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Effects of an Educational Intervention on Nutrition and Healthy Eating Habits in Minority Group Parents and Children living in Arkansas

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Effects of an Educational Intervention on Nutrition and Healthy Eating Habits in Minority Group Parents and Children living in Arkansas

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Abstract

Background: The Hispanic population is the largest growing minority ethnic group in the United States today. Minority groups have an added struggle with obesity and have higher rates of obesity in this country than their Caucasian counterparts. While minority group parents want more for their children, they face many cultural, socioeconomic and language barriers related to proper nutrition and hydration. These barriers may adversely affect minority families from gaining adequate nutrition.

Objective: The purpose was to evaluate knowledge of nutrition and sleep habits and provide a 9-month long educational intervention for minority group mothers and their children through an already established parenting class group at George Elementary in Springdale, AR. The intervention was targeted to promote positive attitudes and behaviors that could decrease childhood obesity.

Methods: In this quasi- experimental study, a pretest and posttest were used to evaluate knowledge and implementation of nutrition, exercise, sleep and healthy habit behaviors. The first survey was specific to healthy eating habits and the second was about sleep and hydration. They were translated into the native languages of the participants. The intervention consisted of modules presented to mothers over four sessions throughout the school year. The first focused on overall healthy habits, the second on nutrition, the third on exercise and sleep, and the last was an overall review. The posttest will be administered upon completion of the fourth intervention module in May, 2019. The intent of the program was 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?*

Results: Despite all parents (N=13) reporting they view nutrition as important, only 46% reported their child regularly ate more than 2 servings of fruits and vegetables, 69% gave children fast food over 3 times a week and 85% reported their child had 2 hours or more of screen time daily. The pre-data showed no strong correlation in emotional eating behaviors.

Conclusion: It is our intent that this research and teaching will provide caregivers in minority groups with the knowledge and confidence they need to implement healthy habits into their lives and the lives of their children, specifically regarding nutrition and sleep. This will, hopefully, lead to the improvement of overall health of these minority populations in Northwest Arkansas, especially in regard to childhood obesity.

Background and Significance

Childhood obesity continues to be a prominent issue, affecting nearly 23 million children in the United States with an estimated cost of 14 billion dollars per year (Asieba, I. O. 2016). The growing number of fast food restaurants and delivery services have allowed Americans to meet the demand that technology has created for a minimal cost. Unfortunately, these services significantly contribute to the obesity epidemic. With expanding technology, you would expect more knowledge to be available about exercising and eating healthy, and the good news is that there is (Asieba, I. O. 2016). However, even with the information accessible to all, some populations may not fully understand the information, especially if they do not speak the language or if they lack the education to be able to read it. Unfortunately, this struggle to make the correct lifestyle choices in relation to health appears the case with the Hispanic population, especially with their obesity rate being at 25%. Even with the information available, this population currently has the highest obesity rate in the country (Foster & Hale, 2015). 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 (Foster & Hale, 2015). The Hispanic population is more vulnerable to childhood obesity remaining a prominent issue due to barriers such as parenting style, parental perception, socioeconomic status, and cultural feeding practices. The *Eat Better, Move More* education project aimed to not only educate the children in the school system, but to also educate their mothers on living a healthier lifestyle.

In addition to the many negative nutritional and social implications, childhood obesity can severely impact a family's medical expenses. Foster & Hale (2015) revealed that many children who are overweight in childhood remain overweight through adolescence and increase their risk

of becoming obese into adulthood . This study also explained how overweight children and adolescents are not only at greater risk for physiologic complications such as hypertension, diabetes, sleep apnea, and cardiovascular diseases, but are also at greater risk for psychologic problems such as low self-esteem.

Different parenting styles relating to food practices of the past have a great impact on how mothers today choose to present food to their children. Recently, there have been certain shifts in mothers' perceptions of child weight (Tschann, J. M., et al., 2013). Mothers are more likely now than in previous years to restrict foods; several studies found that these mothers were highly likely to use unhealthy foods as a reward for eating healthy foods. This particular parenting style was especially prominent in the Mexican American community (Tschann, J. M., et al., 2013). Some parents in this community contribute to their child's obesity by placing the child's preference for fast food above the need for healthy foods. Parents in this community often use food as a way to shape child behavior in all other aspects of life (Tschann, J. M., et al., 2013).

