

**Reinforcing Pediatric Nutrition Recommendations Using Low-Cost Resources to Reduce
Impacts of Childhood Obesity**

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Abstract

A statistical correlation has been made between the incidence of childhood obesity, comorbid conditions such as hypertension and diabetes, and food insecurity (Arnold et al., 2020). These studies conclude that increasing the availability of healthy food resources can combat childhood obesity and its complications (Trude et al., 2018). To increase knowledge and availability of healthy food resources, this project surveyed 212 pediatric patients for elevated body mass index (BMI) and food insecurity using the Hunger Vital Signs questionnaire on admission to the pediatric unit. Patients with elevated BMI and food insecurity were provided with nursing-led education on free and low-cost healthy food resources and family-oriented health programs. The project results concluded that 62 of 212 patients met the BMI and food insecurity criteria and only 28 of those received project education over a 12-week implementation period. Significantly fewer Spanish-speaking patients received the education, despite a higher rate of elevated BMI and food insecurity. Strategies were provided to help increase compliance with the proposed education, decreasing care gaps identified in Spanish-speaking patients who met project criteria.

Keywords: childhood obesity, food insecurity, nurse-led education, healthy food resources

Table of Contents

Abstract	2
Section I: Introduction	5
Background.....	5
Organizational Needs Statement.....	5
Problem Statement.....	8
Purpose Statement.....	8
Section II: Evidence.....	10
Literature Review.....	10
Evidence-Based Practice Framework.....	14
Ethical Consideration and Protection of Human Subjects.....	15
Section III: Project Design.....	16
Project Site and Population.....	16
Project Team.....	17
Project Goals and Outcomes Measures.....	17
Implementation Plan.....	18
Timeline.....	19
Section IV: Results and Findings.....	20
Results.....	20
Discussion of Major Findings.....	21
Section V: Interpretation and Implications.....	23
Cost-Benefit Analysis.....	23
Resource Management.....	23

Implications of the Findings.....	24
Sustainability	25
Dissemination Plan	25
Section VI: Conclusion.....	26
Limitations.....	26
Recommendations for Others.....	22
Recommendations for Further Study.....	28
References.....	30
Appendices.....	37
Appendix A: Title of Appendix.....	37
Appendix B: Title of Appendix.....	38
Appendix C: Title of Appendix.....	39
Appendix D: Title of Appendix.....	40
Appendix E: Title of Appendix.....	41
Appendix F: Title of Appendix.....	42
Appendix G: Title of Appendix.....	44
Appendix H: Title of Appendix.....	45

Section I. Introduction

Background

Studies have shown causation between poor nutritional habits and childhood obesity, particularly in low-income groups and families of color (Arnold et al., 2020). Socioeconomic indicators play a significant role in food consumption, and the prevalence of obesity in children is increasing rapidly, with a 40% incline over the last two decades. Low-income households are more likely to engage in poor eating habits, a problem that has been exacerbated in Hispanic and Black households, particularly during Covid-19 (St. Pierre et al., 2022).

This project focused on providing community resources identified by the student to be used by pediatric patients and their families to increase the availability of healthy food choices (Trude et al., 2018). The organization was chosen based on its non-discriminatory mission to provide high-quality, accessible health care for all pediatric patients. Based on the above project focus, the project topic was reinforcing pediatric nutrition recommendations using low-cost resources to reduce the impacts of childhood obesity.

Organizational Needs Statement

The organization desired to focus on acute care and preventative health measures by integrating health education methods to combat common health problems (Director of Nursing, Brenner Children's Hospital, personal communication, August 20, 2022). To incorporate the organizational goals, this project process included educating the nursing staff within the pediatric unit on how to provide information on community resources to support low-income families' health needs. This need-based intervention stemmed from the proportion of patients with positive indicators on the Hunger Vital Sign questionnaire, a resource that identifies food-insecure

households during the admission process, a contributor to childhood obesity (Kaur et al., 2015; L. DeWitt, personal communication, August 20, 2022).

Access to healthy food options is necessary to prevent childhood obesity (Gleason et al., 2021; Kaur et al., 2015). Resources can be scant if one needs help knowing where to look for them, and access to food is a social determinant of health (Centers for Disease Control and Prevention, 2020). This project goal aligns with the Healthy People 2030 initiative on eliminating childhood low food security. Low food security is defined as decreased access to various food options, including healthy foods, without evidence of intentional hunger (United States Department of Agriculture, 2022). According to the Healthy People 2030 data, 31.6% of families of low socioeconomic status have poor food security, which is well above the national average of 12.3% (U.S. Department of Health and Human Services, 2020). These goals align with the Quadruple Aim goal of reducing poor health outcomes, including the prevalence of obesity in the United States (HealthStream, 2022). The project site location, a children's hospital in an urban county within the Piedmont region of North Carolina, retains a list of community resources for low-income households to obtain healthy foods at low or no cost. Some options available to families include rideshare coupons to local grocery stores, free food delivery, application links to government assistance, enrollment in free nutrition classes, and referrals to Loaves and Fishes, a local food bank (Associate Clinical Professor-Pediatrics, personal communication, August 20, 2022).

