2018

Dyslipidemia Screening in Children between the Ages of 9 and 11 Years: An Evidence-Based Approach

Meredith Toms
mrco225@uky.edu

Right click to open a feedback form in a new tab to let us know how this document benefits you.

DNP Final Project Report

Dyslipidemia Screening in Children between the Ages of 9 and 11 Years: An Evidence-Based Approach

Meredith Toms RN, BSN

University of Kentucky

College of Nursing

Fall 2018

Dianna Inman DNP, RN, APRN, CPNP-PC, PMHS, PMHNP – Committee Chair

Leslie Scott PhD, APRN, CDE, MLDE – Committee Member

Jane Anne Smith MSN, APRN, CPNP-PC – Committee Member/Clinical Mentor

Dedication

My DNP project is dedicated first and foremost to my husband who has been a constant source of encouragement and unwavering support throughout my graduate school journey. You have selflessly and lovingly enabled me to follow my dreams, and for that I am forever thankful. This is also for my family and friends who have consistently reminded me to look at the bright side of things and push through to the finish line. Lastly, this is for our baby boy who will be joining our family in just a few short months. I hope to always make you proud and promise to always be your biggest fan.

Acknowledgements

I would like to offer thanks from the bottom of my heart to my faculty advisor, Dr. Dianna Inman, who has been my mentor, advocate, and source of persistent guidance throughout my studies. Without you, my final defense would not be possible. You seamlessly embody everything I hope to be as an advanced practice provider one day—driven, assertive, patient, compassionate, and always willing to go the extra mile to help others. I would also like to thank my committee members, Dr. Leslie Scott and clinical mentor Jane Anne Smith, for not only investing their time and energy, but also for imparting their heartfelt wisdom on my research. Dr. Scott, you singlehandedly helped lay the foundation of my studies throughout the course of this doctoral program and have enriched my mind with both academic and clinical experiences that I will never take for granted. Jane Anne, you have taken me under your wing and taught me what it takes to be a pediatric nurse practitioner. You eloquently symbolize what it looks like to be an outstanding clinician, mentor, and friend. I can't thank you enough for imparting your knowledge on me and pushing me to the best of my ability.

I would be remiss to not thank all staff at this pediatric primary care clinic for fostering a learning environment that enabled me to pursue my research. I would also like to personally thank James Aaron (Biomedical Informatics) and Dr. Amanda Wiggins (statistician) who helped synthesize my research and studies. Lastly, to all employees at the University of Kentucky College of Nursing, I can't thank you enough for playing a part in allowing me to fulfill my dreams and achieve my DNP degree.

Table of Contents

List of Tables

List of Figures

Introduction

Throughout the past couple of decades, dyslipidemia in pediatrics has been a subject of growing concern due to its correlation with both obesity and cardiovascular risk factors. Research has shown that if dyslipidemia goes untreated throughout childhood, a child is at an increased risk of developing early atherosclerosis, cardiovascular disease, heart attacks, and stroke during adulthood (DeFerranti & Newburger, 2017). The American Academy of Pediatrics has clinical practice guidelines in place for healthcare providers that outlines when a child should undergo dyslipidemia screening. The hope is that through early detection and treatment, a child's morbidity and mortality from cardiovascular disease will be drastically improved down the road.

There has been a lack of research that examines why dyslipidemia screening rates are historically low throughout the pediatric primary care population and what needs to be done to address this. It is important that healthcare providers are provided with both education and evidence-based research that demonstrates the need behind dyslipidemia screening in childhood. The aim of this study is to provide education to healthcare providers at a pediatric primary care clinic to increase screening rates and provide children with the best possible preventive care that they deserve.

Abstract

PURPOSE: The purpose of this study is to examine the outcome of healthcare provider education on the incidence of dyslipidemia screening in a pediatric primary care clinic.

METHODS: The design of this study was a descriptive pre and post design to evaluate if dyslipidemia screening rates, knowledge, and self-efficacy of healthcare providers changed following an education series at a general pediatric clinic in Lexington, KY. The rates of dyslipidemia screening were calculated prior to providing provider education as well as afterwards to see whether there was an improvement in screening rates. Provider's knowledge and confidence before the education series was also assessed via a survey. The sample of this study consisted of 11 pediatric healthcare providers at a general pediatric clinic. The secondary sample of this study were the medical records of children between the ages of 9 and 11 years who presented to a general pediatric clinic for an annual well-child exam. The sample consisted of 256 medical records during the pre-education time period, June 2018 to August 2018, and 65 medical records during the post-education time period, September 10, 2018 to October 19, 2018.

