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Maria Lopes	12/15/2024

Abstract

Background: The Hispanic pediatric population has the highest obesity rate across all pediatric populations, leaving them at the highest risk to develop obesity-related chronic diseases.

Aim Statement: The objective of this project was to evaluate whether an individualized virtual intervention would motivate Hispanic children with obesity to initiate a nutritional change.

Methods: Fourteen Hispanic participants, from a waitlist of tertiary clinic, completed a virtual meeting. The participant's diet was evaluated and guidance on a nutritional change was provided.

Intervention: Participants established one specific, measurable, achievable, relevant, and time-specific nutritional goal. A post-intervention survey was then completed.

Results: This intervention resulted in patients planning to follow the nutritional change discussed and satisfaction with the care received.

Conclusion: This is an effective intervention for primary practitioners to motivate the initiation of nutritional changes for the treatment of childhood obesity. It also provides education and expands medical care to an underserved community. However, further investigation should focus on its effectiveness on health and weight status long-term.

Introduction

Obesity during childhood and adolescence has reached an unprecedented, epidemic level in the United States. It has been estimated that 19.7% of U.S children are obese with the Hispanic pediatric population having the highest prevalence of obesity among all ethnic and racial groups (Centers for Disease Control and Prevention [CDC], 2022). Because more than a quarter of Hispanic children are obese, they are at the highest risk for the short and long-term obesity-related consequences. These include physical conditions, cardiovascular disease, type 2 diabetes, sleep apnea, osteoarthritis, and cancer, as well as mental health problems, including anxiety, depression, eating disorders, and substance abuse disorder (Sarwer & Polonsky, 2018). In 2021, World Health Organizations (WHO) have also warned that childhood obesity increases one's chances of premature death in adulthood.

Although parental influences and modifiable lifestyle factors, like sedentary behaviors, play a role in these children's weight status, there are many social determinants of health (SDoH) that significantly increase the Hispanic pediatric population's risk for obesity within the U.S. As discussed previously, nutritionally poor food is less expensive than nutritionally rich food. Income level and socioeconomic status (SES), therefore, play a direct role in the types of foods individuals can purchase for themselves and their families. Families of lower SES, which is more common among minority groups, are more likely to purchase the cheaper UPF (Ochoa & Berge, 2018). Because the poverty rate for the Hispanic population in 2022 was 16.7%, compared to that of the general population at 11.5% (Ochoa & Berge, 2018), Hispanics are more likely to buy the cheaper UPFs, resulting in higher risk of obesity across all age groups. Ochoa and Berge (2018) also found that 27% of children from families with an income below the federal poverty line were obese. Comparatively, only 10% of children from families with incomes above 40% of

the poverty line were obese. Furthermore, the Hispanic population is the least likely to be medically insured. More than 20% of Hispanics are uninsured, ultimately resulting in less contact with and less preventative education from healthcare professionals (Artiga et al., 2022). Consequently, lack of knowledge about nutrition and perceptions about a child's weight and obesity risk are all associated with a child's weight status (Ochoa & Berge, 2018). Lastly, those of lower SES tend to live in marginalized and rural areas, where access to fresh fruits and vegetables are more difficult to find and where fast-food restaurants prevail (Jin & Lu, 2021). Overconsumption of UPF is common in these communities, further increasing their risk for obesity and the obesity-related comorbidities.

It has been established that family-based weight management interventions, which includes changes in the diet and physical activity level of the entire family, are effective in encouraging weight-loss in these children with obesity and improving weight-related behaviors (American Academy of Pediatrics [AAP], 2023; American Psychological Association [APA], 2018; CDC, 2022; Chai et al., 2019). However, there are some challenges to addressing obesity within the U.S. Hispanic pediatric population. First, there is limited research on the effectiveness of these family-based weight management interventions in the Hispanic pediatric population; the sample population of most of the research studies, of which the obesity management guidelines are based upon, predominantly consists of white and/or non-Hispanic pediatric populations. This limits the generalizability and effectiveness of these programs within this population. More importantly, very few of these interventions are adapted to take into consideration the differences between the white and Hispanic SDoH and cultures that are influential factors for the development of obesity within this population (Soltero et al., 2021). These cultural differences can include different dietary preferences, like tortillas, that are popular within Mexican

households but not in other Hispanic and non-Hispanic households. It can also include different family eating practices, like eating together or separately. Lastly, there is the language barrier that exists. Over 28.4% of Hispanics report that they have limited to no English fluency (U.S Department of Health and Human Services, n.d.). This poses a barrier to obesity management within this population; there is a limited number of Spanish-speaking pediatric providers that specialize in obesity.

