

University of Arkansas, Fayetteville  
**ScholarWorks@UARK**

---

The Eleanor Mann School of Nursing  
Undergraduate Honors Theses

The Eleanor Mann School of Nursing

---

5-2019

# Effects of Eat Better, Move More (EBMM) Educational Program on Obesity Rates in Latino Children Residing in Northwest Arkansas

Allison Jones

Follow this and additional works at: <https://scholarworks.uark.edu/nursuht>

Part of the [Nutrition Commons](#)

---

## Recommended Citation

Jones, Allison, "Effects of Eat Better, Move More (EBMM) Educational Program on Obesity Rates in Latino Children Residing in Northwest Arkansas" (2019). *The Eleanor Mann School of Nursing Undergraduate Honors Theses*. 90.  
<https://scholarworks.uark.edu/nursuht/90>

This Thesis is brought to you for free and open access by the The Eleanor Mann School of Nursing at ScholarWorks@UARK. It has been accepted for inclusion in The Eleanor Mann School of Nursing Undergraduate Honors Theses by an authorized administrator of ScholarWorks@UARK. For more information, please contact [cmiddle@uark.edu](mailto:cmiddle@uark.edu).

**Effects of *Eat Better, Move More* (EBMM) Educational Program on Obesity Rates in Latino  
Children Residing in Northwest Arkansas**

Thesis Presented by Allison W. Jones

Presented to the College of Education and Health Professions  
in partial fulfillment of the requirements for the degree with  
Honors of Bachelor of Science in Nursing

University of Arkansas, Fayetteville

May 2019

## ***Abstract***

**Background:** Childhood obesity, especially in ethnic minority populations, is a growing problem with no signs of improvement over the past decade. The Latino population is one of the fastest growing minority groups in the United States. Unfortunately, they have experienced substantial health disparities and socioeconomic disadvantages that contribute to the high rates of obesity in their youth. Decreasing obesity rates would not only have many health advantages, but also financial benefits as well. It would reduce the risk of co-morbidities such as cardiovascular disease and depression. Healthy children are more likely to grow into healthy adults, ultimately lowering the cost of healthcare for this population.

**Objective:** The purpose of this study is to increase the knowledge of proper nutrition and foster positive attitudes towards healthy habits. It aims to specifically target behaviors that decrease the likelihood of childhood obesity, in 4th-5th grade children by educating their parents.

**Methods:** In this quasi-experimental study, parental knowledge-of healthy lifestyle behaviors of parents at the study site elementary school were collected prior to and after the education sessions. “Healthy Habits” and “Parental Feeding Style” pre-test and post-test were completed by the caregiver group in their native language. The data gathered compared the knowledge of the students and guardians before and after four education sessions to evaluate the effectiveness of the *Eat Better, Move More* (EBMM) program. The program was designed to answer the following research question: *What is the effect of Eat Better, Move More education program on parents of school-age children on healthy lifestyle behaviors (self and home), including food choices, physical activity and sleep habits?*

**Results:** Although the results were not statistically significant due to the inconsistency of the sample size, exposure to the educational program positively influenced healthy habits and increased the knowledge of the caregivers involved. With the limitations of time, only the preliminary data was collected and analyzed. The post-survey will be administered and the results will be compared in May 2019.

**Conclusion:** It is hoped that the *Eat Better, Move More* educational program will increase understanding of the behaviors and practices contributing to the complicated nature of the obesity epidemic among school age children. Ultimately, the program aims to decrease the prevalence of childhood obesity in ethnic minorities throughout Northwest Arkansas.

## **Background and Significance**

Obesity, a global epidemic, is characterized as a disorder deriving from an excess of body fat. Most physicians diagnose obesity based on body mass index (BMI) because it provides a rough estimate of body fat. When an individual's BMI exceeds 30.0 kg/m<sup>2</sup>, they are clinically considered obese (Mayo Clinic, 2015). Childhood obesity continues to be a predominant issue in the United States, affecting nearly 23 million children and costing about 14 billion dollars per year (Asieba, 2016). An estimated one in five children between the ages of six and seventeen is overweight or obese (Haghani, Shahnazi, & Hassanzadeh, 2017). Numerous factors contribute to the progression of weight gain that leads to obesity, including genetic, environmental, hormonal, and behavioral factors. The two most predominant and modifiable factors that cause obesity are inactivity and unhealthy eating habits. Because human behavior and environmental factors are difficult to change, there have been little to no signs of improvement over the past decade.