RESULTS: The Chi-square test of association was used to compare dyslipidemia screening rates before and after the educational intervention was given in the pediatric primary care clinic. The Chi-square test was also used after the educational burst e-mail was sent to all healthcare providers three weeks after the start of the study. Three months prior to the educational intervention being implemented, 17.2% of providers performed routine dyslipidemia screening on children between the ages of 9-11 years during annual well-child exams. Post-educational intervention, dyslipidemia screening rates increased to 24.6% (P=0.1701). An e-mail serving as an educational burst was sent to all providers at the clinic three weeks after the start of the study, regardless of whether they received education, reminding them of the evidence-based guidelines

and the need to screen. Dyslipidemia screening rates increased from 18.75% prior to the e-mail to 26.53% after the e-mail was sent (P=0.7409). Lastly, descriptive statistics including means and standard deviations were used to summarize healthcare provider's confidence and knowledge in dyslipidemia screening. The results yielded that many healthcare providers do not feel confident in the evidence-based guidelines regarding dyslipidemia screening and management in the pediatric primary care population nor feel comfortable treating.

CONCLUSION: Dyslipidemia screening rates improved from 17.2% to 24.6%, an increase of 43% between the two percentages, at a general pediatric clinic after the educational intervention was implemented. This is a significant improvement and evidence that education on the current AAP guidelines was needed. Of the providers that participated, 81.8% strongly agreed that they felt more confident in when and how to screen, diagnose, and manage dyslipidemia in children between the ages of 9 and 11 years after they received education. Providing quality, evidence-based care is of utmost importance in the clinic. This intervention will likely lead to improved early diagnoses and treatment of dyslipidemia in the pediatric population and reduce morbidity and mortality in adulthood.

Background

Dyslipidemia is a known risk factor for cardiovascular disease (CVD) that often

manifests during childhood and adolescence (De Ferranti & Newburger, 2017). Heart disease is

the leading cause of death for both men and women, contributing to 630,000 deaths each year

(Cholesterol, 2017). Twenty percent of children in the United States between the ages of 6 and

19 years have adverse levels of one or more lipid value (De Ferranti & Newburger, 2017). The

majority of lipid disorders exhibit no signs or symptoms. Therefore, it is crucial that screening be

conducted on every child regardless of whether there are known risk factors or a family history.

It is estimated that 50 percent of children with abnormal serum lipoprotein values will continue

to have elevated lipid levels into adulthood (De Ferranti & Newburger, 2017). The American

Academy of Pediatrics (AAP) in conjunction with the National Heart Lung and Blood Institute

(NHLBI) Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction

in Children and Adolescents endorse that all children between the ages of 9 and 11 years undergo

dyslipidemia screening before the onset of puberty. Members of the AAP in Utah were surveyed

by the National Institute of Health in 2011 to assess if they were performing routine dyslipidemia

screenings on all children seen in clinic between the ages of 9 and 11. Of the 118 respondents

who practiced primary care, only 15% screened all children at well-child checks (Stipelman et.

al., 2016). In an evidence report and systematic literature review published by the Journal of the

American Medical Association (JAMA) in 2016, it was found that current rates of dyslipidemia

screening in children and adolescents are low, estimated between 2.5% and 3.2% (Lozano et. al,

2016). These statistics are staggering and a direct indication that this problem in the pediatric

population needs to be addressed. Through early identification of dyslipidemia, a child's lipid

profile can be improved through lifestyle modifications or medication which reduces their risk of developing premature atherosclerosis and CVD in the future (De Ferranti & Newburger, 2017).

