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An Evaluation of the Feasibility of Implementing the National Institute of Children's Health Quality (NICHQ) Physical Activity and Nutrition Survey in Pediatric Primary Care

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An evaluation of the feasibility of implementing the National Institute of Children's Health Quality (NICHQ) Physical Activity and Nutrition Survey in pediatric primary care

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Abstract

Pediatric obesity is a growing problem in the United States of America causing both immediate and long-term health implications including: cardiovascular disease, diabetes, bone and joint problems, sleep apnea, and social and psychological problems (Centers for Disease Control and Prevention, 2015). The purpose of this quality improvement project is to implement and evaluate an evidence-based screening tool for identifying modifiable risk factors for childhood obesity in children in a pediatric primary care office. The National Institute for Children's Health Quality (NICHQ) Physical Activity and Nutrition Survey (Appendix A) was administered to 25 pediatric patients ages 2-18 presenting to their primary care office for a well care visit. The evaluation of this project was based on identifying risk factors, ease of use, and usefulness and feasibility. The implementation of the NICHQ Physical Activity and Nutrition Survey was found to be both useful and feasible at primary care well child visits. Risk factors for obesity were identified, patients and families found the survey easy to complete, and providers found the survey to be helpful in starting conversations with families about healthy activity and nutrition. In future practice a survey such as the NICHQ Physical Activity and Nutrition Survey can be used to help identify modifiable risk factors for pediatric obesity and as a catalyst for meaningful conversations about activity and nutrition. Through screening and education pediatric obesity can be prevented.

Keywords: childhood obesity, screening, prevention

Introduction

Over the past thirty years, obesity has more than doubled in children and quadrupled in adolescents (Centers for Disease Control and Prevention, 2015). Children who are overweight are at increased risk for developing heart disease, high blood pressure, diabetes, osteoarthritis, and cancer (Nathan & Moran 2008). Additionally, children who are obese are more likely to become obese adults and are at risk for mental health issues as young adults (Gray & Leyland 2012). The risk of obesity among the U.S. pediatric population is indicated by an estimated 32% of children ages 2–19 being overweight and 18.7% of children ages 6–19 being obese (Ogden, Carroll, Curtin, Lamb, & Flegal, 2010). A lack of screening, risk factor assessment and preventative education on the importance of healthy nutrition and an active lifestyle are contributing factors. Through early screening, risk factor assessment, and preventative interventions, primary care providers can help reduce the prevalence of childhood obesity.

The prevalence of obesity is well documented by both local and federal agencies as well as in clinical research findings. In 2012, the Centers for Disease Control and Prevention (CDC) estimated that 18% of children age 6-11 years and 21% of adolescents age 12-19 years of age were obese. The World Health Organization (WHO; 2011) now considers obesity an epidemic with more people worldwide at risk for dying of obesity than dying from being underweight. Childhood obesity has become so prevalent and such a major health risk for children that multiple practice guidelines have been developed to help providers better manage children who are obese and prevent childhood obesity (Fitch et al., 2013). The purpose of this quality improvement project was to implement and evaluate a screening tool for pediatric obesity risk

factors in an effort to provide appropriate education and prevent obesity in the pediatric population.

Review of the Literature

A literature review was conducted to identify factors contributing to the development of obesity in children and effective interventions at reducing obesity in childhood. Two healthcare databases and one guideline database were searched. The terms *childhood obesity* and *screening* were used to search the Current Index to Nursing and Allied Health Literature (CINAHL) and produced 13 articles, and the search terms *childhood obesity* and *prevention* produced an additional 72 articles. The second database searched was Academic Search Premier. The search terms *childhood obesity* and *screening* produced an additional 78 articles. Of the 163 articles identified by this search, the five most relevant were cited in this literature review. Results were limited to studies current within the last five years, full text available, and written in English. Finally, the search term childhood obesity was used to search the U.S. Department of Health & Human Services' National Guideline Clearinghouse. This search resulted in 53 practice guidelines, of these the first three were relevant to this literature review, of these three only one was current within the past five years and was therefore used in this review. The evidence based practice guideline recommends both screening, risk factor assessment and preventative interventions for children who are overweight/obese or at risk for developing obesity. Three of the five articles used in this review focused on screening, risk factor assessment and prevention and the remaining two were preventative interventions implemented in the community.