Obesity diagnosis and management can combat obesity-related health problems that compound as the patient grows into adulthood (Chen et al., 2022). One of the most significant indicators of obesity is increased body mass index or BMI. BMI is based on the following classifications: at risk for overweight (>85th percentile height to weight ratio), overweight (>97th

percentile height to weight ratio), and obese (>99th percentile height to weight ratio) (Centers for Disease Control and Prevention, 2019; Valerio et al., 2018). Therefore, it is essential to evaluate predictors of low food security. Valerio et al. (2018) synthesized 342 articles on pediatric obesity and noted that access to healthy foods, including fiber, fruits, and vegetables, directly correlates with weight. Additionally, data suggests that socioeconomic status and access to healthy foods are essential factors in preventing unhealthy weight gain.

There are indications for determining if a patient needs community-based resources to improve access to healthy food. The U.S. Census Bureau designated that a food desert requires 20% of an area's population to live below the poverty level and 33% to live a distance greater than one mile from a grocery store (Wilcox et al., 2018). Based on the data extrapolated from the N.C. Department of Health and Human Services [DHHS], (2020), the surrounding county for the project site has 21 food deserts, ranking 7th on the national list for food insecurity in a metropolitan area. To combat this statistic, DHHS locates small food stores in the county that offer healthy food options (Eat Smart Move More, n.d.).

Additionally, electronic health records (EHR) systems can be utilized to distribute patient questionnaires to assess food security. The project site adopted this intervention but needed to correlate BMI and positive food insecurity questionnaires. EHR integration creates a more streamlined screening process that complies with the Health Information Portability and Accountability Act (HIPAA) and is quickly being adopted by major academic health systems. According to the American Academy of Pediatrics (AAP) and the American Diabetes Association (ADA), current practice guidelines recommend screenings for food insecurity with a questionnaire such as Hunger Vital Sign, which partners with Feeding America (AAP, 2022; Gattu et al., 2019). The questionnaire consisted of two questions to assess needs, and positive

indicators could be identified immediately, providing the opportunity for quick referral to community resources. The first question determined if families were worried food would run out at any point over the last year, and the second determined if families lacked financial resources to obtain adequate food in the previous year (Feeding America, 2022).

Utilizing resources and educating families on government assistance, free or low-cost food resources, free healthy food delivery, and more to reduce calorie consumption were the next steps in correcting the care gap and reducing pediatric obesity (Lee et al., 2022, Russell et al., 2022). This project utilized a questionnaire and a list of resources to educate patients and families on how to combat food insecurity and subsequent pediatric obesity.

Problem Statement

Childhood obesity increases the rate of obesity in adulthood and other detrimental health conditions such as type 2 diabetes, asthma, hyperlipidemia, and hypertension (Deal et al., 2020; Fang et al., 2019). The indicators of adult obesity can be predicted as young as age two, based on BMI (Freedman et al., 2020). Since there is a correlation between childhood obesity and comorbid conditions in children and adults, addressing factors that increase obesity in young children is essential to mitigate the consequences of elevated BMI and improve quality of life. The relationship between low-socioeconomic status and access to healthy foods is one factor that must be addressed to prevent childhood obesity and related comorbid conditions effectively. A literature review by Howlett et al. (2015) shows a strong positive relationship between income, diet, and healthy food access.

Purpose Statement

This project aims to educate patients and families on local county resources for healthy, low, or no-cost foods to reduce obesity in childhood by developing a process to identify at-risk

families and educating staff to provide resources to those patients and families. Food insecurity was assessed within a local pediatric unit, targeting patients at risk for or with overweight or obese BMI. Risk factors for food insecurity were identified, and BMI classification was determined via EHR. With this data, the nursing staff will provide education on healthy food resources to patients who meet the above criteria in hopes of increasing quality food choices for pediatric patients and decreasing BMI over time. Outcome measures will determine if the intervention effectively disseminates community resource education to families and patients.

Section II. Evidence

Literature Review

The literature review utilized the Cumulative Index to Nursing and Allied Health Literature (CINAHL) and University Laupus Library databases to identify articles on ways to combat food insecurity and poor diet, their relationship to childhood obesity, how to mitigate the effects of childhood obesity, and nursing compliance with patient education. The search strategy focused on the project topic by researching evidence-based interventions to provide low-cost resources to food-insecure patients and their families. It aimed to determine effective strategies to disseminate the information considering nursing and family compliance.

