Health Promotion Module for Migrant Youth Adults in Obesity Prevention: A Pilot Project

James Chongsu Wong

California State University, Northern California Consortium Doctor of Nursing Practice

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Health Promotion Module for Migrant Youth Adults in Obesity Prevention: A Pilot Project

James Chongsu wong

A doctoral project completed in partial fulfillment of the requirements for the degree of Doctor of Nursing Practice in the Valley Foundation School of Nursing, San José State University

May 2023
# Doctoral Project Team Members

<table>
<thead>
<tr>
<th>Name</th>
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<tbody>
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<td>Lisa Walker-Vischer RN, DNP, CNS, CCRN</td>
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Health Promotion Module for Migrant Young Adults in Obesity Prevention: A Pilot Project

James Chongsu Wong RN, MSN, PNP, FNP-C, PMHNP-BC

Doctor of Nursing Practice Program

The Valley Foundation School of Nursing

San José State University

May 22nd, 2023
HEALTH PROMOTION MODULES

Abstract

The obesity epidemic continues to worsen. It is estimated there are over one half billion adults worldwide struggling with obesity. In the United States of America, 42% of the adults and over 15 million children are obese. Obesity leads to a myriad of other chronic diseases such as diabetes mellitus, hypertension, and hyperlipidemia. With an annual spending exceeding 173 billion dollars, obesity not only has a negative impact on quality of life but also a huge economic impact on the health care system.

This quality improvement project utilized 4 educational modules as intervention and measured the mean changes using a pre and post survey of their belief in obesity. The survey contained 24 items in 4 domains on a 5-point Likert scale. The participants were migrant workers from El Salvador and Mexico, ages ranging from 18-22. Out of the nine participants presented at the first class, three participated in 4 classes.

Although there were over 20 points in the mean score improvement in pre survey versus post survey, it was not enough to show a statistically significant improvement. However, their mean scores in two domains in the pre survey strongly suggest participants have good knowledge of the severity and their susceptibility of obesity. This knowledge can guide future education programs and interventions.

Keyword: Obesity, young adults, migrants, health belief model
# HEALTH PROMOTION MODULES

## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract</td>
<td>4</td>
</tr>
<tr>
<td>Introduction</td>
<td>6</td>
</tr>
<tr>
<td>Literature Review</td>
<td>8</td>
</tr>
<tr>
<td>Theoretical Framework</td>
<td>12</td>
</tr>
<tr>
<td>Methods</td>
<td>14</td>
</tr>
<tr>
<td>Project Design &amp; Setting</td>
<td>18</td>
</tr>
<tr>
<td>Subjects</td>
<td>17</td>
</tr>
<tr>
<td>Intervention</td>
<td>21</td>
</tr>
<tr>
<td>Procedure</td>
<td>19</td>
</tr>
<tr>
<td>Analysis</td>
<td>23</td>
</tr>
<tr>
<td>Ethical Considerations</td>
<td>20</td>
</tr>
<tr>
<td>Discussion</td>
<td>23</td>
</tr>
<tr>
<td>Limitation</td>
<td>24</td>
</tr>
<tr>
<td>Conclusion</td>
<td>25</td>
</tr>
<tr>
<td>References</td>
<td>27</td>
</tr>
</tbody>
</table>
HEALTH PROMOTION MODULES

Introduction

According to the Center for Disease Control (CDC), Body Mass Index (BMI) is calculated by a person's weight in kilograms and divided by the square of the height in meters. A person’s BMI of greater than 25 and less than 30 is overweight and a BMI of greater than 30 is considered obese (CDC, 2022b). Children's obesity is having a BMI of 95th percentile or greater of the gender specific age growth chart set by the CDC (CDC, 2022a).

In 2019, the prevalence of childhood obesity was close to 20% and 42% for adults over the age of 20. (Stierman et al., 2021). It is also estimated one out of five dollars spent on health care was related to obesity, totaling to 190 billion dollars (Lehnert et al., 2013). Hispanics are affected by obesity more than other ethnic groups. The prevalence of adult Hispanics obesity is 46% compared to 42% for the general adult groups (CDC, 2022c). In Central California farm communities 81% of male migrant farm workers and 76% of female migrant farm workers were either overweight or obese (Lighthall, 2001).