Practice Guideline

The clinical practice guideline, Prevention and Management of Obesity for Children and Adolescents, recommends early screening, risk factor assessment and education aimed towards prevention. Specific recommendations for screening include documenting body mass index (BMI) for children annually and using the CDC growth charts to assure proper terminology (overweight vs. obese) is used to describe each child, annual blood pressure checks starting at age 3 years, and children ages 9-11 years should be screened for dyslipidemia (Fitch et al., 2013). Recommendations for risk factor assessment include annual assessment of diet, physical activity, and sedentary behaviors. Recommendations for prevention include targeting obesity prevention education towards all families, recommending that children get 60 minutes of physical activity daily, increasing fruits and vegetables within the diet, limiting sugary drinks and eating out, eating meals together as a family as much as possible and limiting television or “screen time” to less than two hours daily (Fitch et al., 2013). Emphasis is placed on annual evaluation for obesity and healthy living for each child and education on prevention targeted at all families. Based on the recommendations of this practice guideline, reducing the prevalence of childhood obesity is dependent on screening, risk factor assessment and preventative interventions.

Screening

In 2014 Hurt et al. reviewed the medical records of 10,882 children enrolled in Medicaid in the state of Maryland for documentation of BMI, co-morbidities, and healthcare provider screenings. They found that these at-risk children and teens were not being properly screened and coded by their Medicaid healthcare providers as overweight or obese and as a result were not receiving recommended laboratory testing for co-morbidities (Hurt et al., 2014). A possible solu-

tion to this problem was investigated by Savinon et al. (2012) who explored the effectiveness of customized electronic medical records (EMRs) in screening and identifying children who are overweight/obese or at risk for becoming overweight or obese. By customizing the EMRs to include documenting BMI, Savinon et al. (2012) found a clear increase in recording BMIs, completing BMI growth charts, and scoring questionnaires when compared to paper medical records. Additionally, when EMRs were customized with clinical practice guidelines, adherence to the recommendations for screening (i.e. blood tests) also improved (Savinon et al., 2012).

Moreno, Johnson-Shelton, & Boles (2013) took a different approach to screening children for overweight/obesity by examining potential risk factors other than BMI in a school setting rather than a provider's office. Their study looked at 2317 elementary school students BMIs and six characteristics as potential predictors of overweight/obesity in children. They found that the prevalence of overweight/obesity increased from kindergarten to 5th grade and that prevalence was highest among Hispanic children. Additionally, they identified ethnicity as the strongest predictor, followed by grade and socioeconomic status (Moreno et al., 2013). This study provides insight into factors other than BMI that can predict overweight/obesity and subsequently identifies factors other than BMI that can be used in risk factor assessment for children.

The National Institute for Children's Health Quality (NICHQ), an organization aimed at eliminating the pediatric obesity epidemic by improving access for every child to high quality healthcare, has developed a pediatric obesity toolkit. The NICHQ's Healthy Care for Healthy Kids: Obesity Toolkit was designed to help primary care providers implement coordinated, integrated and multidisciplinary care to prevent obesity and improve care for children who are

already obese or overweight (National Institute for Children's Health Quality, 2016). The toolkit contains resources aimed at prevention, assessment and diagnosis, management and treatment, and community resources. Within the toolkit is a Physical Activity and Nutrition Survey (Appendix A) which screens for modifiable obesity risk factors such as fruit and vegetable intake, screen time, daily physical activity and eating habits (i.e. eating breakfast daily and eating a meal as a family daily). This survey can be used to screen children for obesity risk factors and identify those at high risk for becoming overweight or obese.

Prevention

The studies by Davis et al. (2013) and de Silva-Sanigorski et al. (2011) both found that implementing overweight/obesity prevention interventions during early childhood was helpful in preventing obesity among children. Both the CHILE and Romp & Chomp interventions sought to educate children and families on a balanced diet and healthy active lifestyle to prevent overweight/obesity among children. The CHILE program involved education for children and parents on healthy food choices, exposure to new healthy foods, and the incorporation of local food markets to help identify healthy food options. This program found that often times it can be hard to incorporate education on diet and exercise into an already busy and full school curricula, but implementing such education into Head Start programs and preschool classrooms was not as difficult (Davis et al., 2013). The added bonus is that the education is being implemented at a young age and hopefully obesity can be prevented later on in childhood. While the Romp & Chomp program was also directed at children ages 0-5, it was slightly different in that its aim was to increase the quality of daycare services by encouraging healthy eating and active play. Care providers within this program pilot had more training in the areas of nutrition and activity

and subsequently there were more rules regarding food and drinks provided at the daycare centers and less time was spent doing sedentary activities. This study concluded that the program did improve family daycare services by discouraging sedentary behaviors and promoting healthy eating (de Silva-Sanigorski et al., 2011). These same interventions and programs could be used to increase the overall health of children and reduce the risk of overweight/obesity.