In minority households, the problem of obesity is more prevalent (Berger-Jenkins et al., 2014; Llugués et al., 2017). The Latino population is the largest minority group in the United States and continues to grow. It is estimated that the Latino percentage of the U.S. population will increase from 17.4% in 2014 to 28.6% by 2060 (Velasco-Mondragon, Jimenez, Palladino-Davis, Davis, & Escamilla-Cejudo, 2016). Despite being the largest minority group in the United States, many health disparities exist for the Latino population. Studies have shown that the Latino population in the United States experience extreme obstacles regarding health such as poverty, limited healthcare access, poor diets, high rates of obesity, diabetes, and other chronic diseases (Ruiz, Hamann, Mehl, & O'Connor, 2016). The cause for these disparities is multifactorial, though some can be attributed to the culture and value system of Latinos.

The Latino population's ability to access adequate health knowledge is hindered by poverty, lack of insurance, legal status, and racial or minority status (Askim-Lovseth & Aldana, 2010; Avilés-Santa, et al., 2017). A recent study showed that 42.5% of Hispanic American adults are classified as obese (Velasco-Mondragon, Jimenez, Palladino-Davis, Davis, & Escamilla-Cejudo, 2016). Obesity trends among adolescents of less-educated families continue to rise, while rates among adolescents of well-educated families are declining (Frederick, Snellman, & Putnam, 2014). The main causes for obesity in children from ethnic minorities include poor eating habits, inactivity, and socioeconomic disadvantages such as food insecurity, access to healthy foods, lack of health insurance, low income, home environment, and unsafe neighborhoods (Subica, 2018; Vasques, Shaw-Ridley, & Baig, 2016). Without resources or knowledge of proper nutrition, we see obesity rising and being overweight the social norm. This is attributed to an increased consumption of fast food, low-nutrient-density snack foods, sweetened beverages, increased screen time, and decreased physical activity (Bryars et al., 2012). It is extremely important to address this issue because obesity, in children and adults, is related to an increased risk for other health issues such as diabetes, hypertension, cardiovascular disease, non-alcoholic fatty liver disease, and depression (Velasco-Mondragon, Jimenez, Palladino-Davis, Davis, & Escamilla-Cejudo, 2016). Eliminating these disparities needs to take priority to reduce chronic diseases and future healthcare costs associated with obesity in minority populations.

Studies have shown that there is a lack of nutritional knowledge among the Latino community (Corsino, Chinea, Ard, Voils, Rocha-Goldberg, & Svetkey, 2016). Latino mothers report that their culture is not aligned with obesity prevention practices. They use large amounts

of fat or oil when cooking, encourage their children to eat everything off their plate, allow their children to indulge in sweets, and do not tend to be physically active in winter months (Stang & Bonilla, 2018). These practices, along with others, potentiate sedentary lifestyles and increase the prevalence of health disparities for this population.

Latinos value the idea of *Familismo*, or a commitment to family. Familismo acts as a source of emotional and financial support for Latinos (Velasco-Mondragon, Jimenez, Palladino-Davis, Davis, & Escamilla-Cejudo, 2016). Latinos place high value on family, their elders, and interpersonal harmony. Additionally, Latino mothers value marianismo beliefs, often placing the needs of their family above their own personal needs. In general, Latino women are more committed to taking care of their family than working out (Im, et. al, 2010). It is considered selfish to want to work on themselves when they can be cooking for the family or cleaning the house. It is important for these women to understand that they can get physical exercise and still have family time. In addition to putting family first, “A Waste of Time” revealed that many Latino women feel that there is no need for exercising after work because there was more than enough physical activity at work (Im, et. al, 2010). As a result, Latino mothers are more likely to neglect certain aspects of their health such as physical activity and proper nutrition (D’Alonzo, 2012).

Studies show that Latino mothers are likely to use a permissive parenting style, usually being very loving and responsive toward the children, but providing low expectations and few guidelines regarding their children’s behavior. This can result in mothers allowing their children to eat whatever they want, often unhealthy foods, and do whatever they want, which can result in little exercise (Ochoa & Berge, 2017; McClendon, Meyer, Ylitalo, & Sharkey, 2017). Hispanic

mothers like to satisfy their children's wishes. They report feeling guilty for letting their child eat unhealthy, but allow it because it makes them happy (Stang & Bonilla, 2018). Whether or not parents understand the impact they have, they directly influence their child's health through their food selection and meal structure, and indirectly affect their child's development of lifelong habits through their own eating habits and level of physical activity. In addition, there has been a decline in physical activity due to expanding technology such as television, video games, smart phones, and computers. Several studies have found that Latino parents advocated for a mass amount of television time for their children. These parents believed that television would help them in keeping their hispanic heritage, by watching Spanish language television. They also believed that American television would help their children in adapting to U.S culture (Davis, et al., 2015; Sosa, 2011).

