

MEASURING INTENTION TO MAKE LIFESTYLE MODIFICATIONS IN  
HISPANIC WOMEN BASED ON THEIR BMI AND HEALTH RISKS: A QUALITY  
IMPROVEMENT PROJECT

by

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As members of the DNP Project Committee, we certify that we have read the DNP project prepared by *Marcela Quintero*, titled *Measuring Intention to Make Lifestyle Modifications in Hispanic Women Based on Their BMI and Health Risks: A Quality Improvement Project* and recommend that it be accepted as fulfilling the DNP project requirement for the Degree of Doctor of Nursing Practice.

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## ABSTRACT

Obesity is a rising public health concern in the United States that contributes to the development of long-term health conditions. Development of such conditions can be detrimental to women of childbearing age, as it affects their ability to conceive. Obesity is highest among the Hispanic population, and is estimated to be about 33.1% in Hispanic women in Pima County. This rate is still above the Healthy People 2020 goal of 30.5%. Reducing obesity will help to reduce the annual cost of treating obesity, which is estimated to be about \$149.5 billion. Primary care providers (PCP) use body mass index (BMI) scores to quickly identify obesity and health risks for each patient. The purpose of this quality improvement project was to determine the effect of an educational intervention on intention to engage in lifestyle modifications. Measured outcomes included motivation to engage in healthy diet, regular exercise, knowledge acquisition of BMI scores, and knowledge acquisition of high BMI score health complications. This project was a one group quasi-experimental design with pre- and post-test based in a family practice clinic in Green Valley, Arizona. After 10 days of recruitment, 30 Hispanic women agreed to participate. Participants were aged 20-49, non-pregnant, non-lactating, non-diabetic, and able to read in English or Spanish. Participants filled out a demographic sheet and a pre-test prior to the intervention. Height and weight were measured using a scale and stadiometer, and BMI scores were calculated. Current weight, BMI score, and ideal weight range were written on the personalized educational sheet (PES) that also included health risks associated with high BMI scores, BMI score ranges, and healthy weight maintenance recommendations. Post-tests were given after complete explanation of the PES. Total time to complete the project was about 20-30 minutes. Pre- and post-test questions included questions from the Self-Determination Theory



healthcare questionnaires, which measure perceived competence and motivation for change in participants. On the pre-test, 6.7% of participants knew their current BMI score, and on post-test 96.7% knew their current BMI score. The participants (66.7%) knew BMI score components on the pre-test, and there was only a 20% increase in the number of women that knew the components on post-test. On post-test, 86.6% of the participants knew 10 or more high BMI score associated health risks. Paired t-tests scores revealed that there was a statistically significant difference for both autonomous (-2.1) and controlled (-3.3) motivation for exercise, but not for healthy diet. The PES that was developed successfully motivated participants to engage in regular exercise, but it did not motivate them to engage in healthy eating. Perhaps other ways to encourage motivation to eat a healthy diet should be added to the PES to obtain more robust outcomes for healthy behavior. The PES can provide PCPs with the opportunity to talk to women about healthy weight.

## INTRODUCTION

### Background

Obesity is a current public health concern in the United States, as the number of Americans that are obese increases daily. It is estimated that 38% of all women, or one out of every three women, in the U.S. are considered obese (Centers for Disease Control and Prevention, 2013). Hispanic women make up about 15% of the U.S. female population, and are part of the fastest growing minority group in the country (U.S. Census Bureau, 2017). The rate of obesity in the U.S. among Hispanic women is 45% as compared to a rate of 36.5% among Caucasian women (Centers for Disease Control and Prevention [CDC], 2017). Being overweight or obese can lead to the development of infertility, polycystic ovarian syndrome, diabetes mellitus, hypertension, cardiovascular disease, abnormal uterine bleeding, pregnancy complications, and gynecological cancers among women throughout the lifespan (CDC, 2017; Nouri, Tavakkolian, & Mousavi, 2014; Pickett-Blakely, Uwakwe, & Rashid, 2016). Specifically, women of reproductive age can develop complications that will affect their fertility, such as infertility, abnormal uterine bleeding, and pregnancy complications (Nouri, Tavakkolian, & Mousavi, 2014; Pickett-Blakely, Uwakwe, & Rashid, 2016). Obesity is considered a modifiable risk factor for the aforementioned conditions, and a reduction in weight with a healthy diet and physical activity has been shown to decrease risk of acquiring chronic conditions and pregnancy complications (CDC, 2017). As a result, it is imperative to educate and motivate women of childbearing age to modify their lifestyle now to help maintain a healthy weight to reduce their risk of developing health complications. Furthermore, minority groups, such as Hispanic and African-American women, make up the majority of the national prevalence of obesity in the

United States (CDC, 2017). There is limited research on the amount of knowledge women have regarding the risks associated with an elevated Body Mass Index (BMI) score. Therefore, the purpose of this project is to educate Hispanic women of childbearing age about their BMI score and the health risks linked to elevated BMI in order to measure their intention toward incorporating lifestyle modification to reduce and maintain a healthy weight.

### **Definitions of Concepts**

The BMI score is an efficient manner for providers to assess a patient's health risks in the outpatient clinic, as it measures the proportion of weight to height and the end calculation allows to determine the level of recommendations and/or interventions for weight reduction/increase (CDC, 2017). For the purposes of this project, a healthy diet is defined by the American Heart Association as food consumption that incorporates an increased amount of fruits and vegetables, whole grains, low-fat dairy products, poultry, fish, legumes, and nuts (Eckel et al., 2014). Emphasis is also placed on restricting consumption of sweets, sugar-sweetened beverages, and red meats to lead a healthy diet (Eckel et al., 2014; Centers for Disease Control and Prevention [CDC], 2015). Physical activity is defined as 30-60 minutes of moderate to vigorous intensity physical activity at least 5-7 days per week (CDC, 2015).

### **Key Findings from the Literature Review**

Obesity is defined as a body mass index (BMI) score of  $\geq 30.0$  (World Health Organization [WHO], 2018). Obesity causes chronic inflammation in the body via the activation of macrophages in adipose tissue (Cox, West, & Cripps, 2015). Chronic inflammation is associated with the development of stroke, CVD, and cancer (Cox et al., 2015). Furthermore, Cox et al. (2015) have reported that maintaining an appropriate body mass index score helps to

prevent many of these debilitating chronic conditions. In women, obesity is associated with far more health issues and complications that ultimately affect their ability to conceive (Legro et al., 2013). Obesity in women is associated with endometrial cancer, breast cancer, infertility, and complications in pregnancy that can lead to further morbidity in their offspring (Chen et al., 2017; Prompakay et al., 2013). The cost of treating obesity in the U.S. is estimated to be \$149.4 billion per year (Kim & Basu, 2016). According to Ogden, Carroll, Fryar, and Flegal (2015), the prevalence of obesity among Hispanic women in the U.S. is 45%.

Robinson and Kersbergen (2016) found that as obesity escalates in the general population, patients tend to underestimate their own weight in comparison to that norm. Cunha et al. (2014) has found that women with a low health literacy are associated with significantly high BMI scores. Flegal, Kit, Orpana, and Graubard (2013) found that there was an increase in all-cause mortality as the BMI increased above 30. As a result, it is important for patients to understand this condition and its complications in order to produce the necessary behavior change to prevent complications (Vahdat et al., 2014). Perceptions of normal weight need to be realigned in women in order to help reduce the rate of obesity (Robinson & Kersbergen, 2016). In addition, weight reduction as low as 2% has been associated with a decrease in health risks associated with obesity (Jensen et al., 2013; Wadden, Webb, Moran, & Bailer, 2012). Weight reduction from healthy diets has been found to decrease HgbA1C by 0.5-1%, increase HDL, and decrease LDL over long term follow up (Wadden et al., 2012). Exercise alone has been found to reduce the risks associated with obesity, irrespective of whether there is any weight loss (Wadden et al., 2012). Therefore, it is important to encourage our patients to engage in consuming healthy diets and participating in at least 30 minutes of moderate intensity aerobic

physical activity at least five days per week to help reduce health related complications of obesity.

### **Local Problem**

#### **Nature and Severity of the Specific Local Problem**

According to the Centers for Disease Control and Prevention, the rate of obesity in the U.S. is estimated to be 36.5% of the population (Ogden, Carroll, Fryar, & Flegal, 2015). Of that estimation, it is appraised that about 45.7% of adult Hispanic women in the U.S. are obese (Ogden et al., 2015). This number represents almost half of the Hispanic women population of the U.S. In the state of Arizona, the estimated Hispanic population is 30.9%, and about 33.1% of this population are obese (United States Census Bureau [USCB], 2010). Locally, Hispanics make up about 34.5% of Pima County, which is about a third of the county's population (USCB, 2010). The prevalence of obesity in Pima County is assessed to be about 59.5% of all adults, which is more than half of the county's population (Healthy Communities Institute [HCI], 2014). Furthermore, the prevalence of obesity in Hispanic women of Pima County is estimated to be about 33.1% or about 1 out of every 3 Hispanic women will be obese (HCI, 2014). This rate of obesity is above the healthy people 2020 obesity reduction target goal is 30.5% overall in the U.S. (U.S. Department of Health and Human Services, 2018). As a result, it is imperative that providers engage and empower patients with knowledge as a starting point toward decreasing the prevalence of obesity.

#### **Needs Assessment**

The Pima County health department has issued a community health needs assessment completed in 2015 that specified the need to promote healthy lifestyles in the community to

promote health and decrease the rate of obesity (Coyle, Gall, & Tippens, 2015). This community assessment was intended to inform and engage all of the community in health promotion and the obesity prevalence. With the community needs assessment in mind, this DNP project investigator (PI) surveyed ten women patients during clinical experiences, at a federally qualified community health center, about their weight and BMI score. The women were not aware of their BMI scores or the health risks associated with a high BMI, supporting the hypothesis that there was a knowledge gap that needed to be addressed. Hispanic women in the Tucson area community needed information to help promote consistent physical activity and healthy food choices. Integrating the knowledge obtained from the needs assessment in the clinic, the community, and the prevalence of obesity in Pima County will allow these needs to be addressed, help promote healthy lifestyles, and decrease the prevalence of obesity among Hispanic women.