The history of dyslipidemia has been traditionally centered on Familial Heterozygous Hypercholesterolemia (FH) which is an inherited, autosomal dominant condition that occurs in 1 in every 500 individuals (Cook et. al, 2011). However, with childhood obesity rates tripling over the past 30 years, there is now a heightened concern for a second and larger population of children with dyslipidemia secondary to obesity (Cook et. al., 2011). Pediatric dyslipidemia primarily effects children who are overweight (BMI 85th to 95th percentile) and obese (BMI >95th percentile) (De Ferranti & Newburger, 2017). In an analysis of National Health and Nutrition Examination Survey (NHAMES), it was found that 14% of youths who were normal weight, 22% of youths who were overweight, and 43% of youths who were obese had adverse lipid levels (De Ferranti & Newburger, 2017). It is estimated that 100,000 children under the age of 17 and 400,000 adolescents between the ages of 17 and 21 would qualify for statin therapy in the United States based on the current NHBLI and AAP recommendations (De Ferranti & Newburger, 2017).

Dyslipidemia in children is characterized by disorders of lipoprotein metabolism that result in the following abnormalities: high total cholesterol, high low-density lipoprotein cholesterol, high non-high-density lipoprotein cholesterol, high triglycerides, and low high-density lipoprotein cholesterol (De Ferranti & Newburger, 2017). Normal lipid values in children vary by age and sex. In addition to variance, these values change with normal growth and maturation. Therefore, it is critical that screening be done at specific intervals to avoid false negatives or positives. Normal lipid and lipoprotein values are measurable and come from a collaboration of data collected by the Lipid Research Clinical (LRC) Prevalence Study and from

the United States National Health and Nutrition Examination Surveys (De Ferranti & Newburger, 2017).

Public health efforts are now being made to reduce cardiovascular risk factors, such as pediatric dyslipidemia, to reduce the overall morbidity and mortality rate of cardiovascular disease in the future (Cook et. al., 2011). The World Health Organization reported that there were 5.7 million deaths to stroke in 2005 and speculates that this number may reach 23 million by 2030 (Kuklina et. al., 2012). According to the CDC, heart disease contributes to 630,000 deaths each year (Cholesterol, 2017). Early recognition and treatment of pediatric dyslipidemia could play a significant part in decreasing the mortality rate of such conditions.

Purpose

The purpose of this study was to examine the outcome of healthcare provider education on the incidence of dyslipidemia screening at a general pediatric clinic in Lexington, KY. The rates of dyslipidemia screening were examined prior to providing education to healthcare providers as well as afterwards through a descriptive pre and post design. Provider's knowledge and confidence before the education series was obtained through an anonymous survey. The overall goal of this project was to increase screening rates of dyslipidemia in a pediatric primary care setting. The objectives of this project are as follows:

1. Determine baseline dyslipidemia screening rates at the clinic prior to initiating education.
2. Examine dyslipidemia screening rates after education has been given to staff at 1-, 4- and 6- weeks.

3. Measure healthcare provider's confidence and knowledge in both screening for and managing dyslipidemia according to evidence-based guidelines.

Methods

Study Design

The design of this study was a descriptive pre and post design to evaluate if dyslipidemia screening rates, knowledge, and self-efficacy of healthcare provider's changed following an education series at a general pediatric clinic. The rates of dyslipidemia screening were calculated prior to providing provider education to see whether there was an improvement in screening rates. Provider's knowledge and confidence before the education series was also obtained after receiving informed consent through a survey.

Setting

The setting of this study took place at a general pediatric clinic in Lexington, KY. The mission of the organization is to provide leading-edge patient care while advancing professional nursing and practice. This clinic serves a primary population of children between the ages of birth to 18 years.

Sample/Participants

The sample of this study consisted of pediatric healthcare providers who worked at a general pediatric clinic in Lexington, KY. The dates of the study were from September 10, 2018 through October 19, 2018. Healthcare providers were asked to take part in an anonymous survey regarding their knowledge and confidence in dyslipidemia screening. The primary care office consists of 21 physicians and 4 nurse practitioners. The total sample of the study involved 11

pediatric healthcare providers at a general pediatric clinic. The inclusion criteria were as follows: any provider who performs a well-child exam for the pediatric population and is willing to participate in the survey. The exclusion criteria were: 1) any provider who does not provide care for the pediatric population and 2) any provider who is not willing to participate in the survey.