Using the Search Strategy Tool, the Center for Evidenced Based Medicine Glossary (CEBM), the Cochrane Database of Systematic Reviews, and Medical Subject Headings (MeSH) terms, the student assembled a list of 100 articles that were relevant to the problem intervention. Search terms were determined using the Problem-Intervention-Comparison-Outcome (PICO) method to formulate clinical questions using controlled vocabulary to find filtered sources with the highest levels of evidence. These searches included Boolean phrases, including “mitigating food insecurity” and “childhood obesity,” “reducing risks” and “childhood obesity,” “combatting childhood obesity,” and “reducing childhood food insecurity.”

Inclusion and exclusion criteria were applied to ensure the articles complied with evidence-based practice. Criteria for inclusion were articles written in English within the last five years, peer-reviewed, demonstrated Evidence Levels IV to include articles with verified validity, applicability, and high-quality design (see Appendix A), with full online text available. From these searches, exclusion criteria narrowed the list to the 13 most applicable articles. Articles based in other countries, with low hierarchy levels of evidence, or not directly correlated with the

project topic were excluded from the final literature matrix. Each selected article was read in full to determine its appropriateness for inclusion in the literature matrix.

Current State of Knowledge

According to Arnold et al. (2020), a systematic review of 153 randomized controlled trials noted the disproportionate prevalence of childhood obesity in low and middle-income families and Hispanic and Black children compared to their Asian and non-Hispanic White counterparts. This review determined that a combination of health promotion, education, and family counseling on dietary modifications and exercise methods were the most successful interventions for decreasing BMI. Combining the above methods in the five and below age group led to a decrease in overall BMI by an average of 0.11m², a clinically significant reduction compared to one intervention alone.

The AAP advises parents to limit empty calorie snacks and to have healthy options, including fruits and vegetables, accessible to children by placing them in areas they are more likely to eat them, i.e., in a bowl visible on the counter (Sisti, 2019). In addition, the AAP presents guidelines for portion control and caloric intake based on food group and age. In the 2015 clinical update by the AAP, the practicality of the above interventions was questioned because the topic of childhood obesity is complex. One of the topics of concern was the implications of the patient's socioeconomic status on access to healthy food options. One article determined that increasing families' knowledge of where to find frozen or canned fruits and vegetables would increase the availability of healthy options (Daniels & Hassink, 2015).

Loo & Skipper (2017) acknowledge that obesity prevention (primary, secondary, and tertiary) is integral in mitigating the effects of childhood obesity and decreasing the burden of future healthcare costs. Identifying community resources for healthy options increases the

likelihood of change within the food environment, including stimulus control, particularly in communities where retail food chains are the mainstay of dietary choices (Hudak & Racine, 2019).

Current Approaches to Solving Population Problem(s)

DeWitt et al. (2020) note that because food insecurity and obesity are often outcomes of low socioeconomic status, it is essential to consider community-based interventions to support families who do not have access to healthy food choices. Performing a community assessment gives insight into procurement methods for low-income families. In addition to government-funded resources, utilization of local food-based assistance programs can decrease costs associated with healthy dietary intake.

While some sources suggest food and vegetable prescriptions be available for pediatric patients, resources are limited at the project facility, and partnering with local food delivery services could be more beneficial (Saxe-Custack et al., 2019). For example, Door Dash Acts for Sustainability and Hunger, which partners with Feeding America, is a delivery service partnered with the project site to deliver free groceries to families at their homes following discharge. The program focuses on providing local communities healthier food options and coordinates with community food banks to decrease food insecurity. This program was initiated in the Neonatal Intensive Care Unit but is being expanded into other areas, including acute care pediatrics (Berger, 2018).

The project site also uses a food bank to provide families with healthy food options during their stay. While patients get food trays while inpatient, having supplemental healthy food options in the hospital setting addresses food insecurity and obesity concerns (Bruce et al., 2019). The food bank is underutilized due to food insecurity questionnaires being overlooked by

nursing staff and a lack of patients' and families' knowledge of available resources (Associate Clinical Professor-Pediatrics, personal communication, September 8, 2022).

The Associate Professor also stated that having a consolidated list of resources available to patients would be beneficial in educating the families on available resources and facilitating their access (Associate Clinical Professor-Pediatrics, personal communication, September 8, 2022). Assembling a pamphlet and QR code with the information gathered in the literature review and the proposed list of resources for the project location can prove effective for patient education, as 85% of the country has a smartphone (Cook et al., 2021). Available resources are listed in many places online, and providing information using a QR code made the information succinct. Some of the resources included local food banks, information about SNAP and other government-funded resources, enrollment in free nutrition classes, and referrals to Loaves and Fishes, a local food bank (Assistance Programs Winston-Salem and Forsyth County NC, n.d.; Associate Clinical Professor-Pediatrics, personal communication, August 20, 2022).