Poverty, food insecurity, and lack of access to health care makes Latino Migrant workers a vulnerable population (Quesada et al., 2011). In California, Latinos make up about 40% of the population and 46% of the Latinos live below the poverty level (Public Policy Institute of California, 2022). 82% of the migrant and seasonal farmworkers households living on the U.S.-Mexico border experienced food insecurity (Weigel et al., 2007). Only 68% of documented immigrants have a primary care provider; this percentage decreases to 47% for undocumented immigrants (Cabral & Cuevas, 2020). Being ineligible for Medicaid, lack of proof of residency, and providers' implicit biases limit access to care (Cabral & Cuevas, 2020). Limited access to health care promotes “oblivobesity”, a term meaning the difficulties in seeing the excess weight in their child compared to the national average (Confiac et al., 2020). With “oblivobesity” and lack of
access, the risk factors are normalized and not perceived as a threat to their health, this false perception and belief perpetuates the cycle of obesity.

** Contributing factors **

Diet, activity level, environment, socio-cultural, genetics, psychological, and medications contribute to childhood obesity (Sothern & Gordon, 2003). The increased fast foods consumption, along with sugary beverages and large portion sizes are major dietary factors that contribute to obesity. In addition, our society also uses food as rewards and socialization such as celebrations of birthdays and holidays, which can build an unhealthy relationship with foods (Sothern & Gordon, 2003). Lack of access to safe places for physical activities and increased screen time on television and smartphones are environmental factors contributing to obesity. Psychological factors such as depression and anxiety can also contribute to overeating, which also fosters an unhealthy relationship with foods. Family genes and cultural perceptions of obesity contribute to childhood obesity (Sahoo et al., 2015). Many Mexican American parents don’t consider their children’s weight as a factor to their health. To many Mexican American parents, a healthy child is a child that eats well, and a skinny child is perceived as an unhealthy individual (Confiac et al., 2020). In Central California, over 92% of the overweight children are perceived as normal weight by their mothers (Sadeghi et al., 2016). Introduction to a healthy living can’t be achieved without the awareness and acceptance of obesity by the parents (Etelson et al., 2003).

** Negative sequelae **

Obesity is associated with a myriad of chronic illnesses: type 2 diabetes mellitus, high blood pressure, high cholesterol, risk of impaired glucose tolerance, depression, anxiety, low self-esteem, obesity related cancers, and lower quality of life and life expectancy (CDC, 2021). According to the American Academy of Pediatrics, childhood obesity is the biggest risk factor for type 2 diabetes (Hannon et al., 2005). It is estimated that years of life lost due to obesity ranges between 13-20 years (Fontaine et al., 2003).
Obesity also affects work and work performance, decreasing the economic output (Lehnert et al., 2013). Studies have suggested obesity results in reduced work productivity, increased absenteeism and disability, and premature mortality (Lehnert et al., 2013). There is strong evidence that the impact of obesity is felt on every level of the economy (Lehnert et al., 2013). On the individual level, there is an increase in absenteeism, 3-8 days, in obese individuals; on the employer level, relative risk of disability ranged from 1.15 to 2.8 for obese individuals compared to a normal weight person; the drain on the health care system due to obesity related illnesses is estimated to be 190 billion dollars in 2005 (Lehnert et al., 2013).

Lastly, there is a strong connection between obesity and mental illness. An individual who struggles with mental illness increases their risk of obesity by three fold compared to individuals without mental illness (Avila et al., 2015). Conversely, an individual who struggles with obesity increases their risk of mental illness by up to 70% (Avila et al., 2015). This bidirectional interrelationship between the two illnesses contributes to disorders such as attention deficit hyperactivity disorder, post-traumatic stress disorder, mood disorders, schizophrenia, substance abuse, and binge eating disorder (Avila et al., 2015).