One of the biggest barriers to optimal eating habits in low income families is cost of food and convenience of grocery shopping. A study (Quandt, Grzywacz, Trejo & Arcury,2014) found that Walmart was the most popular grocery store among Hispanic due to the low prices and the wide variety of Hispanic cooking items. Price was shown to be the greatest determining factor in food procurement, as many Hispanic families would regularly make inexpensive choices (Quandt, S. A., et al., 2014). This was further evidenced in a study in which mothers were more likely to bottle feed for a longer period of time if money was tight, meaning that solid food was introduced much later for children in families of lower socioeconomic status (Quandt, S. A., et al., 2014). Often when money is scarce, families will not grocery shop as often, leading families

to purchase longer-lasting, high carb, starchy and sugary foods as opposed to purchasing perishable healthier options (Quandt, S. A., et al., 2014).

Another barrier to lowering child obesity is the lack of parental knowledge on healthy foods. Davis, et. al (2015) found that Mexican-Americans generally viewed all Mexican food as being healthy and most American food as being unhealthy. Furthermore it was determined that parents to not think that it was a priority to teach their children about American food, believing their children would learn about these foods elsewhere, such as at school (Davis, R. E., et al., 2015). One literature review further found that parents did not seem to understand the short term effects of childhood obesity such as hypertension and issues with self-esteem, and some parents believed that obesity in children was largely a problem of genetics and a result of "destiny," (Tschann, J. M., et al., 2013).

The final barriers to a healthy child is decreased activity and certain feeding practices. Several studies have found that Mexican-American parents advocated for a mass amount of TV time for their children. These parents believed that TV 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, R. E., et al., 2015). Studies also found that mothers were likely to encourage children or force children to eat more food even once they were full and would often use unhealthy snacks as motivators to eat healthy food. These parents also regularly used unhealthy foods such as ice cream to reward their children for good behavior, (Tschann, J. M., et al., 2013). Some research has already be done into how to modify certain behaviors and teach parents about healthy foods in order to decrease childhood obesity. (Hampl, S. et al., 2016) found, used a group based program to lower cost and parents were educated on changing dietary habits, modeling, and behavioral management techniques.

The study was done over two years and the children ranged from ages 8-18. Meal and snack demonstrations were done and time was allotted for family activity. During the study BMI measurements decreased in the children studied with the lowered BMI level maintain over the two years , (Hampl, S., et al., 2016). Another study demonstrated the positive effects of educating parents on how to provide non-eating treats for children such as going to a park, or going walk. (Quandt, S. A., et al., 2014).

In order to break down the barriers of childhood obesity, this program aimed to educate Mexican American mothers and mothers of similar socioeconomic status on the short and long-term effects of obesity. We specifically focused on nutritional knowledge, implementing healthy meals on a budget, and becoming more active in their daily 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 is 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. The research question of this study is *What is the effect of Eat Better, Move More education program for caregivers of school-age children on healthy lifetstyle behaviors, including food choice, physical activity and sleep patterns.*

Methods

Overview

This study was conducted following approval from the University of Arkansas Institutional Review Board and Springdale School district along with the individual written consent of the parents. Consent forms were available in the parent's native language. At the time of this study, there was an SFLP (Spanish Family Learning Plan) implemented at the school that gave the opportunity to teach in a set learning environment.

Design

The design of this study is a quasi-experimetal design utilizing a retrospective data analysis examining the effects of a knowledge and quality improvement project on Hispanic eating habits after mothers have been educated and given tools for proper nutrition. The intervention was implemented to promote healthy nutrition and hydration styles. A survey to assess nutrition practice and knowledge was given before and after the intervention. Post-intervention surveys of nutrition practices of Hispanic families after the completion of the education were evaluated and compared to surveys collected before the education. The intervention consists of two different teaching opportunities. The first teaching was an overall healthy habits education done by a community clinical group who utilized the outline we provided them, containing nutrition, hydration, and exercise information. The purpose of starting with healthy habits was to ensure that the mothers/ guardians received a good initial understanding of overall health in themselves and their children. Mothers were educated about the overview of nutrition, exercise, sleep, and how having a healthy lifestyle can enrich the lives of the entire family. There was a Spanish language translator who helped facilitate the learning, especially with the mothers who didn't understand

or speak much English. The second teaching focused on nutrition and hydration specifically, and went more into depth about how to optimize eating habits. Mothers were educated through powerpoint presentation by a community clinical group which focused on the outlines we provided. There were also written hand-outs and mothers were able to take notes throughout the session. The third education module contained information on exercise and sleep habits. All of the written education and presented information was provided by the students.