The secondary subjects of this study were the medical records of children between the ages of 9 and 11 years who presented to a general pediatric clinic for an annual well-child exam. Two hundred fifty-six medical records were extracted from Allscripts Electronic Health Record (AEHR) between June 2018-August 2018 for all children between 9 and 11 years who presented to the clinic for an annual well-child exam in order to determine pre-education screening rates. Inclusion criteria were as follows: all children between the ages of 9 and 11 years who presented to a general pediatric clinic for an annual well-child exam (refer to Table 1 for a comprehensive list of ICD-10 and CPT codes used for inclusion criteria). Exclusion criteria consisted of: 1) children younger than 9 years or older than 11 years and 2) all children, regardless of age, who present to the clinic for an acute visit. Post-education screening rates were examined by extracting medical records of children between 9 and 11 years who presented to the clinic for an annual well-child exam from AEHR using the inclusion and exclusion criteria listed above between the weeks of September 10, 2018 through October 19, 2018. 65 medical records were pulled from AEHR for post-education screening rates.

Data Collection

Approval from the University of Kentucky Institutional Review Board (IRB) was obtained in August 2018 prior to the collection of data. The patient medical records, healthcare provider educational materials, and healthcare provider survey were the three tools utilized to

assess whether dyslipidemia screening rates were affected at a general pediatric clinic throughout the study. The educational materials provided were expected to change healthcare provider behavior in terms of dyslipidemia screening in children between the ages of 9 and 11 years by increasing awareness and updating them on current clinical practice guidelines endorsed by the American Academy of Pediatrics and NHLBI (refer to Table 2 and Figure A). The anonymous and voluntary surveys were used to assess whether healthcare providers felt both confident and knowledgeable in screening, managing, and treating dyslipidemia in the pediatric primary care population (refer to Table 3).

The primary investigator frequented the general pediatric clinic throughout the post-education period between September 10, 2018 and October 19, 2018 and provided education and surveys to healthcare providers who were present in the office at the time. There are 21 physicians and 4 nurse practitioners in the primary care clinic who were eligible to take this survey. A total of 11 healthcare providers took part in both the education session and anonymous survey. An e-mail reminder serving as an educational burst was sent out three weeks after the project was started during the week of October 1, 2018, regardless of whether they participated in the survey. This e-mail served as a reminder to screen for dyslipidemia (refer to Figure B). Since the survey was completely anonymous, there was not a follow-up survey issued after the educational series or completion of the project.

Data Analysis

The study utilized a descriptive pre and post design. Data Analysis Statistical Package for the Social Sciences (SPSS) software was used in the analysis of data. Screening rates were calculated into frequencies (%). The Chi-square test of association was used to compare

dyslipidemia screening rates before and after the educational intervention was given in the pediatric primary care clinic. The Chi-square test was also used after the educational burst e-mail was sent to all healthcare providers three weeks after the start of the study. Each anonymous survey response completed by healthcare providers was also calculated into frequencies (%). Descriptive statistics, including means and standard deviations, were used to summarize provider's confidence and knowledge in dyslipidemia screening. SPSS software, version 24, with an alpha level of 0.05 was used for statistical significance throughout analysis.

Results

Sample Characteristics

There were 256 medical records reviewed during the pre-education period between June 2018 and August 2018. During the six-week post-education period between September 10, 2018 and October 19, 2018, there were 65 medical records reviewed. The mean age of children screened for dyslipidemia was 9.82 years. Of the 65 medical records reviewed during the post-education period at a general pediatric clinic, 7 records were well-child visits for new patients and 58 records were well-child visits for established patients.

Clinical Practice Guideline Adherence

Clinical practice guideline (CPG) adherence improved significantly after implementation of the educational intervention. While adherence at this general pediatric clinic is still relatively low compared to what the American Academy of Pediatrics (AAP) and NHLBI would like it to be, it is significantly higher than the 2.5%-3.2% national average of adherence reported by the Journal of American Medical Association (JAMA) in 2016 (Lozano et. al, 2016).

There is a total of 25 advanced practice providers who perform well-child checks at a general pediatric clinic. Eleven of the 25 providers (44%) participated in the educational session and anonymous survey. Of the 256 medical records that were reviewed during the pre-education period, 44 received dyslipidemia screening (17.2%). During the post-education period, 16 out of the 65 medical records reviewed received dyslipidemia screening (24.6%, P=0.1701). Dyslipidemia screening rates and adherence to the clinical practice guideline (CPG) improved from 17.2% to 24.6%, an increase of 43%, at this general pediatric clinic after the educational intervention was implemented. (Refer to Figure C and Table 4).