In addition to parental influences and expanding technology, socioeconomic status played a large role in this issue. Because many Latino families in the United States live in low-income neighborhoods, they have limited access to healthy foods and to safe "play" areas. The parents' argument for purchasing nutritionally poor food was the high cost of healthier options (Ochoa & Berge, 2017). The parents explained challenges to being physically active such as expense, time, and neighborhood safety. Ultimately, the main predictor of their child's own dietary and activity-related behaviors were their parents' dietary practices and activity levels (Ochoa & Berge, 2017). Therefore, in order to decrease the prevalence of childhood obesity, the article recommends getting the parents directly involved to change their own unhealthy behaviors and to be role models for their children.



According to the 2010 Health-Related Quality of Life data in Arkansas, the Hispanic race has a higher percentage with 14 or more physically unhealthy days than the white, non-Hispanic population. The survey described the physically unhealthy days as when the individual perceived “physical dysfunction” and asked them each to report a number out of 30 days. Of all the individuals that completed the survey, 13.6% Hispanics reported being physically unhealthy 14 days or more in the previous month and 12.6% of White, non-Hispanics reported the same (Centers for Disease Control and Prevention, 2015). Furthermore the 2015 Health, United States report found that the percentage of children and adolescents with obesity was highest in the Hispanic/Latino population and lowest in the White, non-Hispanic population. Children who are considered obese have a greater chance of developing co-morbidities in adulthood. This disease causes obese individuals to feel physically dysfunctional and unhealthy due to their low physical activity level, calorie-dense, nutrient-poor food choices, and sedentary lifestyle (Hruby & Hu, 2015).

As previously stated, the chances of obesity increase in individuals with a lower socioeconomic status due to a lack of education and lower income (Hruby & Hu, 2015). According to a recent estimate, obese men and women spend thousands of dollars more in medical bills due to prescription medications and hospitalizations for their co-morbidities associated with obesity. In addition, healthcare institutions in the United States spend approximately 21% of all medical spending treating obesity and obesity-related conditions (Hruby & Hu, 2015). It not only cost more for the obese individual, but for the hospital and the employer of the obese individuals. Non-bariatric, non-obstetric hospitals must modify their rooms and procedures and use additional supplies to accommodate for obese individuals,

spending an estimated \$160 million more per year (Hruby & Hu, 2015). Employers not only deal with a lower productivity level in obese individuals, but must also account for increased medical or sick leave, short term disability and workers' compensation costs in obese individuals. The article specifically gives comparisons for total annual costs and total days absent in obese versus non-obese employees, the differences being almost \$2,000 and 3.5 days per year (Hruby & Hu, 2015). Eliminating racial disparities could have a significant impact in eliminating excess health care expenditures and illness-related lost productivity in the workforce, as racial disparities are "associated with substantial annual economic losses nationally" in these areas (Ayanian, 2016).

Few obesity prevention/intervention school-based studies that target a young population of ethnic minorities residing in underserved communities have been conducted (Bryars et al., 2012). Children spend a majority of their time in the school setting, and thus can be greatly impacted through school based interventions on nutrition and healthy lifestyles. Hispanic parents may not view teaching their children about American food as a priority, believing their children will learn about these foods elsewhere, such as at school (Davis, Cole, Reyes, Mckenney-Shubert, & Peterson, 2015). However, the parents in the *Girls on the Run* and *Family Literacy* programs recognized that positive parenting practices would influence their children to lead healthier lives. They believe that it is their responsibility if their child is overweight. They recognize the need to implement rules and enforce healthy habits when their children are young. The Latino parents have the desire to learn more about being healthy. They understand the correlation between nutrition, physical activity, and obesity and diabetes prevention. They want to learn proper health practices to help prevent these conditions in their children. While some Latino mothers may not know how to practice healthy lifestyles, they have expressed interest in

learning. Latino mothers understand the importance of nutrition and daily exercise in obesity and diabetes prevention, but they do not know how to implement those practices (Stang & Bonilla, 2018; Perez & Fleury, 2018).

In order to break down the barriers of childhood obesity, we wanted to educate Mexican American mothers and mothers of similar socioeconomic status on the short and long term effects of obesity. We specifically wanted to focus on nutritional knowledge, implementing healthy meals on a budget, and becoming more active in their every day lives. For the children to begin implementing these behaviors outside the school setting, it is important for their mothers to model healthy behaviors specific to food choices and activity level. It was pertinent to teach the mothers what activities that they can do with their kids to stay active and use those as rewards instead of using food.