Because of its high prevalence in the pediatric population, tertiary clinics specialized in the management of pediatric obesity have been established throughout the U.S. In Atlanta, Georgia, there is a pediatric weight management clinic with a waitlist ranging from weeks to months for the new patients referred here (M. Routly, personal communication, February 7, 2024), pointing to the high volume of pediatric patients struggling with obesity. In this clinic, the wait is indefinite for the Hispanic patients/families with limited or no English skills because there is no bilingual employee to complete the initial, over-the-phone evaluation and scheduling.

This unfortunate, yet not uncommon circumstance, results in a population that is underserved within the U.S. healthcare system. It is, therefore, imperative to establish an individualized, culturally sensitive, and preliminary nutrition intervention that can be employed at the primary care level via a virtual platform to improve the clinical outcomes of the Hispanic pediatric population struggling with obesity. The purpose of this evidence-based practice project is to establish whether an individualized, preliminary nutrition intervention via an online platform will motivate families of Hispanic children with obesity to implement a nutritional change. It will address the following questions:

1. Will an individualized, culturally sensitive virtual nutrition program impact a family's ability to implement a nutritional change among Hispanic children with obesity?

2. Will an individualized, culturally sensitive virtual nutrition program result in satisfaction with the care received?

Methods

The project's participants were obtained from the wait list of a tertiary clinic that specializes in the treatment and management of obesity in the pediatric population from all over the state of Georgia. Every eligible candidate and parent/guardian were asked to participate. Inclusion criteria included Hispanic pediatric patients, under the age of 18 years old, with obesity and their guardians, who have limited English proficiency. A sample of 60 Hispanic pediatric patients were contacted via the phone number they provided to the tertiary clinic. Description of this project and its objectives was disclosed, and participation was offered. Those interested in participating were scheduled to attend one virtual meeting, using the Google Meet platform, within two months from the initial. If necessary, information on how to access the Google Meet platform was provided via telephone. After the intervention, a post-intervention survey was provided to the families.

At the beginning of the virtual meeting, language preference of the child and the guardian was established. The child's diet was then evaluated using the tertiary clinic's diet intake questions: (1) In the last 24 hours, what did you child eat? (2) In the last 24 hours, what did you drink? (3) What fruits do you enjoy? (4) What vegetables do you enjoy? (5) What do you like to drink throughout the day and how many cups of each drink? (6) How many meals per day do you eat? (7) Do you think the portion sizes of those meals are smaller than normal, normal, or larger than normal? Using motivational interviewing techniques, the child was then guided in setting a nutritional goal that was specific, measurable, achievable, relevant, and time specific (SMART). Nutrition education, which highlights the importance of that nutritional change, was provided along with education on

the importance of this nutrition-change being implemented throughout the whole family. At the end of the virtual meeting, the parent's email was requested and/or verified. They were asked to follow the link in their email to respond to the Spanish version of the 2-statement post-intervention survey the clinic utilizes after every patient visit. It was a Likert-scale survey and the statements were the translated versions of (1) We plan to make the lifestyle changes discussed today and (2) I am satisfied with this virtual visit. The participant and guardian of the participant selected to which degree they agreed with the statements: strongly disagree, somewhat disagree, neutral, somewhat agree, strongly disagree. The responses were analyzed as interval data, as each of the responses were converted into numerical data, e.g. 1=strongly disagree, 2 = somewhat disagree, 3 = neutral, 4 = somewhat agree, 5 = strongly agree. The percentage of each of the responses was then computed.

Results

As seen in table 1, out of the 60 patients that were contacted, half of patients answered the call and scheduled a nutrition intervention consultation. Of the 30 patients that were scheduled, fourteen attended the consultation. All the patients were accompanied by their mothers. The patients preferred to speak in English, while all the mothers preferred to speak in Spanish. Eleven of the 14 patients were male, and the average age of the patients was 10.5 years old, ranging from 5 to 16 years old. Half of these patients had at least one patent-reported comorbidity, and 3 patients, or 21%, had more than one parent-reported comorbidity. The average amount of time the patients had been on this tertiary clinic's waitlist was 280 days, but that also ranged from 81 to 535 days.