**Critical Appraisal of the Literature Review**

A review of the literature was conducted to identify effectiveness of health education and its outcome in the migrant young adults. Searches were conducted on the following databases: *Google Scholar, EBSCO, CINAHL, and Pubmed/Medline* with key words and phrases such as: obesity population, obesity comorbidity, obesity and barriers in young adults, obesity in migrant population, theory in nursing obesity prevention in young adult, and obesity prevention in migrant young adults.

Young adulthood is a developmental period from ages 18 to 25. The transition from adolescent to young adulthood represents independent thought, life decision making, and health behaviors (Lytle et al., 2017). Early patterns of health behaviors usually persist in adulthood, thus,
early education in lifestyle modification can prevent having to live with obesity and the chronic illness associated with it (Lytle et al., 2017).

A process evaluation of Choosing Healthy Options in College Environments and Settings (CHOICES) was conducted over a 24-month period at 2-year community colleges in the US to prevent weight gain (Lytle et al., 2017). 441 students were randomly assigned to an intervention group or a controlled group. The CHOICES intervention group focused on four areas of content: nutrition, activity level, stress management, and sleep. One credit was offered for the contents learned in the four areas. Over the 24-month period, participants tracked their weight and 10 weight-related behaviors. Data were collected at baseline, 4th month, 12-month, and at 24. Although there was no significant difference between the intervention arm and the control arm in weight loss, close to 95% of the participants in the intervention group stated they would recommend the class to others (Lytle et al., 2017). This implies the education content was meaningful for the participants.

Study of Novel Approaches to Weight Gain Prevention (SNAP) was a randomized control trial reviewing two novel approaches: self-regulation with Small Changes and self-regulation with Large Changes compared to a controlled group (Wing et al., 2013). Baseline assessments were conducted on 600 participants who were randomly assigned to one of three groups: a control group, a self-regulation with small changes group, and a self-regulation with large changes group. The small changes and large changes groups were provided with 10 face to face sessions of education classes and 2 optional refresher sessions versus one face to face session for the control group. Participants were followed for 48 months. At the end of the 48th month, there was an average weight loss of 0.56kg in the self-regulation with small changes group, an average weight loss of 2.37kg in the self-regulation with large changes group, and a weight gain of 0.26kg in the control group. This study supports that educational programs at that age are effective.
HEALTH PROMOTION MODULES

Shaibi et al., (2012) conducted a 12-week weekly intervention with eighteen obese Latino adolescents. The average body mass index percentile was 96.3 and the average age of 15 years. The weekly intervention consisted of educational classes conducted by bilingual/bicultural health educators and three one-hour exercise sessions a week. Participants were measured for height, weight, BMI, waist circumference, cardiorespiratory fitness, level of physical activity, nutritional habits, insulin sensitivity, and 2-hour oral glucose tolerance test. Metrics were measured pre and post intervention. Paired sample t tests were used to compare output with significance set at P<0.05. The analysis resulted in -5% decreased in BMI z score with P value of 0.01, -3.6% cm decreased in waist circumference with P value of 0.02, -46.4% decreased screen time with a P value of 0.02, -26.8% decreased in physical inactivity with P value of 0.002, and -39.4% decreased in dietary fat intake with P value of 0.001. This study suggests obesity awareness and interventions are achievable via education classes when conducted by bicultural health educators.