With a program that targets minority children in elementary schools, this study aimed to increase the knowledge of healthy behaviors and attitudes toward health. The *Eat Better, Move More* education program not only educated the children in the school system, but also educated their caregivers on living a healthier lifestyle. The key values of the Latino community are family, interpersonal harmony, and a value of elders in the community (Ruiz, Hamann, Mehl, & O'Connor, 2016). This information was vital in creating health promotion tools to help Latino individuals to improve their health, as it is clear that involving the whole family in any change is imperative, if lasting change is to occur. The importance of the group cannot be ignored when working with members of the Latino population. Also, working to create change in elders will likely create better health modeling at home for Latino youth and families. The program was designed to support diversity in ethnicity, age, and socioeconomic groups. Better and more are

concepts that are easily understood and could be embraced at any age. *What is the effect of Eat Better, Move More education program for parents on the importance of good nutrition and physical activity in their children related to healthy lifestyle knowledge?*

## **Methods**

### ***Overview***

This study was conducted following approval from the University of Arkansas Institutional Review Board and the study Springdale elementary school. The parents expressed interest in learning healthy behaviors, and gave consent to participate in the education program. At the time of this study, the school did not have an educational program designed to decrease childhood obesity rates. However, there were other programs such as *Girls on the Run* and *Family Literacy* to support diversity in ethnicity, age, and socioeconomic groups and to promote health.

### ***Design***

This study utilized a quasi-experimental design using a single group pretest/posttest to answer the research questions. Both study groups, 4th-5th grade students and mothers, received the EBMM education four times throughout the course of the academic year. Nursing honors community students assisted with creating the educational modules and delivered the information to parents throughout their community clinical rotation. A content outline was provided to the community students who delivered the education, while being supervised by a co-researcher and instructor. The honors student teams focused on educating the parents of the 4th-5th grade children that were being taught by the other research team. Activities currently available at the school were highlighted in each EBMM session. The activities currently

supporting healthy lifestyles include girls on the run, walking club, and a community garden. With our research team's outlines and suggestions, the S2 students created specific lesson plans focused on nutritional knowledge, shopping for nutritious foods, proper levels of physical activity, how to achieve the daily recommended physical activity, and the impact on child health of improving nutrition and physical activity. The community students met with caregivers of school-aged children in the selected study location four times throughout the school year to provide education on proper nutrition and physical activity. Each of the community clinical groups were required to research the intended audience, the Latino population, to help identify any health disparities or socioeconomic disadvantages that would affect how they taught the participants. Pre and post-test concerning health lifestyle behaviors and knowledge were completed by the student group and will be completed by the mother groups after receiving the education material from all four sessions. Additionally, after each EBMM session both groups completed the EBMM simple surveys created by the community students on the information taught during that session. These surveys consisted of food recall, activity level, sleep habits and focused topic knowledge and were translated to the mothers' native language by a certified translator. These are additional data points that provided information concerning the EBMM session for program evaluation and this research. Body mass index (BMI) was also be measured prior to and after the four education sessions. Each student team member was certified in BMI measurement. This data provided additional pre- and post-education measurements for analysis.

### ***Study Population***

The selected study site was a Northwest Arkansas elementary school with a diverse socioeconomic and ethnic population. Participants in the student group were selected by the

school administration, and all students in the classes selected were asked to participate. One 4th grade class and one 5th grade class was selected for this project. Parental consent was required. The parent group consisted of those parents who are currently enrolled in the *Family Literacy* and *Girls on the Run* programs. These were selected due to the large enrollment and history of good attendance at all education sessions.

### ***Study Procedures***

All parental information was de-identified in accordance with the Health Insurance Portability and Accountability Act (HIPPA) and the Family Educational Rights and Privacy Act (FERPA) guidelines. After all identifiers were removed from the pretest and posttest, an identifying number was added to each participant in the data set (pretest/posttest). The data was entered into an Excel spreadsheet. Descriptive statistics were used to describe the participants. A paired t-Test, Shapiro-Wilk test for normality, and Wilcoxon signed rank sum test will be used for the paired observations in the study. The data collected after each session was analyzed for review of each session and overall progress towards healthier lifestyles and changes in participant health focused attitudes.

### ***Timeline***

The assessment data was collected October 3, 2018. Implementation of the educational program began on the same day with a discussion of the timeline and an overview of the program. The second and third teaching sessions were conducted on December 6, 2018 and February 21, 2019 respectively. Post-intervention data collection will be conducted during the fourth teaching session at the end of the spring semester in 2019.

### ***Statistical Analysis***

At the first education session, thirteen mothers were given the pre-survey to evaluate their knowledge of good nutrition, proper exercise, and healthy habits. The mothers were asked to provide their child's age, gender, and grade. Because the second research group was educating 4th-5th grade students, the results of the mothers who did not have a child in this age group were eliminated from the study. In order to make the data analysis as accurate and relevant as possible, it was decided that the post-survey to test what the mothers learned would be given at a later date after the fourth education session.