Adherence to clinical practice guidelines was also examined after an e-mail serving as an educational burst was sent to providers at the clinic three weeks after the start of the study. All healthcare providers, regardless of whether they received education, received this e-mail reminding them of the evidence-based guidelines and the need to screen. Dyslipidemia screening rates increased from 18.75% prior to the e-mail to 26.53% after the e-mail was sent (P=0.7409). (Refer to Table 5).

Healthcare Provider Survey Data Analysis

Descriptive statistics, including means and standard deviations, were used to summarize healthcare provider's confidence and knowledge in dyslipidemia screening indicated by anonymous survey results (Refer to Table 6 for a summary of survey results). The results yielded that many healthcare providers do not feel confident in the evidence-based guidelines regarding dyslipidemia screening and management in the pediatric primary care population. Furthermore, many healthcare providers do not feel comfortable treating dyslipidemia in children between the ages of 9 and 11 years.

The educational intervention was beneficial in many different ways. As aforementioned, there was a 43% increase in dyslipidemia screens after education was given in clinic. In addition, 81.8% of healthcare providers who participated in the survey strongly agreed that they felt more confident in when and how to screen, diagnose, and manage dyslipidemia in children between the ages of 9 and 11 years after they received education and were updated on the clinical practice guidelines.

Discussion

The overall aim of this study was to assess whether healthcare provider education on current evidence-based guidelines regarding dyslipidemia screening in children between the ages of 9 and 11 years at annual well-child visits affected screening rates at the primary care clinic. As childhood obesity rates continue to threaten to rise over the years, it is of increasing importance that advanced practice providers are aware of when to screen children as well as how to interpret and manage results.

Based on current screening rates, healthcare providers are not performing dyslipidemia screening as often as recommended. The AAP 2013-2014 Periodic Survey of a national and randomly selected sample of practicing AAP physicians found that 68% never/rarely/sometimes screen healthy 9- to 11- year olds (De Ferranti, Rodday, et. al, 2017). This project identified that current screening rates at this primary care setting prior to the intervention was similar to the national rate. Overall, the study results and data analysis reveal that providing healthcare providers with education increases screening rates.

Limitations

There were a few limitations identified in this study that could be improved for future studies down the road. The first limitation identified was the length of the study. Due to time constraints with IRB approval and the end of the semester, the study was only conducted over a 6-week time frame. Perhaps if the length of the study was longer, results would be more accurately depicted.

A second limitation had to do with the sample size of medical records reviewed. There were significantly more medical records reviewed in the 3-month pre-education period than there were in the 6-week post-education time frame. Since the pre-education period occurred over the course of the summer, there was an influx of annual well-child exams before the start of the school year. The post-education frame occurred once school was in session meaning that a many children between the ages of 9 and 11 years had already received their annual exam for the year. Perhaps if the pre- and post-education time periods were at the same time of the year, screening results would be better analyzed.

To assess whether or not a child received dyslipidemia screening, information technology conducted a chart analysis that assessed whether or not a specific box was checked in AEHR under age-appropriate screenings. This box identified whether screening was either performed or ordered at this visit. There is not a corresponding box that healthcare providers could check if a child has already received dyslipidemia screening between the 9 to 11-year age range or at a separate clinic. Therefore, the results could be falsely skewed.

Lastly, healthcare provider and patient demographics were not reported in this study to keep data confidential and private. While this safeguarded privacy, it also didn't allow for analysis of factors that may affect screening rates.

Recommendations for Future Studies

Recommendations for future studies include providing more continuing education to healthcare providers in practice. While this study was specific to a pediatric primary care clinic, family care clinics would also benefit greatly from education on current pediatric evidence-based guidelines since family medicine providers also see pediatric patients. Incorporating screening reminders within charting systems is a tool that needs to be implemented to increase screening rates. This is a simple and cost-effective intervention that could drastically increase adherence to clinical practice guidelines.

Another recommendation for future studies is to expand to multiple different ambulatory clinic sites to increase sample size and draw results from a number of different settings. Lastly, future studies should consider reasons why healthcare providers are not performing dyslipidemia screening. From that information, researchers will be able to tell what is causing this wide gap in practice and whether it's due to a lack of knowledge, cost standpoint, parental refusal, or insurance coverage.