Evidence to Support the Intervention

Providing local resources for food-insecure families with children who have elevated BMI increases the likelihood that they have access to healthy food options. Increasing the availability of healthy foods is a key factor in changing how families eat (Daniels & Hassink, 2015). Interventions were provided in English and Spanish, as 13.9% of the county's population is Hispanic or Latino (U.S. Census Bureau, 2020). The Director of Nursing (personal communication, September 18, 2022) stated that incorporating all prevention methods was an important part of inpatient and outpatient pediatric care because continuity is essential to patient education. If all healthcare providers gave evidence-based recommendations, it would increase the chances of compliance and mitigate some of the negative effects associated with pediatric

obesity. This facility is a proponent of holistic care, ensuring that nurses implement quality improvement processes to improve patient outcomes from all angles.

Evidence-Based Practice Framework

Imogene King's Theory of Goal Attainment is the nursing theory that correlates best with the proposed project idea (King, 1992; King's Theory of Goal Attainment, n.d.). This seminal article notes a collective goal between nursing and patients to attain good health. Interpersonal relationships using nursing knowledge and mutual understanding of the patient's health goals are the basis for this model. Patient care should be individualized based on these goals to facilitate meaningful interactions (Caceres, 2015). By decreasing the risks associated with childhood obesity and providing resources to ensure food security, the nursing and patient goals are met, preventing poor health outcomes related to diet and elevated BMI (Bentley et al., 2018).

Using the Institute for Healthcare Improvement's Plan-Do-Study-Act (PDSA) rapid cycle tool, this project was evaluated at two intervals for quality improvement using a Likert-style questionnaire (Institute for Healthcare Improvement, 2022; Six Sigma, 2019). The planning phase was implemented in the Summer of 2022. After approval, community resources providing information on free and low-cost food services were identified for the project intervention. Food insecurity questionnaires were already embedded in the EHR, making the data readily available. In the implementation phase, positive food insecurity questionnaires were flagged in addition to patients with elevated BMI to determine who needed nutrition education and resources provided by nursing. Nursing compliance and family receptiveness to education were studied to determine educational barriers. Finally, the 'act' stage consisted of actions and recommendations based on the study phase, which worked to increase nursing compliance and understanding of the information presented. The PDSA cycle allowed the student to determine the effectiveness of the

intervention (staff education) in identifying patients/families with food insecurity and related elevated BMI and providing them with appropriate education and resources. The evaluation included an assessment of nursing compliance and the receptiveness of patients and families to the education.

Ethical Consideration & Protection of Human Subjects

It is crucial to consider the ethical implications of this project to protect its subjects (the nursing staff of the pediatric unit). The information was presented in English and Spanish, although not all staff speaks Spanish. Since this project implementation was purely educational and adhered to evidence-based guidelines, there were no potential harms or risks that the target population would be taken advantage of during implementation.

The student completed Collaborative Institutional Training Initiative (CITI) modules on Social/Behavioral Research Investigators and Key Personnel and Biomedical Investigators to prepare for the formal project approval process. In addition, the project was registered with the facility's Institutional Review Board (IRB) using Research Electronic Data Capture (REDCap) training and a biographical sketch of all contributors to determine qualifications for project participation. The site's IRB determined the project to be a quality improvement with no formal IRB process required. The project was also sent to the University's IRB, and it was determined to be a quality improvement project and not subject to IRB review.

Section III. Project Design

Project Site and Population

For this Doctor of Nursing Practice (DNP) project, the student partnered with a large pediatric healthcare organization in an urban county in the Piedmont region of North Carolina. The target population was the pediatric nursing staff who provided education for patients who met the criteria of food insecurity and elevated BMI on pediatric growth charts. Facilitators to project implementation included a pre-existing program for overweight children and their families. Barriers included the project implementor's primary language of English and nursing compliance with patient education. Compliance was a barrier because nursing did not consistently use the Hunger Vital Sign questionnaire on admission.

Description of the Setting

The project site setting was a large hospital within a large healthcare system in Western North Carolina with multiple specialty pediatric units, including a pediatric emergency room. The acute care pediatric unit is a 27-bed medical-surgical unit with specialized pediatric hospitalists.

Description of the Population

Nursing staff of the 8th-floor pediatric unit of the project site who received the project's educational intervention and implemented the new patient identification and education process as outlined above. The population was determined via a convenience sample, participation was voluntary and did not require a consent form as the project was not determined to be human subjects' research.

Project Team

The project team included a DNP student with seven years of pediatric inpatient hospital experience who functioned as the project coordinator. Additionally, the team included a Medical Doctor acting as an Associate Clinical Professor of Pediatrics and the Director of Nursing in Pediatrics, who helped streamline identifying patients with food insecurity and elevated BMI. The final member was the project's site champion, a DNP-prepared Clinical Quality Improvement Manager. The site champion oversaw the project's IRB submission process and dissemination, including recommendations for improvement and project success.