### ***Results***

Despite all parents (N=13) reporting they view physical activity as important, only 46% reported their child participated in neighborhood physical activities, 69% engaged in physical activity with their child and 85% reported their child had 2 hours or more of screen time daily. Approximately 60% of parents reported that their children do not participate in regular physical activity at school, and 25% of these mothers reported not participating in physical activity themselves. This number reveals that approximately 25% of the children's parents do not model healthy behavior, but expect their children to have healthy habits. When asked how often their child participates in physical activities in school, many of the parents did not answer. Unfortunately, some of the parents are unaware of the amount of physical activity their child receives during school and are unable to report how much they participate in physical activity. Only 2 out of 13 parents stated that their neighborhood was not safe for their children to play outside, but only 6 out of 13 children participated in physical activity in their neighborhood. Of these six children that participated in physical activity in their neighborhood, only 2 were reported to participate in physical activities everyday. Although 69% of parents reported

participating in physical activity with their children, only 38% of mothers were physically active with their children more than a couple of times per week. More than half of the parents played with their children or went for a walk with their children very little every week. See Table 1.

Despite all (N=13) of the parents answering the survey think that healthy eating is very important and want to implement healthier habits into their daily lives, 62% of the families reported eating dinner at home less than three times per week. This indicates that a majority of family dinners are bought elsewhere. Furthermore, 76% of parents reported that their child ate fast food or take out between 2-4 times per week. This finding indicates that many of their children receive processed food from the school or from a restaurant a majority of the time. See Table 2.

Many of the parents were not aware of the role that electronics played in decreasing the amount of physical activity in which their child participated and in increasing their child's likelihood of obesity over time. Over half of the mothers reported that their child spent at least 14 hours during the school week on electronics, watching television, and playing video games and a fourth of the parents reported their child spending anywhere between 21-42 hours during the school week on electronics. 85% of parents reported that their child spent the same amount of time or at least one hour less per day on electronics during the weekend. 53% reported their children having a television in their bedroom. Latino parents advocated for a mass amount of television time for their children for many reasons such as adapting to American culture and learning the English language. There were several questions that were not answered, either because the Latino mothers did not understand the question, did not know that particular



information about their child, or forgot to come back to the question. Post-Data will be collected after module four in Spring of 2019.

## **Discussion**

Obesity in children is a growing problem with no signs of improvement over the past decade. An estimated one in five children between the ages of six and seventeen is overweight (Haghani, Shahnazi, & Hassanzadeh, 2017). In minority households, the problem is more prevalent. Children from ethnic minorities and socioeconomically disadvantaged families are at an increased risk of overweight and obesity, with much of this attributed to food insecurity (Bryars, Mouttapa, McMahan, & Tanjasin, 2012). The aim of this study was to increase the knowledge and attitudes towards healthy living, specifically behaviors that decrease the likelihood of childhood obesity, in 4th-5th grade children and their parents. Without resources or knowledge of foods, we see obesity rising and being overweight the social norm. The *Eat Better, Move More* education project not only educated the children in the school system, but also educated their caregivers on living a healthier lifestyle. Teaching sessions accommodated a lower socioeconomic status with limited resources and English as a second language by providing knowledge of healthy, but cheap options for nutrition and physical activity in native language.

Changes in the health behaviors of children will have an impact on their future health and wellness. Parental support and involvement is essential to overall success of the EBMM program. By including the parents and the children in the program, the children have a better chance of implementing the healthy behaviors at school and at home. Children require parental support and guidance in order to be successful in areas such as eating habits, exercise, and good sleeping habits. While students are influenced by and spend a good amount of time at school,

there are also many hours and influences outside of school. Summer offers an opportunity for parents to continue the EBMM initiatives. For the research question: *What is the effect of Eat Better, Move More education program for parents of school-age children on healthy lifestyle behaviors, including food choice, physical activity and sleep patterns?* The results after all four education sessions will not only assess the parental gains in knowledge but also how these might be supported in the home environment.

The Latino mothers included in the educational program were very involved with the honors students, expressing interest in learning about available resources and dedication to implementing healthier habits into their daily lives. They had limited knowledge of healthy habits, and also had limited resources available to meet their needs. In order to address this issue, they received three teaching sessions throughout the past year on how to decrease obesity and model a healthier lifestyle for their children. After the first education session on health habits in general, the participants were asked specifically about what they wanted to learn that they had not previously learned. They expressed interest in learning about topics such as good sleep hygiene and more affordable ways to be physically active. The participants took notes on the different places in the community that they could exercise as a family and on the inexpensive equipment they could buy to be more physically active. The mothers actively participated and asked questions.

This study brought awareness to existing health disparities and will hopefully create more programs (in other districts) that take all aspects of the target population into consideration. Obesity rates will only continue to rise and continue to cause problems as long as the issue is not addressed. The more knowledge shared, the better. This research will allow a greater

understanding that obesity is not necessarily a choice, especially in minority groups—it is due to genetics, a lack of knowledge, and a lack of resources. By addressing obesity in this way, it brings light to the necessity to incorporate a more holistic approach in teaching obese patients.