Kaiser et al., (2015) examined the influence of age and gender of food patterns of Latino children in Central Valley California. Data was gathered from a 5-year, quasi-experimental obesity prevention study with n = 217. It consisted of a thirty-item questionnaire inquiring about the children’s food intake and eating practices, which were analyzed using the t-test and ANCOVA. In the study where 51% of the children were either overweight or obese, children aged 2-4 consumed less fast and convenient foods than children aged 5-8 years (p = 0.04). Mother’s acculturation level was associated with increased consumption of fast and convenience foods (p = 0.01). Children consumed more vegetables when there was a role model present with meals and structured meal schedules and snacks (p = 0.0007) versus meal skipping associated with consuming frequent fast and convenience food consumption (p = 0.04). This study focused on consumption of fast foods but did not consider the effect of food insecurity and dietary pattern. Thus, the education modules in nutrition should not be limited to food choices but should also promote eating practices.
Soltero et al., (2018) examined the effects of a community-based lifestyle intervention in Latino youth with obesity in a randomized controlled trial. All participants were between 14 – 16 years of age. The youths were randomly assigned to a 3-month lifestyle intervention group or a comparison group, $N = 67$ and $N = 69$ respectively, and followed for 12 months. Both groups had their height and weight recorded, fasting insulin sensitivity measured, and a 15-item Youth QoL and a 26-item weight specific QoL surveys conducted at beginning of the study, 3-month, 6-month, 9-month, and at 12-month of the study. The intervention group received additional weekly classes in nutrition and health as well as exercise sessions three days/week for three months. There was a statistically significant change in insulin sensitivity among the intervention group (1.8 to 2.2, $P < 0.01$) compared to the controlled group which experienced no change group at (1.7, $P > 0.05$). Weight specific QoL increases were seen in the intervention group (from 63.9 to 79.6, $P < 0.001$ but not in the control group (64.6 to 67, $P > 0.05$). The intervention group also had statistically significant reduction in weight, BMI%, waist circumference, and % body fat (all $P < 0.05$). This study and prior studies have health education as not only the foundation of all obesity education programs but also shows a statistical improvement in weight and QoL.

Young adulthood is a stage where all change is seen in all aspects of the individual’s life. During this stage of young adulthood, a personal sense of identity begins to develop, adopt a personal value system, forms more stable relationships, and begins to meet the demands of adulthood. This early stage of adulthood is a window of opportunity to educate and realign healthy lifestyle. Although no significant weight gain was observed in the CHOICE Study, the participants recognized the importance of the content in the course to recommend the class to others. While the SNAP demonstrated weight loss in the intervention arms, education was the key component of the intervention. The two studies took advantage of the opportunity of early intervention of healthy living to guide the participants in every life decision onward.

**Theoretical Framework**
HEALTH PROMOTION MODULES

The Health Belief Model (HBM) asserts an individual’s response to a health problem is based on their perceptions of the problem, the benefits of avoiding or overcoming the problem, and barriers that keep them from taking actions (Burke et al., 2017). HBM is a commonly used model in applied nursing, specifically in compliance in health care interventions and preventative health care practices. Hence, HBM is perfectly suited to address childhood obesity.

Theoretical Origination

The HBM was constructed in the 1950s by four U.S. Public Health Service social psychologists, Hochbaum, Leventhal, Kegeles, and Rosenstock, to explain the lack of participants in programs to screen and detect disease (Burke et al., 2017). The model predicts how likely a person will act depends on three factors: perceived susceptibility and severity of a health threat, perceived benefits of their action, and perceived barriers of the threat (Burke et al., 2017). In the mid-1980s, cue to action and self-efficacy were added to the model as how the model stands today (Lamorte, 2019).

Theory Assumptions

The HBM assumes an individual will take proper action if the individual understands a negative health condition can be avoided by taking proper action. This assumption addresses the fact that the individual has knowledge about the health threat. Without knowledge of the health threat, individuals have no reason to act (Tarkang et al., 2015).

The HBM also assumes that the individuals’ action will have a direct effect on the perceived health threat. Thus, the individual must see the benefits from their action. Lack of tangible result may result in lack of adherence to the intervention (Tarkang et al., 2015). In this assumption, the individual assumes that their lifestyle change will have a direct effect on reducing the threat.

In addition, the HBM assumes the individual must believe they can follow and achieving the said intervention. If the individual doesn’t feel they can be successful then it will not be
HEALTH PROMOTION MODULES

successful (Tarkang et al., 2015). This assumption allows individuals to believe they can meet the required changes.

Lastly, the HBM assumes demographic, structural, psychosocial factors affect belief and health behavior (Glanz et al., 2015). The HBM consists of six major constructs: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy. It is predicted that an individual is ready to act when the constructs are met:

- Perceived susceptibility is an individual's belief in the likelihood of getting the condition. E.g., What is the likelihood of being diagnosed with type 2 diabetes given my history?
- Perceived severity is an individual’s belief how much it will affect their quality of life. E.g., How difficult is it to live with type 2 diabetes? How much does it affect my life?
- Perceived benefit is individual belief how the interventions will mitigate the condition. E.g., How is “taking care of myself” going to make my life better.
- Perceived barriers are individual’s perceived barriers to overcoming the interventions. E.g., The cost of medication and access to care are examples of barriers.
- Cues to action are factors that promote and cause someone to act. E.g. Seeing or meeting someone with a foot amputation due to poor circulation caused by diabetes.
- Self-efficacy refers to an individual's belief in their ability to overcome obstacles and achieve their goals. E.g., I have control over my life. (Burke et al., 2017).