Project Goals and Outcome Measures

The project goal was to develop an educational intervention and implement a process by which staff distribute educational information to selected patients/families who met certain criteria for food insecurity. One of the project's outcomes was distributing those materials to the patients/families. Nursing was responsible for providing patient education using a pamphlet, QR code, and website with these local resources in English and Spanish. Before administering the above education, nursing was educated on why this is a need in the project location using a dialogue provided by the DNP student on statistics of food insecurity and elevated BMI and the clinical significance of both (see Appendix B1). Outcome measures included nursing compliance, which was evaluated by analyzing the number of documented pamphlets given to the target population versus how many patients were identified with food insecurity and elevated BMI.

Description of the Methods and Measurement

Using the EMR records, the DNP student and the nursing staff at the project site evaluated the patient population for the two inclusion criteria during the implementation

timeline. The DNP student requested a report verifying this information, which was run by the Associate Clinical Professor of the children's hospital to compare data. The PDSA cycle was utilized to determine the efficacy of the intervention, meaning nursing compliance in distributing the proposed education to the correct patient population. These outcome measures were evaluated at two intervals, once at the midpoint of implementation and again when the implementation period ended. A Likert-type questionnaire was given to nursing to evaluate the project intervention at the same intervals, six and twelve weeks (see Appendix C).

Discussion of the Data Collection Process

Data were collected daily by the DNP student over 12 weeks through EMR to determine which patients met the project criteria for inclusion. The target population had to have a positive food insecurity questionnaire and be overweight or obese based on CDC BMI calculations (see Appendix D). Nursing tracked patient's Hunger Vital Sign responses for their daily patients and noted their BMI; the DNP student verified this information. The data were anonymously collected using a simple form (See Appendix E). The data was then used to determine geographical commonalities in patients that met the criteria, particularly considering the location's high national ranking for food insecurity (DHHS, 2020).

Implementation Plan

The DNP student briefed the nursing staff on the proposed project and required education for project success. Information was given on the project's relevance, considering the growing incidence of obesity and food insecurity. Once the patient population was identified, the nursing staff was notified verbally if one or more of their patients fit the criteria for the proposed education. The pamphlets were then distributed to those patients and families with information on the QR code and corresponding website. Once the information was distributed, the nursing

staff documented that the education was given in the patient's medical chart and on a paper form at the nurses' station.

Timeline

Project planning and approval were initiated in May 2022, while implementation spanned from January 2023 to April 2023. Implementation was set over 12 weeks, leaving time during the Spring semester to evaluate project success. Weekly audits were taken to determine if the patients meeting the criteria above were given the pamphlet and educated on the resources. Since compliance was not 100%, charge nurses and the DNP student reinforced the quality improvement initiative by providing the initial project dialogue at day and night shift huddles. Bi-weekly meetings with the site champion were conducted to determine how to increase nursing compliance with the project intervention. At weeks six and ten, Likert-type questionnaires were given to participating nursing staff to determine barriers to providing education. The PDSA cycle was employed at these intervals to determine interventions to increase nursing compliance. Interventions were initiated the following shift to increase project success. The final DNP project semester ended in July of 2023 with project completion and university presentation (see Appendix F).

Section IV. Results and Findings

Results

Nursing compliance with distributing the project education peaked when the DNP student was present for project dissemination. During the implementation period, the DNP student was available at the project site between one to three times a week over 12 weeks, totaling more than 50 hours total on site. Nursing education was more likely to be given if the patients already had vitals in the chart (height and weight for BMI) and the food insecurity questionnaires were completed. If these two items were not completed before the nurses received the patient, the patient education was extremely less likely to be distributed. When considering barriers to nursing implementation, nursing identified time as the most critical barrier to providing education. To address this low compliance, the DNP student provided an incentive for nursing, which increased nursing compliance for the second quarter of the implementation period by 20%. One factor that contributed to participation was the age of the nursing staff. There was a noticeable difference in age and years of experience. The younger, less seasoned nursing staff were more apt to participate in providing patient education.

In addition, English-speaking patients were more likely to receive the education than Spanish-speaking patients, although Spanish-speaking populations more often met the elevated BMI and food insecurity criteria. This knowledge could be used in further projects to address care gaps with Spanish-speaking populations. Of note, 82% of patients that received the education were English-Speaking, while only 18% of those patients were Spanish-Speaking. Another solution to compliance identified using the PDSA cycle with the site champion was the assignment of unit champions. Charge nurses were assigned as ‘unit champions’ to help with project participation by reminding nursing to complete their surveys during morning huddles.

After week five, this reminder decreased during huddles (based on when the DNP student was present in the unit). The DNP student repeatedly reinforced the staff's understanding of reducing BMI and incorporating healthier food options for patients with food insecurity.