### ***Limitations***

Despite best efforts, there were multiple limitations to this particular study including population size, language and cultural barriers, lack of control over implementation of the program, and a miscalculation of the timeline. The size of the sample population was only thirteen mothers, which restricts the generalizability of the study's findings. Unfortunately, the parent group was limited to mothers who were currently enrolled in the *Family Literacy* and *Girls on the Run* programs in a singular Northwest Arkansas school. Using this particular group eliminates other parents from receiving education to prevent childhood obesity. In addition, the attendance rate of the parent group made it difficult to ensure all thirteen mother received the education necessary to form healthier habits. Although the *Family Literacy* and *Girls on the Run* programs had a high attendance rate and the teacher of these programs promised the same for the *Eat Better, Move More* educational program, the attendance rate progressively got lower at each session. At the first session, on October 3, 2018, there were 11 mothers who attended and received education on healthy habits. At the second session, on December 6, 2018, there were 8 mothers who were able to attend and receive more focused education on nutrition specifically. At the third session, on February 21, 2019, only 3 mothers attended to receive information on the importance of sleep and physical activity. Many of the women would walk or carpool to the school. Therefore, their attendance was based on the weather. If it was extremely cold, raining, or snowing, then the mothers did not attend the session. Even though the women had a desire to

learn the information, their lifestyle prohibited them from attending on days that the weather was bad. The spotty attendance record restricts the reliability and validity of the study, making it almost impossible to conclude that the educational program was effective. In future studies, it is recommended to provide incentives for attendance for the parent group to increase participation.

Another limitation was the language and cultural barrier. While the students used a translator to conduct the teaching and provided materials in both Spanish and English, some of the information could have been lost in translation. Researchers and students brainstormed and did the best they could to come up with creative ways for them to implement healthy habits into their life. At a session on physical activity, the community students. Researchers demonstrated and suggested common household items to use for exercise, but the mothers were more interested in the cheap equipment they could use and the inexpensive community places they could join. One of the participants even took notes on the different places in the community that they could exercise as a family and on what she could afford to buy to be more physically active. Furthermore, if the mothers did not like an idea or think it was worth their time, but did not know any other way to be active, they could potentially revert back to their old habits.

As previously stated, not only were the post-data collection participant numbers were too small on February 3, 2019, but also the mothers had not received all four education sessions. Mathematically, the numbers were not large enough to be statistically significant, therefore, a paired t-Test, Shapiro-Wilk test for normality, and Wilcoxon signed rank sum test were not used for the paired observations in the study. A study like this takes time, and the original timeline was not realistic to obtain complete results. However, the results of the healthy habits pre-survey should serve as a reference point for future studies. In addition, because the project was

implemented by honors students in their community clinical, the researchers lacked control over the study. The students did not reschedule the teachings on days that all (N=13) parents were present, limiting the amount of education they received. Since this was an ongoing pilot study in a small population, the results should serve as a reference points for future studies. This research and the idea of a educational program similar to *Eat Better; Move More* make a great contribution to the field of study. Because Latinos are a growing population with one of the highest rates of obesity, there is a desperate need for knowledge on healthy habits. The limitations on the study should be considered to improve future studies on this population as it is expanded in the community.

### **Conclusion**

These findings suggest that four sessions of a culturally sensitive educational program on healthier habits may not be enough to adequately educate or drastically change the lifestyles of Latino parents and their children. This project encouraged the school to provide other sources of culturally sensitive educational material for the Latino population in the hopes that healthy behavior modification and teaching, information on obesity prevention and management, and more can be readily available in their language. Regardless, the intervention was impactful, and other studies can use the program as an example. It can serve as a template that other schools can expand and create more comprehensive versions of in the future. Since a comparison of healthy habits after the EBMM educational program could not be determined by the specified timeline, further studies should follow up on the mothers' knowledge in the summer and throughout the next school year to assess if the program fulfilled its purpose: to increase the understanding of

the behaviors and practices contributing to the complicated nature of the obesity epidemic among school age children.

For future research, several things should be considered. The convenience of the sample population limits adequate representation of the entire population, which makes the sampling size not adequate for generalization. Ideally, the Eat Better, Move More program should be implemented in multiple study sites to obtain a more accurate representation. In addition, there is a possible response bias that could have resulted from participants feeling pressure to respond with healthy behaviors. Many of the parents' answers for the third teaching session's pre-survey matched the post-survey. It did not reflect their knowledge prior to the teaching session or the amount of information that they learned during the teaching session. In the future teaching sessions, the translator needs to be instructed not to discuss each of the options or the answers with the participants. Finally, obtaining assessment data prior to the study and offering the education more than once might strengthen the study due to the attendance rate and the timeline limitations. This study indicates the potential for improvement, but further studies are imperative to decrease the rate of childhood obesity among the Latino population.