Relationships between concepts

The HBM’s perceived susceptibility and severity combined expresses the perceived health threat. The perceived health threat alone may “cue to action” the individual to act to mitigate the
risk (Tarkang & Zotor 2015). In some studies, perceived susceptibility has shown to be a strong predictor of one-time preventative health screening such as annual screenings (Glanz et al., 2015).

The HBM’s perceived benefits and barriers are self-assessments of the benefits of the interventions in relation to how difficult the intervention is once the perceived threat is identified. Self-efficacy will be positive if perceived benefit is greater than perceived barrier and negative if the perceived benefits and less than perceived barrier (Tarkang & Zotor 2015). In other studies, perceived barriers are the stronger indicator of their action (Glanz et al., 2015).

Methods

Application to Setting and Population

For the educational module in preventing obesity, the HBM is perfectly suited to implement the project. As seen in figure 1, an individual’s perceived susceptibilities to obesity are their definition of a healthy weight, familiar history and personal history, cultural view of weight, and lifestyle. An individual's perceived severities of obesity are social stigma, activities intolerance, and shame. These perceived susceptibilities and severities lead to perceived threat of becoming obese and obese related diseases such as type 2 diabetes. As seen in figure 1, perceived threat can also come from Cues to Action. Cues to Action is an independent event that leads to perceived threat: recommendation of a healthcare provider or knowing someone who requires dialysis due to complications of diabetes. With perceived threat recognized, change in lifestyle becomes more likely. HBM has been applied in Family-based Childhood Obesity Program where most participants were Hispanic/Latino (Schmied et al., 2018).
In some instances, perceived benefits such as improved quality of life must be demonstrated and must outweigh perceived threat for the individual to act. In other instances, perceived barriers must be overcome for the individual to act. Self-efficacy is the individual’s belief that one is able achieve their goal of lifestyle modification.

**Purpose of the project**

The prevalence of obesity in the United States continues to increase across all ages (Liu et al., 2021). It is forecast that 1 in 2 of the world’s population will be either overweight or obese by the end of the decade (Maula et al., 2020). Migrant workers are most vulnerable to obesity and other chronic illnesses due to poverty and lack of access to health care and health education (Sadeghi et al., 2017). Health education is a proven strategy in preventing obesity. Young adulthood is a vulnerable stage in development of obesity due to their decline in physical activity.
HEALTH PROMOTION MODULES

and poor dietary choices (Laska et al., 2016). The purpose of the project is to increase knowledge and awareness in preventing obesity and promoting healthy living in the migrant young adult through education modules.

Design

The goal of this pilot project was to improve the beliefs, attitude, and knowledge about obesity in the Latin youth migrant students. This quality improvement project compared pre and post mHBMSO surveys designed to measure the mean change in belief and attitude towards obesity. The pre survey and demographics were conducted prior to the first of four educational modules and the post survey was conducted after the final educational module.

Setting

The project was conducted at the Westside Youth Center in Mendota California, which hosts the Fresno Unified Migrant Education Program. The Migrant Education Program is a national program that provides supplemental educational, and support services to eligible migrant children (FresnoUnified.org). Migrant workers follow the growing seasons across the country. Through the Migrant Education Program, they are provided with supplemental educational and support services. To be eligible, a migrant child/youth must have 1) moved in the last three years across state or school district boundaries, 2) moved with a migrant parent, guardian, or self, 3) obtain temporary or seasonal employment in agricultural, fishing, or food processing, 4) grade between preschool and 12th grade, 5) must not be older than 22 years old, and 6) and not a high school graduate.