The post-intervention response rate, of the 14 families that participated, was 71%. Table 2 shows that eighty percent of the participants either somewhat agreed or completely agreed,

10% and 70% respectively, to planning to follow the nutritional goal that was discussed during the virtual visit. Furthermore, seventy percent of the families were completely satisfied with the visit and 10% were somewhat satisfied with the virtual visit. Lastly, only 20% of the families completely disagreed to planning to follow the nutritional goal that was discussed and were completely dissatisfied with the virtual visit.

Discussion

The post-intervention survey demonstrated that an individualized, culturally relevant, and virtual nutrition intervention effectively motivates Hispanic families to implement a nutritional change to improve the weight status of this pediatric population. Most of the families that completed the survey reported that planned to follow the nutritional goal that was discussed during the virtual visit. Because the nutritional change is dependent on the patient's current dietary habits and is determined by the patient through motivational interviewing (MI) techniques, it increases the probability that the nutritional change will be employed. As highlighted in Bischof et al.'s (2021) meta-analysis, the use of MI strengthens the motivation for behavioral change by positively reinforcing patient-made statements. These responses also demonstrate that a virtual nutritional intervention facilitates the establishment of nutritional goal with patient that is feasible enough to implement in their day-to-day lives, which in turn results in patient and family satisfaction with the care received. Patient and family satisfaction is directly correlated with compliance, clinical outcomes, and the patient's health status (Ng and Luk, 2019). Therefore, these two factors, feasibility and satisfaction, should yield a positive change in the patient's weight status.

While 20% of those that completed the post-intervention survey reported that they were not planning on implementing the nutritional change discussed and where dissatisfied with the visit, the comments provided by both families suggest a user-error when completing the survey.

The first family wrote that "[the project lead] was an excellent guide for my daughter as [she] explained in great detail how we could start with small, but significant, [nutritional] changes to improve her health." The second family wrote, "I think that in the days following the consult, it has been easy to follow the [nutritional] change that was suggested, and I am hopeful that we will be able to continue." It can therefore be inferred that the families who provided these ratings experienced difficulties with understanding or using the post-intervention survey platform.

This evidence-based practice project also emphasized the necessity of a culturally relevant and individualized nutritional intervention. Minority populations must overcome obstacles that many from the non-Hispanic white community will never encounter, including navigating the U.S health system in their non-native language, transportation concerns, provider biases, and lack of medical insurance or underinsurance. The difference in language preference between the patient and the mother is also noteworthy. All the patients requested to speak English, but the mothers requested Spanish. This points to the cultural and lingual gap that exists between Hispanic children living in the U.S. and their Hispanic parents. Providers must therefore act as the bridge between the child and the parents to provide family-centered care to improve the weight status of this population. By providing the patient and their mothers with the opportunity to speak with a provider in their preferred language and in the comfort of their own home through an online platform, most of those obstacles are eliminated; thereby, increasing this patient population's satisfaction with the care that is received. According to Lu and Zhang (2019), providers can divulge high-quality medical information to patients and guide the patients in evidence-based medical decision making through online platforms.

The average time spent on the waitlist without any contact from this tertiary clinic is significant. Prior to being offered to participate in this evidence-based practice project, the

patient had been, on average, on the waitlist for 10 months, or 280 day. While there was a wide range in the waitlist time, 3 months vs 17 months, that is time that the patients and the families could have taken advantage of to improve the patients' health and weight status. The use of an internet-based platforms to provide nutrition education expands patient access to this medical information, thereby decreasing or even eliminating all the other potential barriers to receiving this service. In turn, pediatric obesity and overweight management can be expedited and facilitated in this high-risk patient population. This results in a positive outcome in the patient's compliance and satisfaction with their interactions with the medical community.