Discussion of Major Findings

There was an expectation that nursing compliance would be the largest barrier to project dissemination, and this was a noticeable finding early on. Of the 212 patients admitted over the 12 weeks, 62 met the BMI and food insecurity criteria, and 28 of those received the education. In other words, 29% of the admitted patients were positive for food insecurity and elevated BMI, and 45% received the proposed education. Unfortunately, the Spanish-speaking populations were less likely to receive the information. However, they were statistically more likely to fit the elevated BMI and food insecurity criteria based on analysis of the EHR data available. There was a larger deficit of Spanish-speaking patients who received the education, although a greater number of them had elevated BMI and positive food insecurity questions. This important finding reinforces the need for equitable care to reduce gaps in healthcare literacy. Patient advocacy and empowerment are critical in health equity and can be accomplished through nursing education, which seems lacking, particularly in Spanish-speaking populations (Polster, 2018).

Nursing compliance was low despite the use of unit champions and incentives. The nurses who began participating at the beginning of the implementation period were most likely to have participated throughout the 12 weeks. Additionally, the younger, less experienced nurses were more inclined to participate in the nursing surveys and patient education. 75% of the participants had less than 10 years of experience in nursing. This seemed contradictory to the barriers survey completed earlier in implementation, which showed time constraints as a reason for not

participating (Appendix H). The more nursing experience, the more time to complete tasks. More information could be gleaned on this topic in future projects.

Section V. Interpretation and Implications

Costs and Resource Management

The DNP student provided the materials for this project, totaling around \$200. This included color-printed pamphlets, surveys, and incentive baskets. A minimum of 50 hours was spent at the project site, and a total of 500 hours was spent in research and development, collaborating with project participants, revising the project to increase nursing compliance, and analyzing data to create project conclusions. There were four significant participants outside of the nursing personnel.

If reimplemented at the project site with organizational support, participation would increase as this would take the ‘optional participation’ component away. This project was inexpensive to implement and could improve patient outcomes if nursing compliance improved. With that said, money was saved by having the DNP student implement the project and pay for materials. In a cost-benefit analysis, the potential patient benefits outweigh the costs. While attaching a monetary value to patient outcomes is impossible, providing resources to decrease BMI and increase food security increases health literacy and makes strides toward equitable care. Research has shown that providing culturally competent patient education, particularly to those with health disparities, improves healthcare outcomes using evidence-based information (Polster, 2018). Personnel would be minimal, as the unit nurse educator could be responsible for re-implementation. Incorporating this survey and education into daily nursing tasks would be simple and take minimal time. Again, making this a requirement for nursing staff would increase compliance. The greatest cost to the organization would be the physical materials (Appendix G).

Implications of the Findings

Implications for Patients

The project increased knowledge of free or low-cost community resources, including food pantries and health programs (also available in Spanish). It helped families understand the implications of elevated BMI and reduction in pediatric BMI, decreasing co-morbid conditions. The patient education provided access to healthy foods and health maintenance programs. This new knowledge improved health literacy which could aid in the reduction of food insecurity. In addition, this project increased knowledge of unit resources (the food pantry on the project unit) to support patients' and families' health during their inpatient stay.

One of the greatest implications of this project was providing equitable care to those with health disparities, particularly low-income and Spanish-speaking families (as evidenced by the decreased statistical likelihood of Spanish speakers receiving the project education). While nursing compliance showed that Spanish-speaking families were less likely to receive the education, the DNP student identified that this population was more likely to fit the BMI or food insecurity criteria based on EHR review after the implementation period.

Implications for nursing practice

One of the greatest takeaways from this project is the idea of health advocacy, cultural competence, and the reduction of communication barriers. Since we identified that Spanish-speaking populations were at higher risk for elevated BMI and food insecurity but were less likely to receive the information, this shows significant care gaps that could be better addressed through nursing. Through the above-mentioned takeaways, we can increase patient rapport and, hopefully, patient outcomes by providing pertinent patient education to those who need it most.

Impact on Healthcare System(s)

The impacts on healthcare systems would need to be studied longer, but the project can reduce BMI-related or food security health complications and admissions. The Healthcare System stands to gain improved general health and knowledge of health maintenance programs, which evidence shows supports better patient outcomes related to health literacy.

Sustainability

From a monetary standpoint, this project is easily sustainable with few costs associated with implementation. However, nursing compliance remains a barrier. Organizational support could increase nursing compliance as project education can easily be incorporated into daily tasks, but this would require it to be mandatory and/or necessitate integration into EHR for ease of use.

Dissemination Plan

Implementation was completed on April 12th, 2023. The DNP project poster was disseminated to the College of Nursing faculty at East Carolina University on July 11th, 2023. Following the presentation, the project will be submitted through The ScholarShip website, which serves as an intellectual collective of published works from the college. Abstracts have been submitted to the project site through the nursing education department.