Study Population

Hispanic parents/ guardians of fourth and fifth grade students at George Elementary that were part of the SFLP program were eligible for the study. Parents or guardians who had fourth or fifth grade students were allowed to opt out of participation in the study if they did not want to participate or did not want their children's information taken.

Study Procedures

IRB approval was obtained from the U of A for this study. All patient information was de-identified in accordance with the Health Insurance Portability and Accountability Act (HIPAA) guidelines. All survey data was collected in the school setting in the SFLP classroom setting. Surveys that were conducted post-intervention were given in the Spring of 2019. Demographic data included the age of the mothers and the ages of their children, what they usually fed their children, and other habits such as bed times. The outcome measured was how the teaching affected knowledge of nutrition practices on the parents and their children. We collected nutrition practices before and after the educational interventions and teaching and then they were compared along side each other to measure the change.

Timeline

The pre-assessment data was collected on October 3, 2019. Implementation of the teaching project was also started on October 3, 2019. Post assessment data was collected on February 21, 2019 after the third teaching was completed. Due to weather-related attendance issues, only 3 posttests were completed, with one of these not completing the pre-assessment. The third education module was re-scheduled but was not completed due to a scheduling conflict. Therefore, post-intervention data collection will occur in May, 2019.

Statistical Analysis

All of the participants in our study were mothers. 100% of the mothers who participated in the study were Hispanic. Eight-four point six percent of the mothers who participated also had children under the designated age of study which was fourth and fifth grade students in the elementary school. The most variability was between the ages of the children which ranged from 6 to 10 years of age. Thirteen mothers completed the pretest and were asked to provide their child's age, gender and grade. Analysis was done on specifically pre-data gathered.

Descriptive Statistics

General characteristics of the mothers and their children in the study group are provided in Appendix, Table 1. The groups are statistically identical in average age and gender of children in the house.

Results

The mothers (N=13) all started with a certain beliefs about the nutrition of their children. They all had already established eating practices with their families. Most mothers reported eating out about twice a week, having their child eat breakfast daily and eating dinner as a family. Most mothers reported participating in physical activity once a week or less. Appendix, Table 2 provides a summary of what these eating practices.

While almost all mothers believed that healthy eating was important, there was a discrepancy between this belief and the number of fruit and vegetable servings that were consumed by the parents and children on a daily basis. Appendix, Table 3 shows the difference in this data.

This shows a large difference in how mothers perceived healthy eating and how they actually implemented it throughout their daily lives and activities with their children. The differences in the eating habits of these mothers and their children was not statistically significant. The pre-data suggests that while these mothers find healthy habits important, they do not seem to be able to adequately implement them in their lives and the lives of their children.

Discussion

In the United States, rates of healthy eating and healthy habits in minority groups continue to be the lowest in the country and the gap is only increasing (Asieba, I. O. 2016). Low income households are less likely to eat healthy due to the high price of healthy foods and the lack of understanding of nutrition labels and what eating healthy really means (Asieba, I. O. 2016). The interventions of this study focused on the knowledge and education of the parents and caregivers in these minority groups in order to change the behaviors of the community as a whole. There was good reception and attitudes towards changing expressed by the mothers, however actual changed behaviors was not statistically significant.

The results of this study were similar to another study, which used education as an intervention to improve health in minority groups. This study also found in pre-data that attitudes towards nutrition education were positive, however there was a significant lack of initial knowledge about how to identify healthy foods. Study results confirm what Tschann, et. al (2013) found, that while mothers put high value of their child's health they also were more likely to allow their children to eat unhealthy foods. Pricing of food was also very impactful in for these families who believed that healthy foods consistently were not an option because of the regular expense that choosing healthy foods over less healthy options imposed on the family unit. We also found that purchases of longer-lasting foods that were higher in fat and carbohydrates was prevalent in this community based on income (Quandt, S. A., et al., 2014).

It was determined by researchers through these studies that any increase in physical activity and subsequent decrease in high sugar, high fat foods could have a transformational effect on the obesity rates of their children. Since parents in our study also seemed to take in the bias that most Mexican food is healthier than American food it was an object of this study to focus on teaching parents about healthy foods and unhealthy foods cross-culturally so they could then teach their children healthy eating habits of overall food choices (Davis, R. E., et al., 2015).