Lastly, the fact that half of the patients that completed the virtual nutritional education had already been diagnosed with one or more comorbid diseases emphasizes the dire need to address pediatric obesity, especially within the Hispanic community. Three of the patients were struggling with psychiatric disorders, including anxiety, depression, and Attention Deficit-Hyperactivity disorder. Two patients had been diagnosed with a liver disorder, one with hypertension, one with prediabetes, and one with hypercholesteremia. These patient diagnoses were parent-reported on an intake form that was completed the day the tertiary clinic received the referral. Therefore, the long wait time between the completion of the intake form and the consultation could have resulted in the under-reporting of comorbid diseases. As discussed previously, a person with obesity is at a greater risk for a plethora of chronic disorders and if it is not properly addressed in childhood, most if not all, of these diagnoses will follow these patients into adulthood. The physical and financial burden on the patient, family, and potentially the U.S. government, of pediatric obesity is far too great to remain underserved within the U.S. health system.

There were a few limitations with this evidence-based practice project. The first was the difficulty of scheduling the virtual meetings. Half of the families that were called to offer participation in this project did not answer the phone call, so a voice message was left. In this case, there are two factors that must be considered. These parents or guardians were expecting to receive a call from the weight-management clinic, not from an unknown number. Per McClain (2020), more than 80% of the population does not answer calls from unknown numbers. Although a voice message was left to those that did not answer the phone call, it is uncertain how many people listened to the message. Moreover, only one phone number was provided for each patient, thereby limiting the number of methods of contact to this family.

Another limitation was the number of absences of scheduled visits. There was a total of 30 virtual visits scheduled, but only 14 families logged onto the virtual visit. Unfortunately, these visits were offered near the end of the academic school year. While scheduling, many of the parents remarked how busy their child was with final exams and extracurricular performances. About ten families rescheduled their visit at least one time, and eight of those rescheduled visits also resulted in the families' absence. The family did receive a reminder or notification one day prior to the visit via Google, but it is uncertain how many of those notifications were viewed.

The way the post-intervention survey was provided to the families is the last limitation of this project. A link to the survey was sent to the parents' or guardians' e-mails after the completion of the intervention. This required the parent to access two other online platforms (their e-email and the link to the survey) to complete the survey, which someone with low technology literacy may have difficulties with. This also introduced the possibility that the survey arrives to the junk or spam folder of the person's email, making finding and accessing the survey difficult. Furthermore, it also allowed for time to pass from the completion of the visit to

when the link to the survey was sent, which could have resulted in a lack of motivation to complete the survey. All these factors must be considered, as the post-intervention survey response rate was only 71%.

After the implementation of this educational nutrition intervention, there are many recommendations for future implementation. Any provider interested in providing this service to their patient population would benefit from calling the patients from a phone number that is associated with their clinic. By having the patients and/or families recognize the number, it is more likely that they will be interested in this virtual visit. It could also be offered during a health maintenance exam or an episodic visit, when enough time may not be allotted to discuss about the patient's nutritional habits.

To decrease the number of no-shows, confirming the virtual visits via the family's preferred method of contact from the provider's clinic should increase the participation rtes. Furthermore, a virtual platform where families could schedule or reschedule visits, without having to feel pressured or embarrassed for having to reschedule, may also increase participation. This option provides families with more visit options and flexibility.

Lastly, it would be beneficial to perform the virtual visit on a platform that allowed the participants to complete the post-intervention survey as soon as the provider logs -off of the platform. In prompting the participants to provide feedback immediately and via the same platform, the response rate of the post-intervention survey is expected to rise and therefore providing valuable feedback to the provider.

This nutritional intervention is feasible across primary care practices. It requires a bilingual healthcare professional, a stable and secure internet connection and virtual meeting platform, and for sufficient time to be allotted for each visit. While this intervention can be done

with the general pediatric population in English, the Spanish version is especially beneficial to the Hispanic pediatric population. It increases access to preventative care and education to a patient population that is at the highest risk for obesity and its associated comorbidities. By providing this intervention in Spanish, it also ensures that the parents and/or guardians of this patient population have the sufficient knowledge, and resources required to support a nutrition change in their child and their family. Furthermore, it allows the parent and the child to more openly discuss all the factors that have resulted in the current weight status, like socioeconomic, genetic, and cultural considerations.