Section VI. Conclusion

Limitations and Facilitators

The main limitation was nursing compliance with distributing patient education. This was identified as a potential barrier before implementation and proved to be the main barrier to project success. When nursing was surveyed using a free-text type survey to determine why compliance was an issue, they noted that time constraints were the major contributor. Compliance increased with the advent of an incentive but waned again following the halfway point of implementation.

Obtaining data from EHR promptly was another barrier to project implementation. It took a lengthy period to search through the data, as there were over 200 admissions during the implementation period. The Assistant Professor of Pediatrics aided in the collection of this data, but communication was difficult given her schedule, which increased the time it took to collect data for synthesis.

Another barrier was that the food pantry was empty for 2.5 weeks during the implementation period, and communication with the donation coordinator was not swift. This meant that one of the major resources listed on the pamphlet was unavailable for a large portion of the implementation period. Finally, the nurses were not reminded of the project goals during morning huddles, which impacted the project's success. This was a great barrier to nursing compliance.

Facilitators included the advent of an incentive basket-increased compliance to meet a goal. Gift baskets were given at weeks six and 12 of the project implementation period. While there was an initial decrease in completed surveys and administered education following the

second week of implementation, incorporating an incentive basket increased the number for around six weeks.

The addition of unit champions reinforced the need for project implementation. While there were mornings when the project was not mentioned in huddles, the unit champions reminded the nursing staff of the project's purpose. They encouraged survey completion and administration of education.

Another facilitator was the site mentor's recommendations using PDSA cycle. Some of these recommendations included surveys of reasons for poor nursing compliance distributed about halfway through implementation, the assignment of unit champions, and the use of an incentive to increase nursing compliance.

The DNP student's presence on the pediatric unit increased compliance by reinforcing project needs. This was the greatest facilitator from a nursing compliance standpoint, as nursing was given the questionnaires in the morning and encouraged throughout the day by the DNP student to complete the patient education. The DNP student was present to answer questions and facilitate the project's completion.

Recommendations for Others

Based on the knowledge obtained from project completion, increasing organizational support would be the greatest way to improve project compliance. A part of that process would entail reinforcing the need for this education by educating nursing on local statistics regarding food insecurity and elevated BMI and the implications of both on community health. More frequent discussions on cultural competence and disparate communities can encourage equitable care, particularly considering the gap between Spanish-speaking families receiving education. As mentioned in the implications section, cultural competence plays a large role in advancing health

equity. Reinforcing interpretation services can decrease these gaps, whether using tele- or in-person interpreters.

Another recommendation for future project consideration is evaluating the family perspective on the education provided. While this would include an IRB process, it would be helpful to know if the families were receiving helpful information or if they had additional recommendations for improvement.

Finally, incorporating the new unit nursing educator in project implementation would be a great facilitator. While she was unavailable during the initial stages of project implementation, she could reinforce the education of nursing staff on the importance of assessing pediatric BMI and food insecurity in an inpatient setting.

Recommendations Further Study

As mentioned above, considering a parent evaluation of the patient education and use of resources would provide additional suggestions for improvement.

Additionally, this project could be replicated within the adolescent unit. The adolescent unit holds patients aged 12 and up, so BMI would always be calculated based on height and weight. Most patients on the project unit are under two, meaning they do not have BMI calculations per CDC recommendations. The same recommendation could be made for adult settings, although the pediatric setting focused more on health maintenance or preventative care.

Additional gaps included providing education to those other than English or Spanish speakers. Perhaps consider providing education in additional languages using live interpretation services. Further research could be conducted on the efficacy of tele- versus in-person interpretation services.

Final Thoughts

The primary purpose of this project was to reinforce pediatric nutrition guidelines using nurse-led education on healthy food options and lifestyle choices. This DNP project sought to have nurses educate patients with elevated BMI and food insecurity based on vital signs and the Hunger Vital Sign questionnaire provided on hospital admission. This education focused on free resources for culturally appropriate healthy foods and health maintenance programs within the community. Although nursing compliance remained a barrier throughout implementation, the education was delivered to some patients who met the criteria to improve patient outcomes related to pediatric BMI and food insecurity.

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Appendix A

Levels of Evidence

Level of evidence (LOE)	Description
Level I	Evidence from a systematic review or meta-analysis of all relevant RCTs (randomized controlled trial) or evidence-based clinical practice guidelines based on systematic reviews of RCTs or three or more RCTs of good quality that have similar results.
Level II	Evidence obtained from at least one well-designed RCT (e.g., large multi-site RCT).
Level III	Evidence obtained from well-designed controlled trials without randomization (i.e., quasi-experimental).
Level IV	Evidence from well-designed case-control or cohort studies.
Level V	Evidence from systematic reviews of descriptive and qualitative studies (meta-synthesis).
Level VI	Evidence from a single descriptive or qualitative study.
Level VII	Evidence from the opinion of authorities and/or reports of expert committees.