Previous studies identified that parents in these minority groups would often use foods, specifically fast foods and candy as a reward for their children. Instead of using non-food related rewards families were more likely to reward their children with an unhealthy option. This has been shown to increase the value a child puts on food and it grows the belief that doing good things can be related to eating high sugar, unhealthy foods (Hampl, S., et al., 2016). In this study as has been done in others, we hoped to teach parents about healthier alternatives or the option of not giving their children food related rewards but providing other rewards such as going to a park

as was seen to be effective in previous studies (Quandt, S. A., et al., 2014). We also believed that following the example of other studies which focused on modeling of the parents and behavior management techniques in regards to food would benefit our target population as well, (Hampl, S., et al., 2016).

Researchers determined that not only were the attitudes of minority groups very receptive to learning and education about nutrition and eating habits, and how to best use this knowledge for your nutritional advantage. It was also found that these minority groups were very willing and motivated to learn more about their communities healthy food options such as lower priced healthy foods at certain grocery stores and farmers markets, (Davis, R. E., et al., 2015). Our study found that this group of minority mothers was also very receptive and uniquely motivated to learn more about how to take full advantage of the communities nutritious and inexpensive food options.

Limitations

The first limitation was sample size, there were multiple reasons why the sample size for these mothers was as low as it was. Only mothers with children at a specific school could be considered for this study since the study tracked the children along with the progress of their caregivers. Our participants consisted of a convenience sample from a current mothers group at the school who were also learning about family literacy. In addition we had a short amount of time for each teaching with these mothers as they had other things they were learning regularly in addition to the nutritional education we were providing them with. In order to organize the educational opportunities we had to coordinate both with the school schedule and with the teachers who oversee the family literacy program. There was also a problem with organizing teaching around the schedules of the mothers, who in addition to raising their family and coming to these

classes, were also trying to work and provide financially for their families. We were unaware of the other education they were receiving throughout the day in these programs and how much if at all it related to the information we were giving them. The mothers in this program were also learning English and how to navigate a country that they were unfamiliar with in addition to learning a completely new language for the betterment of themselves and their children. There were many times when the mothers seemed to be concerned with something else they were doing in the class for the day than with the education we were providing.

It was difficult to keep consistency throughout this study because of the conflicting schedules of the mothers. Getting all the education was difficult because not all of the mothers who were there for the pre-survey were able to be there for all the other education. Also collecting the post data was difficult because we were unable to get them all together to take the post data survey. The caregivers were not motivated to be at every class and going to the class regularly was less and less likely as the year went on. Many women were working seasonal jobs and around the holidays were not at these classes because they were working and also because flu and general illness was up so many of them were having to stay home and take care of their children or were sick themselves.

The caregivers were less likely to come to classes as the weather got worse and if it was cold or raining they didn't come. This affected attendance for several of our teachings and it limited the level of education and the continuity of the education given. The educational intervention we had and the teachings we planned were designed to build upon each other and if a session was missed, participants were unable to receive all the education intended. There was no way to make sure they got all the information that we wanted to provide them and because they didn't come to every class we had a hard time back tracking and trying to explain certain things

that we were trying to build on and that took away from each teaching. While when the mothers were in class they were motivated to learn and be engaged with everything we were teaching them. Due to attendance issues, the biggest problem we had was keeping them engaged enough to return to the following class. We were also trying to track their changes in behaviors without really being able to track them fully because we had no hard numbers to use. The potential of not receiving all of the education may have affected the results of the post-data due to be collected in May, 2019.

Another limitation we had was that of a significant language barrier. None of our researchers spoke Spanish, the primary language of every mother involved in the study. Some of the mothers spoke or understood English but most of the caregivers involved only spoke Spanish. Since we were unable communicate ourselves with the mothers involved we had to use an interpreter which was inconsistent because there were two different interpreters and we never knew which one was going to be there for the teachings. Since the interpreters were not part of our research team there was not a good way to figure out how knowledgeable they were on the subjects we were teaching. When we were teaching there was a limited amount of time that we were allowed to be there and going back and forth with the interpreters took up much of that time because we were having to convey information twice in different languages. The mothers also had many questions throughout the teachings that also had to be interpreted to us and then the answers had to be re-interpreted back to the participants.

While we were very fortunate and glad to have the interpreters because there was a time limit there is no way for us to really know how much of what we said to the interpreters was summarized and given to the participants. All the information we were giving was important and

we really wanted them to receive all the education but with going back and forth its almost certain that a good amount was lost in translation. Since there was no way for us to know exactly how the information we were giving was being translated it was hard to know if they were getting all of the education points that we were hoping the would receive. This also limited what we were able to teach in the time we were given since everything was translated back and forth throughout the teachings.