### **Intended Improvement**

#### **Purpose**

The purpose of this project is to determine the effect of a personalized educational intervention on intention of Hispanic women aged 20-49 to consume a healthy diet, and engage in moderate intensity physical activity at least five days a week.

#### **Specific Aims and Outcomes**

The aim is to measure knowledge acquisition and intention to engage in healthy eating and moderate physical activity, following a personalized educational intervention.

#### **Trigger for Change**

In my recent clinical experiences, I have encountered many overweight and obese women wanting to conceive, are having pelvic pain, and have menstrual problems. About 75% of these

women were uninsured or underinsured Hispanic immigrants with few financial resources, thus were unable to afford the cost of treatments. Many of these health issues can be prevented by maintaining a healthy weight via a healthy diet and exercise. Therefore, it is imperative to focus on behavior change stimulated/motivated by increased knowledge acquisition, and encourage the adoption of healthier behaviors.

### **Study Question**

#### **Primary Improvement Related Question**

Will women's knowledge of their Body Mass Index (BMI) score and associated health risks affect positive change in their knowledge and intention to engage in consuming a healthy diet and engaging in physical activity?

## **THEORETICAL FRAMEWORK**

### **Theoretical Underpinnings**

Theoretical underpinnings are essential in the development of a DNP project because it allows the PI the ability to see the phenomenon of interest through a different set of eyes. It allows for a clearer view of the interactions between the elements of interest, and as a result, the PI will be able to successfully implement interventions by viewing potential barriers that can hamper implementation. Theories also allow the PI to be able to set outcomes for a specific phenomenon that will allow for measurement of whether the intervention was successful or not (Moran, 2017).

For many years, the discipline of nursing has implemented and utilized theory as a way to inform practice and as a way of knowing phenomena in practice. This allows nurses to anticipate the needs of the patient and provide for those needs when the patient is ready to receive the

information needed for a successful positive patient outcome (Moran, 2017). In this manner, theory allows the nurse to be able to set an outcome, implement an intervention, and measure whether the intervention was successful by measuring the outcome (Moran, 2017).

The theory that would best help to inform the PI regarding the psychological motivations of change needed to affect obesity reduction is the self-determination theory. This model states that every person has needs that are essential to be met in order to be motivated to perform certain behaviors (Self Determination Theory, 2017). The theory states that there are three items a person needs to meet: autonomy, competence, and relatedness (Assadi & Hassanein, 2017). These needs, once met, provide an intrinsic motivation, which promotes continuing to reproduce the behavior (Meng & Ma, 2015). Providing a person with a choice in the manner in which they are to correct problem behaviors will lead to fulfilling the need of autonomy (Assadi & Hassanein, 2017; David, 2014; Self Determination Theory, 2017). Autonomy is believed to lead to behavior change in the individual that is long-term and not temporary (Assadi & Hassanein, 2017).

In providing information about the participant's BMI and the conditions associated with a high BMI, the new knowledge will afford the participant with opportunity to meet competence or achieve mastery. The material in the informational sheet will provide the participant the opportunity to achieve mastery or learn about obesity and the related health risks involved. The participant's need for relatedness will be met when they ask questions of the PI/provider for more information about their weight, appropriate weight according to height, and strategies to use to maintain a healthy weight; this is described as the need to interact with others (Assadi & Hassanein, 2017). Meeting these two needs will allow the participant to achieve autonomy,



which is described as the need to actively change circumstances to obtain positive change in their lives, or assuming responsibility for their actions (Self Determination Theory, 2017). By achieving all three elements, the participant is building internal motivation that will allow them to be mindful of their health, activity, and eating habits to take control of their health and well-being (Assadi & Hassanein, 2017).

The information sheet was structured to elicit motivation as described in the self-determination theory, as interventions based on the self-determination theory have proven effective at short- and long-term follow up for engagement in physical activity (Samdal, Eide, Barth, Williams, & Meland, 2017). Measurement of motivation/intention elicited from the information via a post-intervention survey allowed for correlation of intention and possible behavior change. The findings from the survey allowed the PI to determine whether the participant met two of the three needs required to produce autonomy, or a sense of taking control of one's circumstances and producing change (Meng & Ma, 2015). This sense of taking control can be construed as motivation/intention to engage in daily healthy eating habits and regular physical activity to promote weight loss and maintenance. McDermott, Oliver, Iverson, and Sharma (2016) found that information techniques used to increase intention had a small to moderate ability to affect behavior change.

## **METHODS**

### **Project Design**

This project utilized a one group quasi-experimental design with pre- and post-tests (Portela, Pronovost, Woodcock, Carter, & Dixon-Woods, 2015). The design allowed for determination of the effectiveness of the educational intervention that included specific

information about the participant's BMI calculation and associated health risks, plus information about the positive health benefits of healthy eating and moderate physical activity. This study design did not require a control group, which allowed as many participants as possible to be exposed to the intervention (Portela et al., 2015).

## **Procedures**

### **Setting**

The project was conducted in an outpatient clinic in the Green Valley, Arizona area, due to wide availability of Hispanic women that frequent a particular clinic, and the short period of the study (Polit & Beck, 2012). Pre-approval was received from the main nurse practitioner of the clinic and was followed by a discussion of the project with the front office staff and the medical assistants to ensure their cooperation. Included in the discussion was the potential disruption of clinic flow.

### **Sample Recruitment**

For this project, convenience sampling was utilized to obtain participants. Convenience sampling is considered to be a source of bias and the findings cannot be generalized to the whole population, therefore careful considerations needed to be followed in order to reduce bias (Polit & Beck, 2012). Bias was reduced by employing eligibility criteria and consecutive sampling (Polit & Beck, 2012). The inclusion criteria for participation were the ability to read and write, age 20-49 years, female gender, not pregnant or lactating, self-identified as Hispanic, and not diabetic. Consecutive sampling involved obtaining the first 20 subjects that came to the clinic who were eligible to participate over the span of five days. Participants who did not meet all inclusion criteria or who were unwilling to participate were excluded.

To avoid a review of patient medical records, the clinic medical assistant personnel notified the primary investigator (PI) of the arrival of Hispanic women between the ages of 20-49 after they had been placed into the treatment rooms. The PI knocked on the treatment rooms, and spoke to the woman regarding the project. This script was utilized to recruit each potential participant: “I am a doctor of nursing practice student at the College of Nursing at the University of Arizona. I am conducting a quality improvement project about knowledge and intention to engage in healthy eating and moderate physical activity in Hispanic women at Green Valley Family Practice. Any information obtained through my project is strictly anonymous and confidential. Data will only be reported as a summary without identifiers except an assigned study number. Your involvement in this project would take about 30 minutes, and will be completed before your provider enters the room. You would be given a pre-test that asks 36 questions, an educational information sheet that includes your own BMI calculation and facts about the benefits of healthy eating and physical activity for your health, and will be followed by a 36 question post-test. Would you like to participate in this project?”

### **Informed Consent**

Those women that agreed to participate in the project provided informed consent via the consent form found in Appendix I. The Spanish translation of the consent form is found in Appendix J. The consent form states that no identifying information will be collected from the participant or the chart, no harm to the participant is expected from participating, and information collected will only be used for the present project. The project was approved by the University of Arizona Institutional Review Board of Human Subjects prior to implementation. The participant signed the form, which gave her consent. A copy of the consent form was given

to each participant for future reference. To protect participant privacy, each was assigned a study number, which was written on the demographic form, pretest, and posttest. Data were entered using this study number into statistical analysis software. Consent forms were kept in a separate file from the numbered study materials, and kept under lock and key.

### **Demographic Survey**

Once the participant's questions were answered and she signed the consent form, the demographic form was given to fill out. The demographic form consisted of questions that helped to describe the sample. Questions included: age, current weight, current height, marital status, highest level of education completed, employment status, if participants lived alone or with others, whether income was sufficient for her needs, and any additional health conditions (i.e., high blood pressure, heart attack, kidney disease, asthma, long-term lung problems, reflux, menstrual problems, polycystic ovarian syndrome, or cancer). The demographic survey is found in Appendix A and the Spanish version can be found in Appendix B. After the demographic form was completed, the PI collected the form and gave the participant the pre-test.

### **Pre-Test**

The pre-test consisted of questions that measured the knowledge the participant had of BMI scores and associated health conditions/complications from high BMI scores. There were also statements used to measure motivation and intent to change obtained from the *Healthcare Self-Determination Theory Packet* developed by Williams, Ryan, and Deci (n.d.). Statements number one through number eight were answered with a Likert scale, where one equaled not at all true, four equaled somewhat true, and seven equaled very true. The next section of the test asked the participant to rate the reasons why they would eat a healthy diet, and the same Likert

scale was used to rate these responses. The next section of the test asked the participant to rate the reason as to why they would engage in physical activity. The PI collected the pre-test once it was completed by the participant, and the educational intervention was then given. The pre-test is available for review in Appendix C, and the Spanish version can be seen in Appendix D.

### **Educational Intervention**

The participant was then lead to the calibrated weight scale and stadiometer to measure weight and height. For the purposes of this study, the weight scale was calibrated before each participant, in order to ensure accuracy. The participant was then lead back to the treatment room. BMI was then calculated using the current weight and height of the potential participant using a BMI calculator found on the PI's computer. This information was recorded on the study information sheet.