Currently, the Fresno Unified Education Migrant Program serves approximately 250 students ranging from 18 – 22 years of age. Although the Fresno Unified Education Migrant Program oversees all the migrant students in Fresno County, the participants are limited to the migrant youth in Mendota due to geographic location.
Subjects were recruited through the Fresno Migrant Education Program. Participants were all born in Latin American countries: Mexico, El Salvador, and Ecuador and have been in the United States as migrants for less than 5 years. Their ages ranged from 18-22. They were non-gender specific and Spanish speaking.

Procedures

This project received program approval using the San Jose State University IRB exclusion worksheet and was determined to not meet the requirements for human subjects review. The approval was obtained prior to the commencement of the program.

A request for a health education program was requested by the Fresno Unified Education Migrant Program to Tzu Chi Mobile Clinic due to the high number of obese students in the program. The pilot program was planned, and participants were recruited. Participants were recruited in two ways: an announcement was made by the Fresno Unified Education Migrant Program coordinator at their monthly meeting with the migrant students and it was reinforced at the twice weekly tutoring sessions for the General Educational Development (GED) exam. Education sessions were conducted once every two weeks for four sessions from 6:30 pm to 7:30 pm. Program manager of the Fresno Migrant Program called participants to remind them of the classes the day before the classes were conducted.

Prior to the program, the project was explained to the participants through a Spanish translator. The Spanish translator explained that participation was voluntary and choosing to participate or not participate does not affect the services through the migrant program or Tzu Chi Mobile Clinic, participants may stop participation at any time during the program, and consent was implied when participants filled out the pre-educational survey of the Modified Health Belief Model Scale in Obesity (mHBMSO). Participants were given an opportunity to ask questions prior
HEALTH PROMOTION MODULES

to administering the pre-education survey. The surveys were collected, placed in an envelope, and stored at the Tzu Chi Mobile Clinic administration office’s locked cabinet until all data were collected and readied to be analyzed.

The four education classes were conducted from October 21, 2022, thru December 02, 2022. Each class was scheduled every two weeks. The first class focused on the definition of obesity and the health effects of obesity. The second class addressed how foods affect obesity. The third class discussed self-acceptance of self, and the fourth class covered the benefits of exercising on obesity. The classes were conducted by a nurse in English using a Spanish translator.

Risks/Confidentiality/Ethical Consideration

The risks in participating in the education module are minimal. However, participants may feel some discomfort if he/she has relatives who are struggling with diseases related to obesity or if they are struggling with obesity. This can be mitigated with reassurance that with healthy choices in nutrition and physical activities, risks can be minimized. Participants can also be referred to their local Federally Qualified Health Center (FQHC): United Health Center, as needed for their mental health needs and to continue their care in obesity.

To minimize the breach of confidentiality, Pre mHBMSO survey and demographics were collected upon completion and were taken to the Tzu Chi Foundation administration office. Where they were kept in a locked cabinet until post mHBMSO survey was conducted and data ready to be analyzed. Data were analyzed only using the pre and post mHBMSO surveys while the demographic questionnaire remained in the locked filing cabinet of the office. This maintains the anonymity of the participants.

Costs

There is no cost to the participants for program participation.
HEALTH PROMOTION MODULES

Payment/ Benefits

No payment is made to participants. However, participants may benefit by learning to improve their health and lifestyle.

Intervention

The intervention consists of four modules. The outline of the education module was adopted and modified from Shaibi et al (2012). The topics of the four modules are

1) What is obesity and the burden of obesity: chronic illness related to obesity, social stigma, lower quality of life, and the cost of obesity.
2) Obesity and foods
3) Self-esteem and acceptance
4) Benefits of exercising

The Lifestyle Modification Education Program included a family nurse practitioner to educate participants in health-related topics such as health preventions and maintenance; nutritionist to discuss culturally appropriate diet; a licensed clinical social worker to discuss self-acceptance, stress reduction, and self-care; and a Spanish speaking translator for classes that are conducted in English. Consent was implied with the completion of the pre survey and the modified HBMSO will be translated into Spanish.