It is the responsibility of doctorally-prepared nurses to identify current gaps and healthcare and attempt to appropriately address them. It has been well established that the Hispanic community is grossly underserved within the U.S. healthcare system, and there are evident trends within patient populations that cannot continue to be ignored. Obesity is rampant within the United States, and unfortunately, and the consequences of childhood obesity, including type 2 diabetes and fatty-liver disease, are being seen more every day. Those already struggling with obesity or at the highest risk for developing obesity must be provided with adequate medical care and education. It is also the responsibility of doctorally-prepared nurses to provide preventative care, decreasing the probability of the patient requiring secondary or tertiary care. Therefore, it is imperative for these advanced-practice nurses to work with these at-risk populations with their current resources and availability, to provide the most equitable and evidence-based care possible.

References

Artiga, S., Hill, L., & Damico, A. (2023, April 12). *Health coverage by Race and ethnicity, 2010-2021*. KFF. https://www.kff.org/racial-equity-and-health-policy/issue-brief/health-coverage-by-race-and-ethnicity/#:~:text=Coverage%20by%20Race%20and%20Ethnicity%20as%20of%202021&text=Nonelderly%20AIAN%20and%20Hispanic%20people,their%20White%20counterparts%20(7.2%25)

Bischof, G., Bischof, A., & Rumpf, H. J. (2021). Motivational interviewing: An evidence-based approach for use in medical practice. *Deutsches Arzteblatt International*, *118*(7), 109–115. https://doi.org/10.3238/arztebl.m2021.0014

Chai, L. K., Collins, C., May, C., Brain, K., Wong See, D., & Burrows, T. (2019). Effectiveness of family-based weight management interventions for children with overweight and obesity: An umbrella review. *JBI Database of Systematic Reviews and Implementation Reports*, *17*(7), 1341–1427. https://doi.org/10.11124/jbisrir-2017-003695

Childhood overweight & obesity. Centers for Disease Control and Prevention. (2022, April 1). https://www.cdc.gov/obesity/childhood/index.html

Clinical practice guideline for the evaluation and treatment of children and adolescents with obesity. American Academy of Pediatrics. (2023, January 9). https://publications.aap.org/pediatrics/article/151/2/e2022060640/190443/Clinical-Practice-Guideline-for-the-Evaluation-and?autologincheck=redirected

Clinical practice guideline for the treatment of obesity and overweight in children and adolescents. American Psychological Association. (2018). https://www.apa.org/obesity-guideline

Hispanic/Latino Health. U.S Department of Health and Human Services. (n.d.). https://minorityhealth.hhs.gov/hispaniclatino-health#:~:text=It%20is%20significant%20to%20note,percent%20for%20non%2DHispanic%20whites.

Jin, H., & Lu, Y. (2021). Evaluating consumer nutrition environment in food deserts and food swamps. *International Journal of Environmental Research and Public Health*, *18*(5), 2675. https://doi.org/10.3390/ijerph18052675

Lu, X., Zhang, R., & Zhu, X. (2019). An empirical study on patients' acceptance of physician-patient interaction in online health communities. *International Journal of Environmental Research and Public Health*, *16*(24), 5084. https://doi.org/10.3390/ijerph16245084

McClain, C. (2020, December 14). *Most Americans don't answer cellphone calls from unknown numbers*. Pew Research Center. https://www.pewresearch.org/short-reads/2020/12/14/most-americans-dont-answer-cellphone-calls-from-unknown-numbers/

Ng, J. H. Y., & Luk, B. H. K. (2019). Patient satisfaction: Concept analysis in the healthcare context. *Patient Education and Counseling*, *102*(4), 790–796. https://doi.org/10.1016/j.pec.2018.11.013

Obesity and overweight. World Health Organization. (2021). https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight

Ochoa, A., & Berge, J. M. (2018). Home environmental influences on childhood obesity in the Latino population: A decade review of literature. *Journal of Immigrant and Minority Health*, *19*(2), 430–447. https://doi.org/10.1007/s10903-016-0539-3

Sarwer, D. B., & Polonsky, H. M. (2018). The psychosocial burden of obesity. *Endocrinology and Metabolism Clinics of North America*, *45*(3), 677–688. https://doi.org/10.1016/j.ecl.2016.04.016

Soltero, E. G., Peña, A., Gonzalez, V., Hernandez, E., Mackey, G., Callender, C., Dave, J. M., & Thompson, D. (2021). Family-based obesity prevention interventions among Hispanic children and families: A scoping review. *Nutrients*, *13*(8), 2690. https://doi.org/10.3390/nu13082690