To treat the obesity epidemic in the pediatric population providers will need to use a combination of screening, risk factor assessment tools and interventions aimed at prevention. Clinical practice guidelines as well as electronic medical records can be helpful in screening for and documenting overweight/obesity. Programs that involve the child, family, and community will be helpful in creating a culture in which a balanced diet and active lifestyle help prevent disease. Screening for modifiable risk factors with tools like the NICHQ's Physical Activity and Nutrition Survey can help identify concerning habits early in life and prevent the development of pediatric obesity in the future. In the case of pediatric obesity, the best treatment is prevention.

Theoretical Framework

The theoretical framework used to guide this quality improvement project is Florence Nightingale's Environmental Theory. Florence Nightingale believed nursing is an art of how to let nature work on patients to make the sick healthy and the healthy remain well (Rahim, 2013). She proposed that nursing was an art and a science, which is achieved through environmental alteration to promote health and healing (Rahim, 2013). Similarly, in this quality improvement project, patients were screened for risk factors for childhood obesity so that the environment in which they live could be modified to prevent the development of obesity. Florence Nightingale

viewed the role of the nurse as a management role in which the nurse observed the patient and their interaction with the environment and assisted the patient back to health. This is similar to how this quality improvement project worked, the doctor or nursing practice (DNP) student used the screening tool to assess the environment in which the patient was living (specifically diet and exercise habits) to determine what (if any) aspects of the environment were putting the patient at risk for obesity. This information could then be used to identify patients at high risk of becoming obese and the environmental (modifiable) factors that could be altered to prevent the development of obesity in childhood.

Goals and Objectives

The goal of this quality improvement project was to implement and evaluate a pediatric obesity screening tool for children in a pediatric primary care office. The objective of the project was to screen 25-30 pediatric patients age 2-18 at their annual well child exam and obtain and document their BMI. The primary stakeholder saw on average three patients per eight hour day who met participation criteria and felt 25-30 participants was a reasonable goal for this initiative. The evaluation of this quality improvement project had three parts. First, all 25 completed surveys were reviewed by the Doctor of Nursing Practice (DNP) student to analyze which, if any, risk factors were identified. The second part of the evaluation was based on ease of use and this data was obtained through verbal feedback from patient/families on how easy or difficult the survey was to complete. The final part of the evaluation was an interview of the key stakeholder (pediatric primary care provider) to assess for usefulness and feasibility of implementing this screening tool.

Project Design and Implementation

The project design included the implementation of The National Institute for Children's Health Quality (NICHQ) Physical Activity and Nutrition Survey (adapted from Jump Up and GO!, a youth wellness program developed in Massachusetts) by the DNP student and an evaluation of the effectiveness and usefulness of this screening tool in the primary care setting. The project ran for 6 weeks with an average of 2-4 eligible participants scheduled to see the primary stakeholder per day. When patients and families arrived for their visit the child was weighed and measured by the nurse and then placed in an exam room. While the patient/family was waiting to be seen by their provider, the screening tool was administered by the DNP student. Children ages 11-18 filled out their own screening form and parents completed screening forms for children under the age of 11. After completing the survey the patient/parent was asked if they had any questions and if they found the survey easy to complete. This information was then recorded on the bottom of the survey to be evaluated at the completion of the project. The DNP then notified the provider that the survey tool had been successfully completed and was ready for review.

Population

This project took place in an urban pediatric primary care setting that is closely affiliated with a large world-renowned pediatric acute care facility that treats patients from all over the world. The office is located in a large city and sees patients from both urban and suburban areas. The primary stakeholder was a pediatrician, with additional stakeholders including multiple other pediatricians and nurse practitioners within the practice. Children ages 2-18 presenting for

annual well child exams were considered eligible participants for this project. Children with specialized nutrition plans (including those receiving parental nutrition or enteral nutrition via feeding tubes) and children who were non-ambulatory were excluded from this project. Of the 25 patients who completed the survey there were 10 toddlers (ages 2-4), 11 school-age children (ages 5-11), and 4 teenagers (ages 13-18). There was only one patient with a BMI categorized as overweight, the remaining patient BMIs fell in the normal or underweight ranges. Eighteen of the participants were male and 7 were female. Three of the patients were Arabic, two were Hispanic, three were African American, and all of the participants spoke and could read English.