One final limitation was specifically cultural in nature. The Hispanic population is known to have certain food preferences culturally. They see nutrition in a different light than we tend to see it in the United States. In many Hispanic countries it is considered better for a child to be overweight than underweight and that the more they weigh the healthier they are because you can tell they are getting fed (Rausch, J. C., 2015). A large portion of their diet consists of starchy vegetables and carbs and they do not always emphasize other vegetables or on fruit. They also do not consider time in the same way we do. They have a much more relaxed pace and they do not put an emphasis on being somewhere every single week at the same time unless it's for work. The Hispanic population sees limiting what their children eat or having their children eat certain food to be restrictive and they see it as holding something back from their children. Furthermore, they see taking time to better themselves and their own nutrition and physical activity as selfish and they believe they are taking time and resources away from their families by taking this time to themselves (Tschann, J. M., et al., 2013).

Conclusion

The findings of this study suggest that a culturally sensitive intervention for education on nutrition and healthy behaviors for caregivers of children in minority communities may not alone influence the implementation of better nutrition and physical activity amongst this population

group. Regardless the interventions and teachings may have had some impact and pending final data collection, overall knowledge may or may not have improved with a decrease in unhealthy eating habits. A more comprehensive study may be even more impactful in the future for these minority groups. Since we cannot completely track healthy behaviors by self- reporting alone, other studies are needed to find some quantitative ways to measure healthy behaviors such as BMI or more comprehensive fruit and vegetable servings. This project also encouraged these mothers to take more ownership of the healthy habits of their children understanding that modeling behavior is so important to how their children will choose to make their own healthy decisions throughout the course of their lives.

For future research, there are several considerations. Starting this program in the summer when moms have more time with their children and can learn this with their children may be slightly more impactful. Having better structured classes and interpreters who are part of the research program and therefore understand more about the goals of the study could help to balance out some of the language barriers presented. Ideally a longitudinal study over many years following the same group of parents and children would give the best overall indication of whether or not this teaching is effective for the long term. Based on previous research there is much data to support the idea that better educating this community could have a great impact on the overall health of these at risk minority communities. Specifically, it has been found that teaching about where to find low cost, healthy foods can make these lower income populations more likely to choose better, healthier options in terms of food and drink for their families. This study indicates the potential for improvement, but further studies are imperative to meet the needs of minority communities who are vulnerable and at risk for obesity and other co-morbid conditions associated with unhealthy lifestyles.

Appendices

Variable	N	Mean	Min	Max
Age	13	8	6	10
Grade	13	3	1	5

Table 1 Variable Ages and GradesTable

2 Healthy Habits Survey

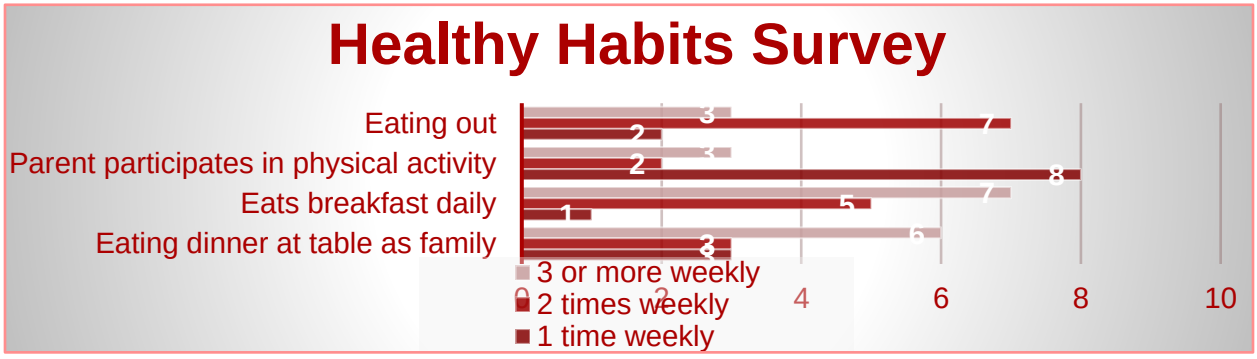

Table 3 Fruits and Vegetables Survey

Is healthy eating important?	Servings of fruits/vegetables
Yes 12 (92.3%)	Average 3
No 1 (7.7 %)	Minimum 0 Max 7

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