The current BMI score was recorded on the information sheet, along with the current height, weight, and an ideal weight range for each participant. This allowed the PI to personalize the educational intervention to the participant. The educational intervention sheet contained information about how the BMI score was calculated, the various BMI score ranges, and a list of some of the health risks associated with high BMI scores. The educational sheet also included recommendations for a healthy diet and consistent physical activity. The information on this sheet was obtained from the Centers for Disease Control and Prevention (2017) adult obesity and consequences website. The healthy diet recommendations were obtained from the American Heart Association management of obesity practice guidelines (Eckel et al., 2014). The personalized information sheet was given to the participant to review, and the PI explained the contents of the sheet to the participant. An explanation of the BMI score, health risks associated

with high BMI, benefits of consuming a healthy diet, and engaging in consistent physical activity followed. All questions the participant had were answered by the PI, and the participant was instructed to keep the personalized educational intervention sheet for future reference. The educational intervention sheet utilized in the project is found in Appendix G, and the Spanish version can be seen in Appendix H.

### **Post-Test**

Immediately following the intervention, the participant was given the post-test to complete. The post-test was identical to the pre-test. The post-test allowed the PI to measure motivation, competence, and knowledge gained from the intervention. Once the participant completed the post-test, the PI collected the post-test, and all other forms, and exited the patient room. The post-test is found in Appendix E, and the Spanish version can be seen in Appendix F. All forms were available in both English and Spanish to accommodate participant preference. The forms were translated to Spanish via a professional translation service provided by the University of Arizona's translating website, and were approved by the University of Arizona's Institutional Review Board. The demographic, pre- and post-tests were collected and stored in a secure briefcase at the clinic in a secure office to maintain privacy. Information on the demographic form, pre-, and post-tests were analyzed for completeness then input into statistical software on a secure computer at the end of each clinical day of the study. Since the PI was able to scan each of the study instruments upon completion, missing data were not a factor. All data were entered into computer data entry forms by participant study number, and this allowed for aggregating and comparing by timeframe (pre- and post-tests).

### **Ethical Issues**

Approval from the University of Arizona Institutional Review Board ensured that all ethical issues listed below were appropriately addressed. Ethical issues are a concern when performing research, especially when it concerns human subjects. These issues need to be addressed in order to ensure ethical treatment of the subjects are being followed in the DNP project. Ebbesen, Anderson, and Pedersen (2012) analyze the components of ethics of biomedicine based on the theories of Beauchamp and Childress, which state that every person has a common morality that consists of “respect for autonomy, nonmaleficence, beneficence, and justice” (p. 2). Therefore, ethical concerns that were addressed with this DNP project can include informed consent, patient rights to refuse to participate, and patient privacy.

Informed consent was addressed in this project by ensuring that the participant’s sense of autonomy was not impeded with the use of a consent form, as is written in Appendix I and the Spanish version in Appendix J. If a participant is not fully informed of the all the aspects and the end goal of the project, then the participant may feel harmed, violated, and this may impede in truthful data collection. This can impede in the validity of the data collection and therefore, impede in the validity of the results of the project. If the participant should decide to opt out of the project, they can opt out of the project at any time, or at the beginning of the visit.

Privacy is a concern about participant identity, and personal information. This concern was addressed by ensuring that no participant identifiers were connected to participant data. All data were entered by assigned participant study number rendering anonymity for data analysis. All data were kept on a password-protected computer in a safe and locked area to prevent theft. In addition, a statement regarding privacy was made on the consent form to provide reassurance

to the participant about preserving anonymity. All discussions regarding BMI, health conditions, and risks were held within the confines of the clinic and exam room for participant privacy.

### **Methods of Evaluation**

The demographic survey was comprised of 13 items, which were aggregated using descriptive statistics and measures of central tendency (percentages of mean, median, and mode). The items described the sample according to age, current weight and height, marital status, number of children, years of education, smoking status, other health conditions, and a rating of their current health status.

The pre-test included 36 items, of which questions one through four were used to measure participant pre-intervention knowledge of BMI scores and complications of high BMI, and were scored by frequencies. Questions five through 12 were extracted from the Perceived Competence Scale (PCS) derived from the Healthcare Self-Determination Theory Questionnaire Packet, and all statements are based on the Self-Determination Theory (Deci & Ryan, 1985; Williams, Deci, & Ryan, 1998; Williams, Ryan, & Deci, n.d.). The packet was obtained from the Self-Determination theory website, which has stated that it can be used in academic research projects. The PCS examines participant's feelings about engaging in healthy habits, i.e. eating a healthy diet and engaging in regular physical activity (Williams, Ryan, & Deci, n.d.). It is an eight-item questionnaire that evaluates participants' confidence about their ability to make lifestyle changes, and the alpha reliability for these items is 0.90 (Williams, Deci, & Ryan, 1998; Williams, Ryan, & Deci, n.d.). For this project, four items related to eating a healthy diet, and four items related to exercising regularly were measured. Responses to the items of the perceived competence scale were rated using a Likert scale from one through seven; where one is equal to



not at all true, four is equal to somewhat true, and seven is equal to very true. The Likert scale used to rate statements was designed to be totaled to retrieve perceived competence score in eating a healthy diet and engaging in regular physical exercise. The rating of one thru two were considered to be low perceived competence, ratings of three thru five were considered to be average perceived competence, and ratings six thru seven were considered to be high perceived competence.

Questions 13 to 36 were taken from the Treatment Self-Regulation Questionnaire (TSRQ) derived from the Healthcare Self-Determination Theory Packet, and questions are based on the Self-Determination Theory (Deci & Ryan, 1985; Williams, Deci, & Ryan, 1998; Williams, Ryan, & Deci, n.d.). This packet was also obtained from the Self-Determination theory website, which has stated that it can be used in academic research projects. These questions were used to assess participants' motivation for a particular healthy behavior, and can discriminate between controlled and autonomous motivation (Williams, Ryan, & Deci, n.d.). Controlled motivation is defined as engaging in behaviors for external reasons (i.e., guilt, obligation, & pressure) (Hagger, et al., 2014). Controlled motivation is associated with poor long-term healthcare outcomes due to reduced consistency in healthy behaviors (Hagger et al., 2014). Autonomous motivation is defined as engaging in behaviors for internal reasons (i.e., personal endorsement, interest, satisfaction, & personal choice) (Hagger et al., 2014). This type of motivation is associated with positive long-term healthcare outcomes due to consistency in engaging in healthy behaviors (Hagger et al., 2014). Levesque, Williams, Elliot, Pickering, Bodenhamer, and Finley (2007) published a validation of the TSRQ in a previous article.

For this project, autonomous motivation for eating a healthy diet were measured by items thirteen thru eighteen. These items were also rated by the same seven point Likert scale, where one equals not at all true, two equals rarely true, three equals sometimes but infrequently true, four equals somewhat true, five equals sometimes true, six equals usually true, and seven equals very true. A Likert rating of one thru two was considered to be low autonomous motivation, ratings of three thru five was considered to be average autonomous motivation, and ratings six thru seven was considered to be high autonomous motivation. These items were totaled to form a reflection of autonomous motivation for eating a healthy diet. For these six items, a total score of 12 and below was considered to be low autonomous motivation, a score of 13 thru 30 was considered to be average autonomous motivation, and a score of 31 thru 42 was considered to be high autonomous motivation.

Controlled motivation for eating a healthy diet was measured by items 19 thru 24. These items used the same Likert scale as the autonomous motivation items (i.e., one equals not at all true, two equals rarely true, three equals sometimes but infrequently true, four equals somewhat true, five equals sometimes true, six equals usually true, and seven equals very true). A Likert rating of one thru two was considered to be low controlled motivation, ratings of three thru five was considered to be average controlled motivation, and ratings six thru seven was considered to be high controlled motivation. The controlled motivation items were totaled to form a reflection of controlled motivation. For these six items, a total score of 12 and below was considered to be low controlled motivation, a score of 13 thru 30 was considered to be average controlled motivation, and a score of 31 thru 42 was considered to be high controlled motivation.

Autonomous motivation for engaging in regular physical activity was measured by items 25 thru 30 on the questionnaire. These items were rated on the same Likert scale as the healthy diet items, where one equals not at all true, two equals rarely true, three equals sometimes but infrequently true, four equals somewhat true, five equals sometimes true, six equals usually true, and seven equals very true. The following 12 statements were used to measure the participant's motivation to engage in physical activity. The Likert scale used to rate these statements was designed to retrieve an average of their motivation to consume a healthy diet. A Likert rating of one thru two was considered to be low autonomous motivation, ratings of three thru five was considered to be average autonomous motivation, and ratings six thru seven was considered to be high autonomous motivation.

Controlled motivation for engaging in regular physical activity was measured by items 31 thru 36. These items used the same Likert scale as the autonomous motivation items (i.e., one equals not at all true, two equals rarely true, three equals sometimes but infrequently true, four equals somewhat true, five equals sometimes true, six equals usually true, and seven equals very true). A Likert rating of one thru two was considered to be low controlled motivation, ratings of three thru five was considered to be average controlled motivation, and ratings six thru seven was considered to be high controlled motivation. The controlled motivation items were totaled to form a reflection of controlled motivation.

The post-test was identical to the pre-test, and was scored in the same manner. The statements were not changed, and the test was given after the intervention was complete. The post-test was used to measure perceived competence, autonomous, and controlled motivation toward eating a healthy diet and engaging in regular physical activity after the intervention was

completed. The four questions used in the pre-test to measure BMI score knowledge pre-intervention, were used to measure knowledge acquisition in the post-test.

Information obtained from the pre- and post-tests were analyzed by paired t-tests using IBM Statistical Package for the Social Sciences (SPSS) software. The mean numbers of age, height, weight, and intention to change behavior were calculated. The significance level was set at  $<.05$ . Based on a moderate effect size of 0.80 and a power of 0.95, the estimated sample size is 42 subjects (Cohen, 2013). This number was derived from the Cohen's power tables for t-tests (Cohen, 2013). For this study, the sample size was set at 50 to allow for subjects lost during data collection (Cohen, 2013). The findings of this project cannot be generalized to the general population, as it was only focused on a subset of women.