Ethics and Human Subjects Protection

Ethical considerations included presenting this survey in a manner that was non-judgmental or damaging to the self-esteem or self-image of the patient. For this reason the words ‘physical activity’ and ‘nutrition’ were used in place of ‘exercise’ and ‘diet.’ It was determined by the University of Massachusetts Amherst Institutional Review Board that this project did not meet the federal regulation definition of human subject research. (See Appendix B.)

Results

The National Institute for Children’s Health Quality (NICHQ) Physical Activity and Nutrition Survey was effective in identifying risk factors for pediatric obesity as well as areas where anticipatory guidance and education were needed (See Appendix C for complete results). The most commonly identified risk factor was eating in front of the television with 72% of patients answering ‘yes’ to that question. Another risk factor that was identified was the consumption of more than one sugar sweetened beverage per week with more than half of the

patients (15 out of 25) answering ‘yes’ to that question. In addition to identifying areas that indicated risk for obesity, the survey also helped identify areas where patients were practicing healthy dietary and activity habits. Unexpected findings were that 100% of patients ate breakfast every day and 88% ate dinner at the table with their family at least once per week. Eighty percent of patients surveyed reported that they had a favorite sport or activity that they loved and participated in gym class or sports/dance class outside of school three or more times per week. These findings helped the provider identify areas where education had already been successful as well as areas where further anticipatory guidance was needed.

The implementation process was uncomplicated and overall patients and parents agreed that the survey was quick and easy to complete. In 100% of patients it was completed in well under five minutes and the patient/parent replied “yes” when asked if they found the survey easy to fill out. There was one item on the survey that did raise a question in 20% of the surveys completed and that was item number four which read: “Do you watch TV, videos, or play computer games for two hours or less per day?” Twenty percent of parents had to re-read this question out loud and/or ask the DNP student administering the survey a question before they could determine their answer. On clarification they were able to answer the question without difficulty, it was the wording of the question that made it difficult to answer. The ease of use and concise length of this survey was a major facilitator to this project.

At the completion of the project an interview was conducted with the primary provider involved with the project to determine the usefulness and feasibility of implementing this tool at well child visits. The pediatrician concluded that it was feasible to administer the NICHQ Physical Activity and Nutrition Survey before or during a wellness check. He found it to be

inclusive of the main factors that a pediatrician should screen for in assessing risk for pediatric obesity. There were no additional items he would routinely screen for that were not already included in the NICHQ Physical Activity and Nutrition Survey. Additionally, he found the administration of the survey was useful in sparking conversations with patients and families about healthy activity and nutrition. The pediatrician felt that although he asks many of the same questions as the survey during well child visits, the survey was useful in helping the caregiver remember a specific question they may have forgotten to ask at prior visits. He would consider adding this survey as a routine screening tool for well child exams in the future.

Throughout the project, additional feedback was provided by other providers within the practice. One valuable piece of feedback included administering the survey at all visits because it is important to evaluate and discuss healthy diet and exercise more than just once per year. In developing the project it was initially thought that patients/parents would not be interested in discussing healthy diet and activity when their children were sick because they would be more concerned about their child's current condition. Additionally, more patients may be administered the survey if it was expanded to sick visits as some patients are not good about keeping well care visits, but do present for a sick visit when they are not feeling well. Based on this feedback and the ease of use of the screening tool it may actually be feasible to administer this activity and nutrition survey at all pediatric visits.

Discussion

This quality improvement project found the NICHQ Physical Activity and Nutrition Survey to be a useful, feasible, and easy tool for the assessment of pediatric obesity risk factors.

Screening for obesity risk factors with this tool was useful not only for the identification of risk factors and subsequent education but also in sparking conversation between patients and providers regarding activity and nutrition that otherwise may not have occurred. The screening tool was found to be feasible because it was both quick and easy for patients/families to complete and therefore did not add significant time or effort to the regular visit. One limitation of the survey was noted and that was the question regarding television/screen time. The question wanted to know if the child watched two hours or less of TV per day, but the question was wordy and some parents had a hard time deciphering what the question was asking.

Another limitation of the project was that the majority (84%) of the children screened were under 13 years of age and almost half the children screened (40%) were under five years old. Evaluating this screening tool in the teenage population would have been valuable as teenagers make choices about their nutrition and diet independently whereas toddlers' dietary choices are very dependent on their parents. Teenagers could fill out the survey independently and would benefit tremendously from supplemental education based on their survey results. It would have been valuable to assess the ease of use for teenagers completing their own survey versus the ease of use reported by parents completing the survey on behalf of their younger children. It would also have presented a great opportunity for teens to speak openly and honestly with health care providers about their nutrition and activity so that they can start building healthy habits as adolescents and carry them through into adulthood.