## Appendix

Participation in Physical activity	Everyday	Most Days (3 or more days a week)	Some Days (1-2 times a week)	Very Little (<1 time week)	Did not answer
How often does your child participate in physical activities in school?	0%	8%	23%	15%	54%
How often do you participate in physical activities in your neighborhood?	23%	15%	15%	23%	23%
How often do you participate in physical activities with your child?	23%	15%	23%	23%	15%

Table 1: Physical Activity Habits

Healthy Eating	0-2 times	3-4 times	5-6 times	7 times
How many servings of fruits or vegetables does your child eat each day?	6/13	5/13		2/13
How many times a week do you eat dinner at the table together with your family?	7/13	1/13	1/13	3/13
How many times a week does your child eat breakfast?	6/13	3/13		4/13
How many times a week does your child eat takeout or fast food?	9/13	3/13		

Table 2: Eating Habits

## References

- Asieba, I. O. (2016). Racial/Ethnic Trends in Childhood Obesity in the United States. *Journal of Childhood Obesity*, 01(01). doi:10.21767/2572-5394.100001
- Askim-Lovseth MK, & Aldana A. (2010). Looking beyond “affordable” health care: cultural understanding and sensitivity-necessities in addressing the health care disparities of the U.S. Hispanic population. *Health Marketing Quarterly*, 27(4), 354–387. <https://0-doi-org.library.uark.edu/10.1080/07359683.2010.519990>
- Avilés-Santa, M. L., Heintzman, J., Lindberg, N. M., Guerrero-Preston, R., Ramos, K., Abraído-Lanza, A. L., . . . Vázquez, M. A. (2017). Personalized medicine and hispanic health: Improving health outcomes and reducing health disparities - a national heart, lung, and blood institute workshop report. *BMC Proceedings*, 11(Suppl 11), 11-12. doi:10.1186/s12919-017-0079-4
- Ayanian, J. Z. (2016, February 05). The Costs of Racial Disparities in Health Care. Retrieved from <https://hbr.org/2015/10/the-costs-of-racial-disparities-in-health-care>
- Berger-Jenkins, E., Rausch, J., Okah, E., Tsao, D., Nieto, A., Lyda, E., . . . McCord, M. (2014). Evaluation of a coordinated school-based obesity prevention program in a Hispanic community: Choosing healthy and active lifestyles for kids/healthy schools healthy families. *American Journal of Health Education*, 45(5), 261-270. 10.1080/19325037.2014.932724
- Bryars, T., Mouttapa, M., McMahan, S., & Park T., S. (2012). Results of a school-based obesity prevention program targeting early childhood students. *Californian Journal of Health Promotion*, 10(1), 91-102.



- Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health (2015). Health-Related Quality of Life (HRQOL) Data. Retrieved from <http://nccd.cdc.gov/hrqol>.
- Corsino, L., Chinae, F. M., Ard, J. D., Voils, C. I., Rocha-Goldberg, M. del P., & Svetkey, L. P. (2016). Perception of Obesity in the Latino Population: Implications for Weight Loss Clinical Trials. *ABNF Journal*, 27(3), 58–63. Retrieved from <http://0search.ebscohost.com.library.uark.edu/login.aspx?direct=true&db=ccm&AN=116990910&site=ehost-live&scope=site>
- Davis, R. E., Cole, S. M., Reyes, L. I., McKenney-Shubert, S. J., & Peterson, K. E. (2015). It hurts a Latina when they tell us anything about our children: Implications of Mexican origin mothers' maternal identities, aspirations, and attitudes about cultural transmission for childhood obesity prevention. *Child Obesity*, 11(5), 608-615.
- D'Alonzo, K. (2012). The influence of marianismo beliefs on physical activity of immigrant latinas. *National Institutes of Health J Transcult Nurse*. 23(2), 124-133. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3310300/pdf/nihms329470.pdf>
- Dudley, K. A., & Patel, S. R. (2016). Disparities and genetic risk factors in obstructive sleep apnea. *Sleep Medicine*, 18, 96–102.
- Evans, W. D., Wallace, J., & Snider, J. (2015). The 5-4-3-2-1 go, brand to promote nutrition and physical activity: A case of positive behavior change but negative change in beliefs. *Journal of Health Communication*, 20(5), 512-520. doi:10.1080/10810730.2014.989344
- Felso, R., Lohner, S., Hollody, K, Erhardt, E., & Molnar, D. (2017). Relationship between sleep duration and childhood obesity: Systematic review including the potential underlying