## RESULTS

### Demographics

After a total of 10 days of recruitment, 37 potential participants were approached. A total of 30 women agreed to participate in the quality improvement project, and filled out the demographic survey. Table 1 describes participant characteristics and Table 2 describes the range and means of the age, weight, and BMI score. Table 3 describes participant current BMI scores grouped within normal weight, overweight, and obese categories.

TABLE 1. *Participant characteristics.*

Characteristic	N (%) 30 (100%)
Gender	
Female	30 (100%)
Male	0 (0%)
Ethnicity	
Hispanic	30 (30%)
African American	0 (0%)
Caucasian	0 (0%)
Other	0 (0%)

TABLE 1 – *Continued*

<b>Characteristic</b>	<b>N (%) 30(100%)</b>
Language Preference	
English	27 (90%)
Spanish	3 (10%)
Educational Attainment	
Some Secondary	2 (6.7%)
Secondary Graduate	5 (16.7%)
Some College	16 (53.3%)
College Graduate	5 (16.7%)
Graduate Studies	2 (6.7%)
Employment Status	
Employed full-time	16 (53.3%)
Employed part-time	4 (13.3%)
Student	2 (6.7%)
Homemaker	3 (10%)
Unemployed	2 (6.7%)
Unable to work	3 (10%)
Income Sufficiency	
Yes	20 (66.7%)
No	10 (33.3%)
Living Alone	
Yes	1 (3.3%)
No	29 (96.7%)
Marital Status	
Single	10 (33.3%)
Married	14 (46.7%)
Domestic Partnership	2 (6.7%)
Divorced	3 (10%)
Separated	1 (3.3%)
Health Status Ratings	
Poor health	4 (13.3%)
Good health	24 (80%)
Excellent health	2 (6.7%)
Reported Health Conditions	
None	15 (50%)
High blood pressure	5 (16.7%)
Menstrual problems	5 (16.7%)
Polycystic ovarian syndrome	2 (6.7%)
Long-term lung problems	1 (3.3%)
Reflux	2 (6.6%)
Smoker	
Yes	2 (6.7%)
No	28 (93.3%)

TABLE 2. *Mean age, weight, and current BMI score.*

Measure	N	Minimum	Maximum	Mean	Std. Deviation
Age	30	21 years	49 years	38.9 years	± 10.0
Weight	30	109 lbs.	300 lbs.	164.0 lbs.	± 39.3
Current BMI	30	18.5	47	28.6	± 5.5

TABLE 3. *Participant current BMI score.*

	BMI score range	N (%)
Normal weight	BMI score 18.5 – 24.9	5 (16.5%)
Overweight	BMI score 25 - 29.9	15 (49.7%)
Obese	BMI score ≥ 30	10 (33%)

### Pre- and Post-test BMI Knowledge

Knowledge gained was assessed using questions number one thru four on the pre- and post-test surveys. The first question was used to obtain the participants' knowledge of their own BMI score pre- and post-intervention, as seen in Table 4.

TABLE 4. *Participant BMI score knowledge.*

	<i>Do you know your own BMI score?</i>	
	<i>Pre-test</i> N (%)	<i>Post-test</i> N (%)
Yes	2 (6.7%)	29 (96.7%)
No	28 (93.3%)	1 (3.3%)
Total	30 (100%)	30 (100%)

Question number two and three were analyzed to determine the extent of pre-existing knowledge about the components used to calculate BMI on the pre-test, and it was utilized to determine knowledge gained from the intervention in the post-test. The results can be seen in Table 5. Question number four was utilized to measure pre-intervention knowledge the participants had on health conditions associated with high BMI scores. The same question was utilized on the post-test to measure knowledge gained from the intervention. It was scored based on the number of correct answers by participants. The range of possible scores on this question was 0-15. Results are detailed in Table 6.

TABLE 5. *Participant knowledge of BMI components.*

<b>Answer Combination</b>	<b>Pre-test N (%)</b>	<b>Post-test N (%)</b>
Height and Weight	20 (66.7%)	26 (86.7%)
Gender and Age	2 (6.7%)	0 (0%)
Height and Age	1 (3.3%)	1 (3.3%)
Height and Gender	2 (6.7%)	0 (0%)
Weight and Age	0 (0%)	1 (3.3%)
Age	0 (0%)	1 (3.3%)
None	5 (16.7%)	1 (3.3%)
Total	30 (100%)	30 (100%)

TABLE 6. *Participant knowledge question #4.*

<b>Mark all the health conditions that are associated with a high BMI score.</b>		
<i>Number Answered Correctly</i>	<i>Pre-test N (%)</i>	<i>Post-test N (%)</i>
0	5 (16.7%)	0 (0%)
≤ 5	15 (50%)	4 (13.3%)
6-9	7 (23.2%)	0 (0%)
≥ 10	3 (10%)	26 (86.6%)
Total	30 (100%)	30 (100%)

### **Perceived Competence Scale**

The Perceived Competence Scale (PCS) for healthy diet comprised questions number five thru eight, and PCS for exercise appeared as questions number nine thru 12. Participants rated the statements with a Likert scale of one thru seven where one was not at all true, and seven was very true. Ratings were averaged, and the sums were analyzed. The possible score range was 1-28. Two participants did not understand the questions on the pre-test survey and chose to not mark the answer for those questions. Therefore, those cases were excluded from analysis in SPSS, and N = 28 for healthy diet and N = 29 for exercise when the means were analyzed. Table 7 shows the PCS score means for healthy diet and exercise. Paired t-test analysis was performed for PCS scores and the results are show in Table 8.

TABLE 7. Mean perceived competence score-healthy diet and exercise.

	N	Perceived Competence		Scale Score	
		Pre-test	Mean (SD)	Post-test	Mean (SD)
Healthy Diet	28	18.2	(± 6.8)	23.1	(± 5.7)
Exercise	29	18.9	(± 7.4)	23.6	(± 5.2)

TABLE 8. Paired t-test for perceived competence score-healthy diet and exercise.

	N	Pre-test	Post-test	Mean Difference between groups	Paired Samples Correlation	t-test score (*significant value)
Healthy Diet	28	18.2 (± 6.8)	23.1 (± 5.7)	-4.9 (± 5.4)	0.6	-4.8*
Exercise	29	18.9 (± 7.4)	23.7 (± 5.2)	-4.8 (± 6.0)	0.6	-4.3*

\* Indicates a statistically significant value at  $p < 0.05$ .

### Autonomous Motivation

Autonomous motivation is defined as the intrinsic drive of a participant that is associated with long-term goal attainment. Questions #13-18 on the pre- and post-test surveys measured participants' autonomous motivation for leading a healthy diet. Questions #25-30 on the pre- and post-test measured autonomous motivation to engage in exercise. The answers were averaged and the sums recorded. The range of possible scores is 1-42. One participant was excluded from the analysis in SPSS due to no responses on the pre-test. The results for paired t-test for autonomous motivation can be seen in Table 9.

TABLE 9. Paired t-test results autonomous motivation.

	N	Pre-test Mean (SD)	Post-test Mean (SD)	Mean Difference Between Groups	Paired Samples Correlation	t-test score (*Significant value)
Healthy Diet	29	40.0 (± 4.5)	38.8 (± 4.5)	-0.8 (± 3.4)	0.7	-1.3
Exercise	29	36.6 (± 6.4)	38.55 (± 5.2)	-2.0 (± 5.0)	0.7	-2.1*

\* Indicates a statistically significant value at  $p < 0.05$ .



### Controlled Motivation

Controlled motivation is defined as the pressure the external pressures felt by the participant to engage in certain behaviors, and is associated with short-term goal attainment. Questions #19-24 measured controlled motivation to eat a healthy diet in the pre- and post-test while questions #31-36 measured participants' controlled motivation for engaging in exercise in the pre- and post-test. Scoring for this section was the same as the autonomous motivation section. Missing data was dealt with in the same manner as above. The results for the paired t-test analysis done in SPSS for controlled motivation can be visualized in Table 10.

TABLE 10. *Paired t-test results controlled motivation.*

	<b>N</b>	<b>Pre-test Mean (SD)</b>	<b>Post-test Mean (SD)</b>	<b>Mean Difference Between Groups</b>	<b>Paired Samples Correlation</b>	<b>t-test Score (*Significant Value)</b>
Healthy Diet	29	20.1 (± 8.3)	20.6 (± 10.2)	-0.5 (± 6.6)	0.8	-0.4
Exercise	29	17.1 (± 9.3)	20.4 (± 9.4)	-3.3 (± 5.4)	0.8	-3.3*

\* Indicates a statistically significant value at  $p < 0.05$ .

## DISCUSSION

### BMI Scores

When comparing the pre-test data with the post-test data about knowledge gained from the educational sheet, the data leads the PI to conclude that the educational sheet successfully increased the participants' knowledge of their own BMI scores. This conclusion is evidenced by 96.7% (n = 29) of participants' reported knowing their BMI score post-intervention. A total of ten participants were obese according to the calculated BMI score, and of those 10 only six of them reported having health problems. None of the 10 obese patients reported knowing their own BMI score. These findings are consistent with the finding in Post et al. (2015) which states that

16.4% (N = 515) of their participants were not aware of their own personal BMI score when asked.

The majority (66.7% (n = 20)) of participants in the present quality improvement project were already able to correctly identify the two components that are used to calculate BMI scores pre-intervention. It may be a primary care provider, at some point in their lives, educated them on what a BMI score is. It would be useful to ask participants in a future study if they had received their BMI score previously and from who. It may also be attributed to the majority of participants reporting an educational attainment of some college (53.3%; n = 16), which may explain prior knowledge of BMI scores.