One final limitation of this project was the sample size. As the project progressed there were far fewer eligible participants on a daily basis than originally anticipated. The primary stakeholder saw many patients for well visits that were too young to meet participation criteria

and filled many appointments each day with sick visits as the project from November to January (cold and flu season). The number of participants was further reduced by patients who would have been eligible for participation but did not show up for their well child exam. In future quality improvement projects of this nature it may be helpful to administer the survey to all children ages 2-18 years of age regardless of visit type, as suggested by another provider within the practice.

The pediatric practice where this project took place is a highly advanced practice that already utilizes many of the recommended best practice guidelines available in pediatric primary care. As a result, many of the items on the Physical Activity and Nutrition Survey are already a part of the providers' annual well child assessment. The primary pediatrician involved in the project did find it was still helpful in sparking meaningful conversations and serving as a reminder for providers, but this assessment tool may be even more beneficial in other settings. Family practice providers may find this survey a useful reminder or even a guide in the assessment of pediatric obesity risk factors because they see far fewer pediatric patients than a pediatrician does. Additional settings that would benefit from this survey as a risk assessment tool include less advanced or newer practices or practices with multiple new providers who have limited experience in pediatric obesity risk factor assessment.

Conclusion

Pediatric obesity is a major health concern in the United States effecting more than 30% of children and adolescents (Centers for Disease Control and Prevention, 2015). Children and adolescents who are obese are at an increased risk for multiple co-morbidities including heart

disease, diabetes, and psychological conditions. Education and prevention will be essential to reversing this epidemic. Evidenced based practice guidelines recommend early screening, risk factor assessment and education aimed towards prevention (Fitch et al., 2013). This quality improvement project implemented and evaluated the National Institute for Children's Health Quality (NICHQ) Physical Activity and Nutrition Survey as a screening tool in pediatric primary care. The NICHQ Physical Activity and Nutrition Survey was found to be both a useful and feasible tool for screening for modifiable risk factors for obesity in children. The survey identified risk factors so further education could be provided. Patients and families found this survey quick and easy to complete and providers found the survey helpful in sparking meaningful conversations about healthy nutrition and exercise. The NICHQ Physical Activity and Nutrition Survey is a useful screening tool and it can help pediatric primary care providers identify children at the highest risk for developing obesity before they are overweight, potentially helping prevent the development of pediatric obesity.

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Appendix A

Figure 1.

Physical Activity and Nutrition Survey

Are You a Healthy Kid?

Patient Name: _____ **Age:** _____ **Date:** _____

While you are waiting to see your clinician, please take a moment to answer questions 1–10 below. For each of the following questions, circle “yes” or “no.”

JUMP UP! & GO!
A Youth Activity Program for Children in Hospital

1. Do you eat five or more fruits and vegetables per day?	Yes	No
2. Do you have a favorite fruit or vegetable that you eat every day?	Yes	No
3. Do you eat breakfast every day?	Yes	No
4. Do you watch TV, videos, or play computer games for two hours or less per day?	Yes	No
5. Do you take gym class or participate in sports or dance in or outside of school three or more times a week?	Yes	No
6. Do you have a favorite sport or physical activity that you love to do?	Yes	No
7. Do you eat dinner at the table with your family at least once a week?	Yes	No
8. Do you have a TV in your bedroom?	Yes	No
9. Do you eat in front of the TV?	Yes	No
10. Do you drink more than one soda, juice, or other sugar-sweetened drink a week?	Yes	No

Appendix B



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Human Research Protection Office
Research Compliance

MEMORANDUM

To: Candice Greene, Nursing
From: Human Research Protection Office
Date: December 2, 2016

Project Title: *Pediatric Activity and Nutrition Assessment (PANA)*

IRB Number: 16-153

The Human Research Protection Office (HRPO) has evaluated the above named project and has made the following determination:

- The activity does not involve research that obtains information about living individuals and therefore does NOT require IRB review and approval.
- The activity does not involve intervention or interaction with individuals OR does not use identifiable private information and therefore does NOT require IRB review and approval.
- The activity is not considered research under the human subject regulations (Research is defined as "a systematic investigation designed to develop or contribute to generalizable knowledge.") and therefore does NOT require IRB review and approval.

Appendix C

Figure 2. Results of 25 NICHQ Physical Activity and Nutrition Surveys completed in pediatric primary care