This level of effectiveness rating scheme is based on the following: Ackley, B. J., Swan, B. A., Ladwig, G., & Tucker, S. (2008). *Evidence-based nursing care guidelines: Medical-surgical interventions*. (p. 7). St. Louis, MO: Mosby Elsevier.

Appendix B

Nursing Script

This children's hospital serves a large pediatric population within the county and surrounding areas. The county itself has 21 food deserts and has around 50,000 people who are designated as food insecure (Feeding America, 2020). As a part of the admission process, we employ the Hunger Vital Sign questionnaire to determine food insecurity in our patients. Identifying food insecurity allows inpatient healthcare providers to address food needs and use available resources to mitigate associated risks.

With that said, there is a strong correlation between food insecurity and childhood obesity. Utilizing community resources to ensure that families have access to healthier options, including fruits and vegetables, can reduce risks of comorbid conditions including diabetes, hypertension, and high cholesterol. This project proposes that we identify patients who are both food insecure and are overweight or obese based on BMI charts to provide education on community resources that provide healthy foods to families. Education includes a pamphlet with QR code and website (available in English and Spanish) with a list of food pantries, health programs, and culturally appropriate nutritional guidance with the goal of increasing access to healthy foods and decreasing negative health effects associated with poor diet.

Appendix C**Patient Education User Survey**

Please circle the appropriate answer based on the questions below. Surveys are anonymous.

1. The education was easy to understand and present.

Strongly agree Agree Neutral Disagree Strongly Disagree

2. The education was easy to incorporate into patient care.

Strongly agree Agree Neutral Disagree Strongly Disagree

3. I checked to see if each of my patients fit the criteria for the education.

Strongly agree Agree Neutral Disagree Strongly Disagree

4. I provided the education to all the patients who fit the criteria for this project.

Strongly agree Agree Neutral Disagree Strongly Disagree

5. I would continue to provide this education to patients after this project is complete.

Strongly agree Agree Neutral Disagree Strongly Disagree

6. I believe this information will benefit my patients.

Strongly agree Agree Neutral Disagree Strongly Disagree

7. This project was easy to participate in.

Strongly agree Agree Neutral Disagree Strongly Disagree

Appendix D

Hunger Vital Sign

The Hunger Vital Sign™ identifies households as being at risk for food insecurity if they answer that either or both of the following two statements is ‘often true’ or ‘sometimes true’ (vs. ‘never true’):

“ Within the past 12 months we worried whether our food would run out before we got money to buy more.”

“ Within the past 12 months the food we bought just didn’t last and we didn’t have money to get more.”

The Hunger Vital Sign is based on the following: American Academy of Pediatrics. (n.d.). *The*

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Appendix E

Data Collection Form

Please circle yes or no in each corresponding column for your daily patients. List information for new admissions and others who can use the resources but do not fit the criteria. Please keep anonymous						
Date:	BMI classification >85% per CDC Pediatric Growth Curve	Positive Indicator on Food Insecurity Questionnaire	Education Given			
	yes/no	yes/no	yes/no	Patient 1		
	yes/no	yes/no	yes/no	Patient 2		
	yes/no	yes/no	yes/no	Patient 3		
	yes/no	yes/no	yes/no	Patient 4		
	yes/no	yes/no	yes/no	Admits		
	yes/no	yes/no	yes/no	Admits		
				Others		

Appendix F

Project Timeline

February 2023



Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
29	30	31	1	2	3	4
5	6 Meeting with Linda Esposito/ Proposed PDSA cycle for implementation	7	8	9	10	11
12	13	14	15	16	17	18
19	20 Meeting with Linda Esposito/ Proposed PDSA cycle for implementation	21	22 Initial nursing survey administered	23	24	25
26	27	28	1	2	3	4

January 2023



Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
8	9 Meeting with Linda Esposito-discuss implementation measures/ Beginn	10	11	12	13	14
15	16	17	18 Begin project implementation/ provide nursing staff and charge	19	20	21
22	23 Meeting with Linda Esposito	24	25	26	27	28
29	30	31	1	2	3	4
5	6 Meeting with Linda Esposito/ Proposed PDSA cycle for implementation	Notes				

March 2023



Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
26	27	28	1	2	3	4
5	6 Meeting with Linda Esposito	7	8	9	10	11
12	13	14	15	16	17	18
19	20 Meeting with Linda Esposito	21	22	23	24	25
26	27 Final Week of implementation/ End of 12 weeks	28	29 Final nursing survey administered.	30	31	1

Appendix G
Itemized Budget

Color Pamphlets	\$138
Folders	\$10
Incentive Basket	\$50

Total: \$198

Appendix H

Survey for Nursing Compliance

Please list concerns about nursing compliance of project education administration below:
1.
2.
3.
4.
5.