In addition, 50% (n = 15) of participants were only able to associate one to five health conditions on pre-test, out of a total of 15, and 86.6% (n = 26) of participants were successfully able to associate 10-15 health conditions during post-intervention. It may be that their primary care provider was not diligent in educating patients about the health risks associated with being overweight or obese. The personalized educational handout used in this quality improvement project did significantly improve knowledge about personal BMI scores and the health risks associated with high BMI scores. It may be useful for all primary care providers to use a similar approach to educating their patients about risks associated with obesity, benefits of eating a healthy diet and engaging in regular physical activity. Potter, Vu, and Croughan-Minihane (2001) found that patients wanted more provider involvement in their weight management than they were currently receiving in the form of education regarding associated health risks with high BMI scores and lifestyle change recommendations.

### **PCS Scores**

Results from this study indicate the educational intervention was associated with participants feeling competent/confident in their ability to eat a healthy diet and engage in regular physical activity post-intervention, as evidenced by statistically significant paired t-test analysis showed. High PCS scores have been associated with positive health behaviors, as was found by Backman et al. (2016) in newly discharged cardiovascular patients. Thus, the participant scores in this quality improvement project can be associated with positive lifestyle changes in these participants.

### **Motivation**

The educational intervention was associated with an increase in the participants' autonomous motivation to engage in regular physical activity on the post-test. This observed outcome is in line with the expected outcome for engaging in regular physical activity. This same outcome was found by Koponen, Simonsen, and Suomonsen (2017) in assessing diabetic patients' motivation to engage in physical activity. There was an association between physical activity and increased autonomous motivation (Koponen, Simonsen, & Suominen, 2017). There was also an increase in post-intervention controlled motivation for engaging in physical activity. Both findings were an intended consequence of the intervention, and demonstrates potential for improving health related behaviors. Controlled motivation is associated with short-term goal attainment, but not with long-term goal attainment. It may be that some other intervention is needed to promote motivation to engage in long-term physical activity.

Surprisingly, no significant changes in autonomous and controlled motivation to engage in eating a healthy diet were found. Perhaps the educational sheet did not provide enough

specificity about serving sizes, suggested daily fruit and vegetable intake or identification of specific healthy foods. Possibly the PI did not take into account the cultural value of food in the Hispanic population that would influence their dietary choices. Future studies should include more specific and culturally pertinent food suggestions to motivate patients in eating a healthy diet. They should also utilize other strategies suggested by clinical guidelines and researchers that have motivated overweight patients about healthy eating.

### **Strengths**

This quality improvement project is one of the first to personalize education with current BMI scores and health risks associated with high BMI scores in order to determine knowledge acquisition and motivation in making healthy lifestyle changes to promote health in Hispanic women. The overall goal was to identify and test a personalized educational intervention to determine effects on motivation (both short and long term) to engage in healthy eating and regular physical activity. This quality improvement project provided a good preliminary start toward promoting healthy lifestyles in Hispanic reproductive aged women, a group that is a large part of the make-up of the surrounding community. This intervention also provides the opportunity for the provider to counsel and/or give recommendations about weight management, as Aveyard et al. (2016) found that there was a reduction in mean weight when providers delivered a brief intervention about weight management.

### **Limitations**

The initial time of sampling for this quality improvement project was five consecutive days, as discussed in the methods section, to reduce bias. At the end of the five days, there were only eighteen participants. The small number of participants could be attributed to the many

cancellations and no-shows at the clinic, which decreased the amount of potential participants to recruit on the days the project investigator was present at the clinic. The small sample size was discussed with the committee chair, and who recommended recruitment continue an additional five days, for a total of 10 days. After 10 days of recruitment at the Green Valley Clinic, the total number of participants was 30. As a result of the general demographic of the surrounding community and unforeseen cancellations, recruitment of reproductive aged women was limited at this clinical site.

In addition, women who only spoke and read Spanish appeared to have difficulty understanding the pre- and post-test surveys, despite the information being presented in Spanish. This was evident by the very low scores or missing answers on the pre-test, and not being able to correctly answer the questions about their own BMI score, and the components that make up a BMI score on the post-test. In a future study, more research would be dedicated toward methods that would reach the Spanish speaking community in hopes of promoting knowledge acquisition by this population. The Spanish interpreter did verbalize concern, at the time of material interpretation, about Spanish-speaking women's ability to understand a Likert scale and how to provide answers. Indeed, this appeared to be a problem in this project. Perhaps changing the Likert scale format to a grid-like format may have been better to understand. This was a barrier to implementation that could have affected the internal validity of the project. For this population, it may be better to use a different format of asking and answering questions, and it may be important to use interviews or focus groups to obtain the information desired. This would allow participants to articulate, in their own words, answers to some of the questions in the questionnaire.

In addition, several participants were unsure or did not understand some of the questions on the demographic, pre- and post-test surveys. There were several instances of the participant asking the project investigator: what a secondary graduate was on the demographic sheet, if all the questions on the pre- and post-test survey were the same because of the similarity of each question, and what answer they should mark on the first four questions of the pre-test. All of which could have contributed to participant confusion when answering questions, thus potentially limiting internal validity.

### **Potential for Sustainability**

In order for this educational sheet to be used confidently with women of reproductive age, it should be trialed in a larger study that includes an ethnically diverse sample. This would allow the PI to validate the educational sheet in order for it to be used on all women of reproductive age. The initial costs of this project went toward developing the materials with printing and translation services. Printing of the whole project in both English and Spanish was about \$250. The average cost of printing would be from \$.07 - .10 per sheet, and the cost of only printing the education sheet would be considerably less. In addition, the interpretation services that were used for this project cost about \$800 for translation of all materials used in the project. However, translation services for one or two pages would be considerable less, and affordable.

The educational intervention alone requires about five minutes to complete excluding the pre- and post-test surveys. This would be an easy intervention to implement immediately in practice settings that would provide Hispanic women of childbearing age with education related to BMI and associated health risks. In the absence of time to measure motivation to engage in healthy eating and/or regular physical activity with use of the PCS, it might be prudent to merely

ask participants after the intervention if knowing their BMI and the associated risks changed their motivation for healthy eating and/or physical activity. This intervention could eventually be included in the electronic health record to keep track of patient BMI score over time.

### **Conclusions**

Overall, the Hispanic women approached about participating in the project were very open and willing to participate perhaps because the focus topic was on healthy weight, healthy diets, and physical activity. Using this educational sheet could be a good way for the primary care provider to approach the subject about weight and lifestyle changes with their patients. It could also be used as a physical reminder that patients can take home about their weight and associated health risks. The educational sheet might even help motivate needed lifestyle changes for healthy eating and engaging in physical activity. Although there was no increase in motivation to engage in a healthy diet, the implications for practice are that women of this age group and ethnicity can be motivated to engage in physical exercise to decrease their risk of developing long-term health problems, menstrual problems, and pregnancy complications activity. With continued motivation from their primary care providers, women might proactively engage in physical exercise that will help them to reduce their health risks and help them to lead healthier lifestyles. Future work must focus on ways to motivate these women to engage in healthy eating.

APPENDIX A:  
DEMOGRAPHIC SURVEY



Participant # \_\_\_\_\_

### Demographic Survey

Age: \_\_\_\_\_

Weight: \_\_\_\_\_

Height: \_\_\_\_\_

**Do you live alone?**

A. YES

B. NO

**What is your marital status? (Check one):**

A. Single (never married)

B. Married

C. In a domestic partnership

D. Divorced

E. Widowed

F. Separated

**Do you have any children?**

A. NO

B. YES If yes, how many? \_\_\_\_\_

**What is the highest level of Education completed? (Check all that apply):**

A. Elementary

B. Some secondary

C. Secondary graduate

D. Some college

E. College graduate

F. Graduate studies

**What is your current employment status? (Check one):**

A. Employed full time (40 or more hours per week)

B. Employed part time (up to 39 hours per week)

C. Self-employed

D. Student

E. Homemaker

F. Unemployed and currently looking for work

G. Unemployed and not currently looking for work

H. Unable to work

**Do you think your income is sufficient for your needs?**

- A. YES
- B. NO

**Are you a smoker?**

- A. YES
- B. NO

**Do you currently have any health conditions?**

- A. NO
- B. YES

**If yes, check all that apply:**

- A. High blood pressure
- B. Heart disease
- C. Heart attack
- D. Kidney disease
- E. Asthma
- F. Long-term lung problems
- G. Reflux
- H. Menstrual problems
- I. Polycystic Ovarian Syndrome
- J. Cancer
- K. Other: \_\_\_\_\_

**Please rate your current health status (Check one):**

- A. Poor health
- B. Good health
- C. Excellent health

APPENDIX B:  
ENCUESTA DEMOGRÁFICA

Participante # \_\_\_\_\_

### Encuesta demográfica

**Edad:** \_\_\_\_\_

**Peso:** \_\_\_\_\_

**Estatura:** \_\_\_\_\_

**¿Vive solo(a)?**

- A. SÍ  
 B. NO

**¿Cuál es su estado civil? (Marque una respuesta):**

- A. Soltero(a) (no se ha casado nunca)  
 B. Casado(a)  
 C. Conviviente, viven juntos, en unión libre  
 D. Divorciado(a)  
 E. Viudo(a)  
 F. Separado(a)

**¿Tiene hijos(as)?**

- A. NO  
 B. SÍ Si la respuesta es sí, ¿cuántos? \_\_\_\_\_

**¿Hasta qué año de educación llegó? (Marque todas las respuestas apropiadas):**

- A. Primaria  
 B. Algo de secundaria  
 C. Se graduó de la secundaria  
 D. Algo de universidad  
 E. Se graduó de la universidad  
 F. Estudios de posgrado