- mechanisms. *Nutrition Metabolism and Cardiovascular Diseases*, 27(9), 751-761. doi: 10.1016/j.numecd.2017.07.008
- Frederick, C. B., Snellman, K., & Putnam, R. D. (2014). Increasing socioeconomic disparities in adolescent obesity. *Proceedings of the National Academy of Sciences of the United States of America*, 111(4), 1338-1342. doi:10.1073/pnas.1321355110
- Haghani, S., Shahnazi, H., & Hassanzadeh, A. (2017). Effects of tailored health education program on overweight elementary school students' obesity-related lifestyle: A school-based interventional study. *Oman Medical Journal*, 32(2), 140-147.
- Hruby, A., & Hu, F. B. (2015). The Epidemiology of Obesity: A Big Picture. *Pharmacoeconomics*, 33(7), 673-89.
- Im, E. O., Lee, B., Hwang, H., Yoo, K. H., Chee, W., Stuijbergen, A., Walker, L., Brown, A., McPeck, C., Miro, M., ... Chee, E. (2010). "A Waste of Time": Hispanic women's attitudes toward physical activity. *Women & health*, 50(6), 563-79.
- Karczewski, S. A., Carter, J. S., & DeCator, D. D. (2016). The role of ethnicity in school-based obesity intervention for school-aged children: A pilot evaluation. *Journal of School Health*, 86(11), 778-786.
- Llargués, E., Recasens, M. A., Manresa, J., Jensen, B. B., Franco, R., Nadal, A., . . . Castell, C. (2017). Four-year outcomes of an educational intervention in healthy habits in schoolchildren. *European Journal of Public Health*, 27(1), 42-47.
- McClendon, M., Umstattd Meyer, M., Ylitalo, K., & Sharkey, J. (2017). Physical Activity of Mexican-Heritage Youth During the Summer and School-Year: The Role of Parenting

Strategies. *Journal of Community Health*, 42(6), 1102–1110. <https://doi-org.library.uark.edu/10.1007/s10900-017-0358-z>

National Center for Health Statistics. Health, United States, 2015: With Special Feature on Racial and Ethnic Health Disparities. Hyattsville, MD. 2016.

Obesity. (2015, June 10). Retrieved from <https://www.mayoclinic.org/diseases-conditions/obesity/symptoms-causes/syc-20375742>

Ochoa, A., & Berge, J. M. (2017). Home environmental influences on childhood obesity in the latino population: A decade review of literature. *Journal of Immigrant and Minority Health*, 19(2), 430-440. doi:<http://dx.doi.org.library.uark.edu/10.1007/s10903-016-0539-3>

Perez, Adriana, PhD,A.N.P.-B.C., F.A.A.N., & Fleury, Julie, PhD,R.N., F.A.A.N. (2018). Using a cultural framework to assess motivation for physical activity among older hispanic women: Application of the PEN-3 model. *Family and Community Health*, 41(1), 10. Retrieved from <http://search.proquest.com.library.uark.edu/docview/1982175112?accountid=8361>

Ruiz, J.M., Hamann, H.A., Mehl, M.R., & O'Connor, M.F. (2016). The Hispanic health paradox: From epidemiological phenomenon to contribution opportunities for psychological science. *Group Processes & Intergroup Relations*. 1-15.

Stang, J., & Bonilla, Z. (2018). Factors affecting nutrition and physical activity behaviors of Hispanic families with young children: Implications for obesity policies and programs. *Journal of Nutrition Education and Behavior*, 50(10), 959-967.

- Subica, A. M. (2018). Public Health Interventions in the Era of Childhood Obesity and Other Racial Health Disparities. *American Journal of Public Health, 108*(9), 1125–1127.  
<https://doi-org.library.uark.edu/10.2105/AJPH.2018.304613>
- Tschann, J. M., Gregorich, S. E., Penilla, C., Pasch, L. A., Groat, C. L., Flores, E., . . . Butte, N. F. (2013). Parental feeding practices in Mexican American families: Initial test of an expanded measure. *International Journal of Behavioral Nutrition and Physical Activity, 10*(1), 6. doi:10.1186/1479-5868-10-6
- Vasquez, L. L., Shaw-Ridley, M., & Baig, K. (2016). The Intersection of Place, Working Parents and Food Assistance: Implications for Preventing Child and Adolescent Obesity. *Californian Journal of Health Promotion, 14*(2), 22–34. Retrieved from  
<http://0-search.ebscohost.com.library.uark.edu/login.aspx?direct=true&db=ccm&AN=118019160&site=ehost-live&scope=site>
- Velasco-Mondragon, E., Jimenez, A., Palladino-Davis, A. G., Davis, D., & Escamilla-Cejudo, J. A. (2016). Hispanic health in the USA: A scoping review of the literature. *Public Health Reviews, 37*(31), 1-27