Data

The demographic questions included age, gender, phone number, country of origin, primary language, and number of years in the country. At the end of the fourth education module, the participants filled out a post modified HBMSO survey. For confidentiality, the last five digits of the participants telephone number was added to the pre and post HBMSO survey (i.e., the last five
HEALTH PROMOTION MODULES

digits of their phone number will be the only identifier from the demographic that will be on the survey. Participants will be reminded to use the pre survey number if they have a new phone number at the time of the post survey. The five-digit number was used to identify and pair the pre and post mHBMSO survey.

The mHBMSO survey was a 24-item survey prepared as a five-point Likert scale. The 24-item survey made up the four domains of the HBM: health value, perceived severity, perceived susceptibility, and perceived benefit. (Dedeli & Fadiloglu, 2011). The HBMSO is modified to tailor the survey specific to the education modules. Perceived barrier domain of the survey was excluded due to time constraints and a group setting inappropriate to address personal barriers in addressing obesity.

See appendix A.

<table>
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<th>Operational Definition</th>
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<td>Demographics</td>
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<td>Age 18-22</td>
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<td>Phone number (numeral)</td>
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<tr>
<td>Gender (Male/Female/Trans)</td>
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<tr>
<td>Country of origin (Mexico, Guatemala, El Salvador, Peru, Chile, Puerto Rico)</td>
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<td>Primary language (English, Spanish)</td>
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<td>Number of years in the United States of America (Numeral)</td>
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## HEALTH PROMOTION MODULES

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<th>Time of measurement</th>
<th>Before the first education module and after the last education module</th>
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<tr>
<td>mHBMSO</td>
<td>24-item in 3 categories, 5-point Likert scale</td>
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### Analysis

Of the nine participants in attendance in the first class, eight were from the country of El Salvador and one was from the country of Mexico. Eight participants were male and one female. Participants’ ages range from 19 to 22. Their average number of years in the United States of America was 3.5 years and their primary language was Spanish. No participants spoke or read English.
There were nine participants in attendance in the first class, eight participants in the second class, seven participants in the third class, and three participants in the fourth class. Of the nine participants from the first class, three participants attended all four classes. Out of the eight participants in the second class, five were returned participants from the first class and three were new participants. Of the seven participants in the third class, three were from the first and the second, three returned from the second class but did not attend the first class, and one was new to the class. Lastly, three returned for the last class, with all three attending all four classes. The pre and post mHBMSO surveys are completed by participants who attended all four classes.

The HBMSO was shortened from five categories 32-item five-point Likert scale to four categories 24-item five-point Likert scale. Health Value category contains eight items, perceived severity contains four items, perceived susceptibility contains four items, and perceived benefits contains 8 items. A pre and post score was compared for each category using the Intellectus Statistics software. Data was analyzed using the paired t-test to determine statistical significance with p<0.05.

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<th>Raw Scores</th>
<th>Pre</th>
<th>Post</th>
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<td>Health Values</td>
<td>64</td>
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<tr>
<td>Perceived Severity</td>
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<td>Perceived Susceptibility</td>
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<td>Perceived Benefits</td>
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<td>Total</td>
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## HEALTH PROMOTION MODULES

<table>
<thead>
<tr>
<th>Category (min-max)</th>
<th>Pre-Survey Mean</th>
<th>Post Survey Mean</th>
<th>$t(2)$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Value (8-40)</td>
<td>21.33</td>
<td>32.67</td>
<td>-2.95</td>
<td>0.098</td>
</tr>
<tr>
<td>Perceived Severity (4-20)</td>
<td>18.67</td>
<td>18.67</td>
<td>0.00</td>
<td>1.000</td>
</tr>
<tr>
<td>Perceived Susceptibility (4-20)</td>
<td>14.33</td>
<td>16.33</td>
<td>-1.73</td>
<td>0.225</td>
</tr>
<tr>
<td>Perceived Benefits (8-40)</td>
<td>27</td>
<td>35.67</td>
<td>-3.61</td>
<td>0.69</td>
</tr>
<tr>
<td>Overall (24-120)</td>
<td>81.33</td>
<td>101.33</td>
<td>-2.85</td>
<td>0.104</td>
</tr>
</tbody>
</table>

In each category, the result of the two-tailed paired sample t-test was not significant based on an alpha of 0.05 with the respective $t(2)$ and $p$ values. Thus the data does not show a significant change in the participants’ belief on obesity after the education program.