**¿Cuál es su situación de trabajo actual? (Marque una respuesta):**

- A. Trabajo a tiempo completo (40 horas o más a la semana)  
 B. Trabajo a medio tiempo (hasta 39 horas a la semana)  
 C. Autónomo, independiente  
 D. Estudiante  
 E. Ama de casa  
 F. Desempleado y estoy buscando trabajo actualmente  
 F. Desempleado y no estoy buscando trabajo actualmente  
 H. No puedo trabajar

**¿Usted cree que sus ingresos son suficientes para cubrir sus necesidades?**

- A. SÍ  
 B. NO

**¿Usted fuma?**

- A. SÍ  
 B. NO

**¿Actualmente, tiene algún problema de salud?**

- A. NO  
 B. SÍ

**Si la respuesta es sí, marque todas las respuestas apropiadas:**

- A. Presión alta  
 B. Enfermedad del corazón  
 C. Infarto al corazón, ataque al corazón  
 D. Enfermedad del riñón  
 E. Asma  
 F. Enfermedades crónicas del pulmón  
 G. Reflujo, agruras  
 H. Problemas menstruales o de la regla  
 I. Síndrome de ovario poliquístico  
 J. Cáncer  
 K. Otro: \_\_\_\_\_

**Califique su estado de salud actual (Elija una respuesta):**

**Mi salud es...**

- A. Mala  
 B. Buena  
 C. Excelente

APPENDIX C:  
PRE-TEST SURVEY

Participant # \_\_\_\_\_

Pre-Test Survey

**1. Do you know your Body Mass Index score?**

- A. NO
- B. YES If yes, what is it? \_\_\_\_\_

**2. What one measurement is used to calculate a Body Mass Index score?**

- A. Height
- B. Shoe size
- C. Age
- D. Gender

**3. What is the second measurement used to calculate a Body Mass Index score?**

- A. Weight
- B. Age
- C. Gender
- D. Shoe size

**4. Mark the health condition associated with a high BMI score? (Check all that apply):**

- A. Difficulty getting pregnant
- B. Problems with menstruation
- C. Develop serious pregnancy complications
- D. Can have children born with birth defects
- E. Diabetes
- F. High blood pressure
- G. Heart disease
- H. Heart attacks
- I. Stroke
- J. Arthritis
- K. Ovarian cancer
- L. Uterine cancer
- M. Breast cancer
- N. Cervical cancer
- O. Colon cancer

**Please rate the following statements (Check one for each statement):**

**5. “I feel confident in my ability to maintain a healthy diet”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**6. “I now feel capable of maintaining a healthy diet”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**7. “I am able to maintain a healthy diet permanently”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**8. “I am able to meet the challenge of maintaining a healthy diet”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**9. “I feel confident in my ability to exercise regularly”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true



- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**10. “I now feel capable of exercising regularly”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**11. “I am able to exercise regularly over the long term”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**12. “I am able to meet the challenge of exercising regularly”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
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**“The reason I would *eat a healthy diet* is”** (William, Ryan, & Deci, n.d.):

**13. “Because I feel that I want to take responsibility for my own health”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**14. “Because I personally believe that eating a healthy diet is the best thing for my health”**

(William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**15. “Because I have carefully thought about eating a healthy diet and believe it is very important for many aspects of my life”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**16. “Because eating a healthy diet is an important choice I really want to make”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**17. “Because eating a healthy diet is consistent with my life goals”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
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**18. “Because eating a healthy diet is very important for being as healthy as possible”**

(William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true

- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**19. “Because I would feel guilty or ashamed of myself if I did not eat a healthy diet”**  
(William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
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**20. “Because others would be upset with me if I did not eat a healthy diet”** (William, Ryan, & Deci, n.d.).

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- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
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**22. “Because I feel pressure from others to do eat a healthy diet”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
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- \_\_ 6 = Usually true
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**24. “Because I want others to see I can do it”** (William, Ryan, & Deci, n.d.).

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- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**36. “Because I want others to see I can do exercise regularly”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true

- \_\_ 2 = Rarely true
- \_\_ 3 = Sometimes but infrequently true
- \_\_ 4 = Somewhat true
- \_\_ 5 = Sometimes true
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- \_\_ 7 = Very true

APPENDIX D:  
ENCUESTA DE PRETEST



Participante # \_\_\_\_\_

**Encuesta de Pretest****1. ¿Sabe cuál es su índice de masa corporal (Body Mass Index)?**

- A. NO  
 B. SÍ Si la respuesta es sí, ¿cuál es? \_\_\_\_\_

**2. ¿Cuál de estas medidas es usada para calcular el índice de masa corporal?**

- A. Estatura  
 B. Talla de zapato  
 C. Edad  
 D. Sexo

**3. ¿Cuál es la segunda medida usada para calcular el índice de masa corporal?**

- A. Peso  
 B. Edad  
 D. Sexo  
 B. Talla de zapato

**4. Marque el/los problema(s) de salud asociado(s) con un IMC alto: (Marque todas las respuestas apropiadas):**

- A. Dificultad para salir embarazada  
 B. Problemas de la menstruación o la regla  
 C. Desarrollo de complicaciones graves durante el embarazo  
 D. Su niño puede presentar defectos de nacimiento  
 E. Diabetes  
 F. Presión alta  
 G. Enfermedad del corazón  
 H. Infarto o ataque al corazón  
 I. Derrame cerebral  
 J. Artritis  
 K. Cáncer de ovario  
 L. Cáncer de útero o matriz  
 M. Cáncer de seno o mama  
 N. Cáncer de cuello uterino  
 O. Cáncer de colon

**Califique las siguientes afirmaciones (Marque una respuesta por cada afirmación):**

**5. “Estoy seguro(a) de que puedo mantener una alimentación saludable”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**6. “Ahora me siento capaz de mantener una alimentación saludable”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**7. “Soy capaz de mantener una alimentación saludable permanentemente”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**8. “Soy capaz de cumplir el reto de mantener una alimentación saludable”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**9. “Tengo confianza en mi habilidad de hacer ejercicio periódicamente”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**10. “Ahora me siento capaz de hacer ejercicio periódicamente”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**11. “Puedo hacer ejercicio periódicamente a largo plazo”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**12. “Soy capaz de cumplir el reto de hacer ejercicio periódicamente”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**“El motivo por el cual tendría una alimentación saludable es”** (William, Ryan, & Deci, n.d.):

**13. “Porque siento que quiero ser responsable de mi salud”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero

- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**14. “Porque creo que tener una alimentación saludable es lo mejor para mi salud”**

(William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**15. “Porque he pensado mucho sobre tener una alimentación saludable y creo que sería muy importante en muchos aspectos de mi vida”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
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**16. “Porque tener una alimentación saludable es una decisión importante que realmente quiero tomar”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
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- 3 = Algo verdadero, pero no siempre
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**17. “Porque tener una alimentación saludable es consistente con las metas de mi vida”**

(William, Ryan, & Deci, n.d.).

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- 4 = Algo verdadero
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**18. “Porque tener una alimentación saludable es muy importante para poder ser tan saludable como sea posible”** (William, Ryan, & Deci, n.d.).

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- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
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**19. “Porque me sentiría culpable o avergonzado(a) de mí mismo(a) si no tuviera una alimentación saludable”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
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**20. “Porque otras personas podrían enojarse conmigo si no tuviera una alimentación saludable”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
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**21. “Porque me sentiría mal conmigo mismo(a) si no tuviera una alimentación saludable”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**22. “Porque siento presión de otras personas para que tenga una alimentación saludable”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre

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**23. “Porque quiero que otras personas aprueben de mí”** (William, Ryan, & Deci, n.d.).

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- 4 = Algo verdadero
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**24. “Porque quiero que otras personas vean que lo puedo lograr”** (William, Ryan, & Deci, n.d.).

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**“El motivo por el que haría ejercicio periódicamente es”** (William, Ryan, & Deci, n.d.):

**25. “Porque siento que quiero ser responsable de mi propia salud”** (William, Ryan, & Deci, n.d.).

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**26. “Porque, personalmente, creo que hacer ejercicio periódicamente es lo mejor para mi salud”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
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- 3 = Algo verdadero, pero no siempre
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**27. “Porque he pensado detalladamente sobre hacer ejercicio periódicamente y creo que es muy importante para muchos aspectos de mi vida”** (William, Ryan, & Deci, n.d.).

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**28. “Porque hacer ejercicio periódicamente es una decisión importante que realmente quiero tomar”** (William, Ryan, & Deci, n.d.).

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**32. “Porque otras personas se enojarían conmigo si no hiciera ejercicio periódicamente”**

(William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
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- 6 = Usualmente verdadero
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**36. “Porque quiero que otras personas vean que puedo hacer ejercicio periódicamente”**

(William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
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APPENDIX E:  
POST-TEST SURVEY

Participant # \_\_\_\_\_

Post-Test

**1. Do you know your Body Mass Index score?**

- A. NO
- B. YES If yes, what is it? \_\_\_\_\_

**2. What one measurement is used to calculate a Body Mass Index score?**

- A. Height
- B. Shoe size
- C. Age
- D. Gender

**3. What is the second measurement used to calculate a Body Mass Index score?**

- A. Weight
- B. Age
- C. Gender
- D. Shoe size

**4. Mark the health condition associated with a high BMI score? (Check all that apply):**

- A. Difficulty getting pregnant
- B. Problems with menstruation
- C. Develop serious pregnancy complications
- D. Can have children born with birth defects
- E. Diabetes
- F. High blood pressure
- G. Heart disease
- H. Heart attacks
- I. Stroke
- J. Arthritis
- K. Ovarian cancer
- L. Uterine cancer
- M. Breast cancer
- N. Cervical cancer
- O. Colon cancer

**Please rate the following statements (Check one for each statement):**

**5. “I feel confident in my ability to maintain a healthy diet”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**6. “I now feel capable of maintaining a healthy diet”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**7. “I am able to maintain a healthy diet permanently”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**8. “I am able to meet the challenge of maintaining a healthy diet”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
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**9. “I feel confident in my ability to exercise regularly”** (William, Ryan, & Deci, n.d.).

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- 2 = Rarely true
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- 5 = Sometimes true
- 6 = Usually true
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**10. “I now feel capable of exercising regularly”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
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- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**“The reason I would eat a healthy diet is”** (William, Ryan, & Deci, n.d.):

**13. “Because I feel that I want to take responsibility for my own health”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**14. “Because I personally believe that eating a healthy diet is the best thing for my health”**

(William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**15. “Because I have carefully thought about eating a healthy diet and believe it is very important for many aspects of my life”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**16. “Because eating a healthy diet is an important choice I really want to make”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**17. “Because eating a healthy diet is consistent with my life goals”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**18. “Because eating a healthy diet is very important for being as healthy as possible”**

(William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true

- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**19. “Because I would feel guilty or ashamed of myself if I did not eat a healthy diet”**  
(William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**20. “Because others would be upset with me if I did not eat a healthy diet”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**21. “Because I would feel bad about myself if I did not eat a healthy diet”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**22. “Because I feel pressure from others to do eat a healthy diet”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true

\_\_\_ 7 = Very true

**23. “Because I want others to approve of me”** (William, Ryan, & Deci, n.d.).

\_\_\_ 1 = Not at all true

\_\_\_ 2 = Rarely true

\_\_\_ 3 = Sometimes but infrequently true

\_\_\_ 4 = Somewhat true

\_\_\_ 5 = Sometimes true

\_\_\_ 6 = Usually true

\_\_\_ 7 = Very true

**24. “Because I want others to see I can do it”** (William, Ryan, & Deci, n.d.).

\_\_\_ 1 = Not at all true

\_\_\_ 2 = Rarely true

\_\_\_ 3 = Sometimes but infrequently true

\_\_\_ 4 = Somewhat true

\_\_\_ 5 = Sometimes true

\_\_\_ 6 = Usually true

\_\_\_ 7 = Very true

**“The reason I would *exercise regularly* is”** (William, Ryan, & Deci, n.d.):

**25. “Because I feel that I want to take responsibility for my own health”** (William, Ryan, & Deci, n.d.).

\_\_\_ 1 = Not at all true

\_\_\_ 2 = Rarely true

\_\_\_ 3 = Sometimes but infrequently true

\_\_\_ 4 = Somewhat true

\_\_\_ 5 = Sometimes true

\_\_\_ 6 = Usually true

\_\_\_ 7 = Very true

**26. “Because I personally believe exercising regularly is the best thing for my health”** (William, Ryan, & Deci, n.d.).

\_\_\_ 1 = Not at all true

\_\_\_ 2 = Rarely true

\_\_\_ 3 = Sometimes but infrequently true

\_\_\_ 4 = Somewhat true

\_\_\_ 5 = Sometimes true

\_\_\_ 6 = Usually true

\_\_\_ 7 = Very true

**27. “Because I have carefully thought about exercising regularly and believe it is very important for many aspects of my life”** (William, Ryan, & Deci, n.d.).

\_\_\_ 1 = Not at all true



- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**28. “Because exercising regularly is an important choice I really want to make”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**29. “Because exercising regularly is consistent with my life goals”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**30. “Because exercising regularly is very important for being as healthy as possible”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**31. “Because I would feel guilty or ashamed of myself if I did not exercise regularly”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true

- 6 = Usually true
- 7 = Very true

**32. “Because others would be upset with me if I did not exercise regularly”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**33. “Because I would feel bad about myself if I did not exercise regularly”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**34. “Because I feel pressure from others to exercise regularly”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**35. “Because I want others to approve of me”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true
- 3 = Sometimes but infrequently true
- 4 = Somewhat true
- 5 = Sometimes true
- 6 = Usually true
- 7 = Very true

**36. “Because I want others to see I can do exercise regularly”** (William, Ryan, & Deci, n.d.).

- 1 = Not at all true
- 2 = Rarely true

- \_\_ **3** = Sometimes but infrequently true
- \_\_ **4** = Somewhat true
- \_\_ **5** = Sometimes true
- \_\_ **6** = Usually true
- \_\_ **7** = Very true

APPENDIX F:  
ENCUESTA DE POSTEST

Participante # \_\_\_\_\_

### Encuesta de postest

1. ¿Sabe cuál es su índice de masa corporal (Body Mass Index)?

- A. NO  
 B. SÍ Si la respuesta es sí, ¿cuál es? \_\_\_\_\_

2. ¿Cuál de estas medidas es usada para calcular el índice de masa corporal?

- A. Estatura  
 B. Talla de zapato  
 C. Edad  
 D. Sexo

3. ¿Cuál es la segunda medida usada para calcular el índice de masa corporal?

- A. Peso  
 B. Edad  
 D. Sexo  
 B. Talla de zapato

4. Marque el/los problema(s) de salud asociado(s) con un IMC alto: (Marque todas las respuestas apropiadas):

- A. Dificultad para salir embarazada  
 B. Problemas de la menstruación o la regla  
 C. Desarrollo de complicaciones graves durante el embarazo  
 D. Su niño puede presentar defectos de nacimiento  
 E. Diabetes  
 F. Presión alta  
 G. Enfermedad del corazón  
 H. Infarto o ataque al corazón  
 I. Derrame cerebral  
 J. Artritis  
 K. Cáncer de ovario  
 L. Cáncer de útero o matriz  
 M. Cáncer de seno o mama  
 N. Cáncer de cuello uterino  
 O. Cáncer de colon

**Califique las siguientes afirmaciones (Marque una respuesta por cada afirmación):**

**5. “Estoy seguro(a) de que puedo mantener una alimentación saludable”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**6. “Ahora me siento capaz de mantener una alimentación saludable”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**7. “Soy capaz de mantener una alimentación saludable permanentemente”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**8. “Soy capaz de cumplir el reto de mantener una alimentación saludable”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**9. “Tengo confianza en mi habilidad de hacer ejercicio periódicamente”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**10. “Ahora me siento capaz de hacer ejercicio periódicamente”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**11. “Puedo hacer ejercicio periódicamente a largo plazo”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**12. “Soy capaz de cumplir el reto de hacer ejercicio periódicamente”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**“El motivo por el cual tendría una alimentación saludable es”** (William, Ryan, & Deci, n.d.):

**13. “Porque siento que quiero ser responsable de mi salud”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero

- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**14. “Porque creo que tener una alimentación saludable es lo mejor para mi salud”**

(William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**15. “Porque he pensado mucho sobre tener una alimentación saludable y creo que sería muy importante en muchos aspectos de mi vida”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**16. “Porque tener una alimentación saludable es una decisión importante que realmente quiero tomar”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**17. “Porque tener una alimentación saludable es consistente con las metas de mi vida”**

(William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero



**18. “Porque tener una alimentación saludable es muy importante para poder ser tan saludable como sea posible”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**19. “Porque me sentiría culpable o avergonzado(a) de mí mismo(a) si no tuviera una alimentación saludable”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**20. “Porque otras personas podrían enojarse conmigo si no tuviera una alimentación saludable”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**21. “Porque me sentiría mal conmigo mismo(a) si no tuviera una alimentación saludable”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**22. “Porque siento presión de otras personas para que tenga una alimentación saludable”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre

- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**23. “Porque quiero que otras personas aprueben de mí”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**24. “Porque quiero que otras personas vean que lo puedo lograr”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**“El motivo por el que haría ejercicio periódicamente es”** (William, Ryan, & Deci, n.d.):

**25. “Porque siento que quiero ser responsable de mi propia salud”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**26. “Porque, personalmente, creo que hacer ejercicio periódicamente es lo mejor para mi salud”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero

7 = Muy verdadero

**27. “Porque he pensado detalladamente sobre hacer ejercicio periódicamente y creo que es muy importante para muchos aspectos de mi vida”** (William, Ryan, & Deci, n.d.).

1 = No es verdadero

2 = Raramente verdadero

3 = Algo verdadero, pero no siempre

4 = Algo verdadero

5 = A veces verdadero

6 = Usualmente verdadero

7 = Muy verdadero

**28. “Porque hacer ejercicio periódicamente es una decisión importante que realmente quiero tomar”** (William, Ryan, & Deci, n.d.).

1 = No es verdadero

2 = Raramente verdadero

3 = Algo verdadero, pero no siempre

4 = Algo verdadero

5 = A veces verdadero

6 = Usualmente verdadero

7 = Muy verdadero

**29. “Porque hacer ejercicio periódicamente es consistente con las metas de mi vida”** (William, Ryan, & Deci, n.d.).

1 = No es verdadero

2 = Raramente verdadero

3 = Algo verdadero, pero no siempre

4 = Algo verdadero

5 = A veces verdadero

6 = Usualmente verdadero

7 = Muy verdadero

**30. “Porque hacer ejercicio periódicamente es muy importante para ser tan saludable como sea posible”** (William, Ryan, & Deci, n.d.).

1 = No es verdadero

2 = Raramente verdadero

3 = Algo verdadero, pero no siempre

4 = Algo verdadero

5 = A veces verdadero

6 = Usualmente verdadero

7 = Muy verdadero

**31. “Porque me sentiría culpable o avergonzado(a) de mí mismo(a) si no hiciera ejercicio periódicamente”** (William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**32. “Porque otras personas se enojarían conmigo si no hiciera ejercicio periódicamente”**

(William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**33. “Porque me sentiría mal sobre mí mismo(a) si no hiciera ejercicio periódicamente”**

(William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**34. “Porque siento presión de otras personas para hacer ejercicio periódicamente”**

(William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

**35. “Porque quiero que otras personas aprueben de mí” (William, Ryan, & Deci, n.d.).**

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero

- 6 = Usualmente verdadero
- 7 = Muy verdadero

**36. “Porque quiero que otras personas vean que puedo hacer ejercicio periódicamente”**

(William, Ryan, & Deci, n.d.).