### Discussion

The overall mean pre intervention score was 244 and the overall mean post intervention score was 309. Although there was a 65-point improvement between pre and post intervention, it did not demonstrate a statistical significant difference between the two surveys. Factors that can contribute to the result are discussed in the following section.

An average of seven participants were in each class, but only three were in attendance for all the four classes. Thus, a small sample size of three can contribute to the statistically insignificant result. Additionally, there was a 2-week gap between classes and six weeks would have lapsed between the pre-education survey and post-education survey, some may have forgotten
HEALTH PROMOTION MODULES

their initial response (i.e., there was no change in the mean Perceived Severity because one of the participant’s pre-educational score was lowered than post education score, offsetting the improvements of other participants).

Limitation

All participants were Spanish speaking only. Due to last minute life events, Spanish speaking facilitators weren’t possible for three of the four classes, thus an interpreter was required for the 3 of the classes. Thus, it is possible that meaning or information can be lost in translation.

It is also well known that Latinos are more likely to acquiesce in surveys compared to other groups (Davis, Johnson, & et. al, 2019). In a five point Likert scale, the average score of the pre-educational survey was 3.4, which is already leaning towards an agreeable range in the scale. Moreover, there is one question in the survey that should be interpreted in reverse (i.e. Likert score answer of one is counted as a five, two counted as four, and conversely, five counted as one and four counted as two). All respondents marked the number “4” on the scale, the same response as all the other questions in that group. Implying, either the respondents didn’t read the question carefully or didn’t understand the question.

The Westside Youth Center demonstrated their commitment to the youth of Mendota by allowing us to use the facility free of charge. However, the presence of competing functions such as cheerleading practice, food giveaways, and activities for early teens could also cause a distraction to the participants. Classes were scheduled at 6:30pm on Friday nights, which also competed with personal activities of the weekends. Lastly, lack of heating during the sessions can compromise participants’ focus to the material. Lastly, because there was a two-week gap between each class, a bigger window of attrition existed. Given the nature of the migrant workers, following the harvest of the land, leaving the area for new job opportunities is more important than health education.
HEALTH PROMOTION MODULES

As participants are migrant workers in this country, the nature of the presence in this country is to follow the seasonal harvest. A two-week gap between classes provides a large window of opportunity for attrition. This can be mitigated by shortening the days between classes and/or delivering services remotely.

Conclusion

There was an overall improvement of 20 points between the mean pre survey and the mean post surveys. This improvement can mostly be attributed to the Health Value and Perceived Benefits domains. Nevertheless, it was statistically not significant. However the two domains: Perceived Severity and Perceived Susceptibility had a mean pre survey score of 4.67 out of 5 and 4.08 out of 5 respectively per question. The high pre mean scores in the two domains suggests the participants understand the severity and their risk factors of obesity.

Anecdotal Observations

The class on Self-Acceptance and Confidence was the only class conducted in Spanish language. The class felt livelier, and the participants appeared freer to express their thoughts, experiences, and obstacles. The facilitator was also invited to speak on the topic at their local church. Additionally, the facilitator made participants aware that her family comes from the long history of migrants. This anecdotal observation suggests a facilitator with a similar background and language offers a more positive experience which may improve understanding content.

Some of other services Tzu Chi Mobile Clinic provides include vision screening and glasses and limited dental such as simple filling and extraction. At the end of the post survey, one of the participants inquired about dental services and expressed his dental needs, which was more than what Tzu Chi Mobile Clinic offers. Anecdotally, did the participant attend the classes to inquire about the dental services and did it affect his pre and post survey.
HEALTH PROMOTION MODULES

Although only the young adults in the Migrant Education Program were invited to the classes, residents of Mendota also attended the classes. The presence of adults who were willing to share their struggles with obesity and the chronic illnesses that are associated with the condition such as diabetes and high blood pressure reinforces the contents of the classes. More importantly, because these adults reside in the same city and the intended participants, barriers unique to the population are discussed and solutions are also shared within the community.
References:


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