- 1 = No es verdadero
- 2 = Raramente verdadero
- 3 = Algo verdadero, pero no siempre
- 4 = Algo verdadero
- 5 = A veces verdadero
- 6 = Usualmente verdadero
- 7 = Muy verdadero

APPENDIX G:

WHAT IS YOUR BODY MASS INDEX SCORE, AND WHAT DOES IT MEAN?

What is your Body Mass Index Score, and What Does it Mean?

**BODY MASS INDEX SCORE IS A WAY FOR YOUR PRIMARY CARE PROVIDER TO DETERMINE OBESITY**, and to estimate your **health risks**, as an adult of 20 years or older.

Body mass index is calculated from your measured height and weight.

Your **current weight** is \_\_\_\_\_.

Your **Body Mass Index Score** is \_\_\_\_\_.

Your **ideal weight** for your height should be \_\_\_\_\_.

### **Body Mass Index Scores (BMI)**

BMI of **less than 18.5** is **underweight**

BMI of **18.5-24.9** is **normal weight**

BMI of **25-29.9** is **overweight**

BMI of **30 and greater** is **obese**

A BMI of 30 or greater can make it difficult with:

- **getting pregnant,**
- cause **problems** with **menstruation,**
- develop **serious pregnancy complications,**
- and can have children born with **birth defects.**

Increased risk of developing long-term health problems, like:

- **diabetes,**
- **high blood pressure,**
- **heart disease,**
- **heart attacks,**
- **stroke,**
- **arthritis,**
- **ovarian cancer,**
- **uterine cancer,**
- **breast cancer,**
- **cervical cancer,**
- and **colon cancer.**

Maintaining a healthy weight with consistent physical activity (moderate to intense exercise 30-60 minutes a day at least 5-7 days a week), a healthy diet (consisting of moderate amounts of vegetables and fruits daily), smaller meal portions, and decreasing fried foods and excess sugars (sodas, breads, tortillas, candy) from your daily diet can help prevent many of the conditions listed above. Staying healthy can help you take care of your family.

APPENDIX H:

¿CUÁL ES SU ÍNDICE DE MASA CORPORAL Y QUÉ SIGNIFICA?



### ¿Cuál es su índice de masa corporal y qué significa?

**EL ÍNDICE DE MASA CORPORAL ES UNA FORMA EN QUE SU MÉDICO PRIMARIO DETERMINA SI ESTÁ OBESO** y que usa para estimar **sus riesgos de salud**, cuando es un adulto de 20 años a más.

El índice de masa corporal se calcula basado en su peso y estatura.

Su **peso actual** es \_\_\_\_\_.

Su **puntaje de índice de masa corporal** es \_\_\_\_\_.

Su **peso ideal** para su estatura debería ser \_\_\_\_\_.

#### **Puntajes de Índice de masa corporal (BMI, por sus siglas en inglés)**

(IMC) **menor de 18.5** es **bajo peso**

(IMC) de **18.5 - 24.9** es **peso normal**

(IMC) de **25 - 29.9** es **sobrepeso**

(IMC) de **30 o más** es **obeso**

Un IMC de 30 o más puede:

- dificultar el **salir embarazada**
- causar **problemas menstruales**
- desarrollar **complicaciones graves durante el embarazo** y
- los bebés pueden presentar **defectos de nacimiento**

Aumenta el riesgo de desarrollar problemas de salud a largo plazo como:

- **diabetes**
- **presión alta**
- **enfermedad del corazón**
- **infarto o ataque al corazón**
- **derrame cerebral**
- **artritis**
- **cáncer de ovario**
- **cáncer de útero o matriz**
- **cáncer de seno o mama**
- **cáncer de cuello uterino** y
- **cáncer de colon**

Usted puede mantener un peso saludable con actividad física constante (ejercicio moderado a intenso por al menos 30 a 60 minutos al día por 5 a 7 días a la semana), con una alimentación saludable (cantidades moderadas de frutas y verduras a diario), comiendo porciones más pequeñas y al disminuir la cantidad de comida frita y azúcar en exceso (soda, pan, tortillas, caramelos y dulces) de su alimentación diaria. Esto puede prevenir muchos problemas de salud nombrados previamente. Si usted se mantiene saludable puede ayudar a cuidar a su familia.

APPENDIX I:  
INFORMED CONSENT

Participant # \_\_\_\_

**University of Arizona  
Consent to Participate**

**Project Title:** Measuring Intention to Make Lifestyle Modifications in Hispanic Women  
Based on their BMI: A Quality Improvement Project

**Principal Investigator:** Marcela Quintero

**You are being asked to participate in a project.** Your participation in this quality improvement project is voluntary and you do not have to participate. This document contains important information about this project and what to expect if you decide to participate. Please consider the information carefully. Feel free to ask questions before making your decision whether or not to participate.

The purpose of this quality improvement project is to measure the intention or motivation of Hispanic women that are being seen at Green Valley Family Practice between the ages of 20-49 years to engage in consistent exercise and eating a healthy diet after presenting them with education about their body mass index score. The expected duration of this project is about 30 minutes. The only requirements from you is to be able to read and write.

There are no physical risks to you in participating in this DNP project. There may be some psychological risks involved, as many people are embarrassed or ashamed to talk about weight. The psychological risk could be embarrassment and/or shame. The goal of the DNP project is to motivate women to engage in a healthy lifestyle, and this can be considered as a benefit. There are no other time commitments when participating to in this project. There will not be any payments to subjects that decide to participate, and there will not be any fees the participant needs to pay.

All information that is collected in this project will be confidential and anonymous. There will not be any identifying information collected from you. Your name will not be collected or linked to your answers. Your health information from your health record will not be used or viewed and is strictly confidential. Any information that is collected from you will not be shared with any other researcher or future projects without your written permission. Any information that is collected from you will be contained in a locked safe in a secure room until the information can be analyzed on statistical software. Any tests and consent forms will be kept until the project is completed, at which point the paper forms collected today will be shredded. Your name will not be used at all, and the data collected will be encrypted and password protected. For questions, concerns, or complaints about the project you may contact Marcela Quintero at 915-241-1337 or Dr. Judith Berg at 520-626-6154

### Signing the consent form

I have read (or someone has read to me) this form, and I am aware that I am being asked to participate in a DNP project. I have had the opportunity to ask questions and have had them answered to my satisfaction. I voluntarily agree to participate in this project.

I am not giving up any legal rights by signing this form. I will be given a copy of this form.

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Printed name of subject

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Signature of subject

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Date

APPENDIX J:  
CONSENTIMIENTO INFORMADO

**Consentimiento informado**  
**Universidad de Arizona**  
**Consentimiento para participar en una investigación**

**Título del proyecto:** Medición de la voluntad de realizar cambios de estilo de vida en mujeres hispanas basadas en su IMC: Un proyecto de mejora de calidad

**Investigador principal:** Marcela Quintero

**Le pedimos que participe en proyecto.** Su participación en este proyecto de mejora de calidad es voluntaria y usted no tiene que participar si no lo desea. Este documento contiene información importante sobre este proyecto y qué puede esperar si decide participar. Lea esta información detenidamente. Siéntase en la libertad de hacer todas las preguntas que quiera antes de tomar la decisión de participar o no.

El propósito de este proyecto de mejora de calidad es medir la intención o motivación de las mujeres hispanas que se están viendo en la práctica de Green Valley Family Practice, entre 20 a 49 años para participar en ejercicios consistentemente y tener una alimentación saludable después de presentarles información educativa sobre su índice de masa corporal. Este estudio dura aproximadamente 30 minutos. Lo único que usted necesita es poder leer y escribir.

No hay riesgos físicos debido a su participación en este proyecto de DNP. Puede haber algunos riesgos psicológicos ya que muchas personas se apenan o se avergüenzan al hablar sobre su peso. Los riesgos psicológicos pueden ser pena o vergüenza. La meta del proyecto de DNP es motivar a las mujeres a que tengan un estilo de vida saludable y esto puede ser considerado un beneficio.

Para participar en este proyecto no tiene que dedicar tiempo en otras ocasiones. No se hará ningún pago a los sujetos que decidan participar y los participantes no tendrán que hacer ningún pago.

Toda la información recolectada en este proyecto será confidencial y anónima. No se recolectará ninguna información que lo identifique. Su nombre no será recolectado o asociado a sus respuestas. La información médica de su expediente médico no será usada o vista y es estrictamente confidencial. Toda información obtenida no será compartida con ningún investigador o en proyectos futuras sin su permiso por escrito. Toda información obtenida será guardada en una caja fuerte en un cuarto seguro hasta que la información pueda ser analizada con un software estadístico. Todo estudio y formulario de consentimiento se guardará hasta que se finalice el proyecto, momento en el cual los formularios de papel recolectados hoy serán destruidos. Su nombre no será usado por ningún motivo y la información recolectada será encriptada y protegida con una contraseña.

Si tiene preguntas, dudas o quejas sobre el proyecto puede contactar a Marcela Quintero al teléfono 915-241-1337 o a la Dra. Judith Berg al teléfono 520-626-6154.

**Firma del formulario de consentimiento**

He leído (o alguien me ha leído) este formulario y soy consciente de que se me está pidiendo que participe en un proyecto de DNP. He tenido la oportunidad de hacer preguntas y han sido respondidas a mi satisfacción. Acepto a participar voluntariamente en este estudio.

No voy a renunciar a ninguno de mis derechos legales al firmar este formulario. Se me dará una copia de este formulario.

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**Nombre del sujeto**

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**Firma del sujeto**

---

**Fecha**

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