Conclusion

The overall goal of my project was to increase screening rates of dyslipidemia in all children between the ages of 9 and 11 years at a primary care pediatric clinic. Throughout the course of the six-week study, screening rates improved by 43%. Not only that, but 81.8% of healthcare providers felt that they benefited from the educational intervention and now feel more

confident and knowledgeable in screening, diagnosing, and managing dyslipidemia in the

primary care setting. The educational intervention implemented in this study promoted evidence-

based care and provided patients with the best quality preventive care.

	Table 1. Inclusion Criteria List of Annual Well-Child Exam ICD-10 and CPT Codes		
ICD-10 Codes	**Diagnosis Definition**	**CPT Code**	**Diagnosis Definition**
Z00.121	New and/or Established Patient Well-Child Exam	99383	New Patient Well-Child Exam Late Childhood (Age 5-11 years)
Z00.129	New and/or Established Patient Well-Child Exam	99393	Established Patient Well-Child Exam Late Childhood (Age 5-11 years)

Table 2. Definition of Lipid Levels in Children from the 2011 Expert Panel Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents

Category	Acceptable mg/dL (mmol/L)	Borderline mg/dL (mmol/L)	High[Δ]
TC	<170 (4.4)	170 to 199 (4.4 to 5.2)	≥200 (5.2)
LDL-C	<110 (2.8)	110 to 129 (2.8 to 3.3)	≥130 (3.4)
Non-HDL-C	<120 (3.1)	120 to 144 (3.1 to 3.7)	≥145 (3.8)
ApoB	<90 (2.3)	90 to 109 (2.3 to 2.8)	≥110 (2.8)
TG			
• 0 to 9 years	<75 (0.8)	75 to 99 (0.8 to 1.1)	≥100 (1.1)
• 10 to 19 years	<90 (1 mmol/L)	90 to 129 (1 to 1.5)	≥130 (1.5)
Category	**Acceptable**	**Borderline**	**Low[Δ]**
HDL-C	>45 (1.2)	40 to 45 (1 to 1.2)	<40 (1)
ApoA-1	>120 (3.1)	115 to 120 (3 to 3.1)	<115 (3)

TC: total cholesterol; LDL-C: low-density lipoprotein cholesterol; HDL-C: high-density lipoprotein; ApoB: apolipoprotein B;

ApoA-1: apolipoprotein A-1; TG: triglycerides.

Table adapted from UpToDate retrieved at
https://www.uptodate.com/contents/image?imageKey=PEDS%2F68183&topicKey=PEDS%2F16972&search=dyslipidemia%20
screening%20in%20children&rank=1~150&source=see_link

	Strongly Disagree	**Disagree**	**Agree**	**Strongly Agree**
Table 3. Provider Confidence in Screening for and Treating Dyslipidemia in 9- to 11-year-olds at a Pediatric Primary Care Clinic				
All children between the ages of 9-11 years who present for an annual exam should be screened for dyslipidemia.				
I use the evidence-based guidelines regarding dyslipidemia screening and management in the pediatric primary care population when performing well-child checks.				
I know when and how to screen for dyslipidemia in children between 9-11 years in the pediatric primary care setting.				
I know how to diagnose dyslipidemia in children between 9-11 years in the pediatric primary care setting.				

I know how to manage dyslipidemia in children between the ages of 9-11 years in the pediatric primary care setting.			
The education received today was helpful in regards to knowing when and how to screen, diagnose, and manage dyslipidemia in children between the ages of 9 and 11 years.			

Table 4. Percentage of Dyslipidemia Screenings Pre- and Post- Education

Pre- and Post- Education

Time	Screened		
	0	**1**	**Total**
**Pre**	212	44	256
	82.81	17.19	
**Post**	49	16	65
	75.38	24.62	
**Total**	261	60	321

Statistic	DF	Value	Prob
Chi-Square	1	1.8819	0.1701

Table 5. Percentage of Dyslipidemia Screenings Pre- and Post- Educational Burst E-mail

Educational Burst E-Mail

Time	Screened		
	0	**1**	**Total**
1	13	3	16
	81.25	18.75	
2	36	13	49
	73.47	26.53	
Total	49	16	65

Fisher's Exact Test

Table Probability (P) 0.2269

Two-sided Pr <= P 0.7409

Table 6. Summary of Healthcare Provider's Confidence and Knowledge in Screening and Managing Dyslipidemia (N = 11)

Question	*Mean* (SD)
All children between 9-11 years who present for an annual well-child exam should be screened for dyslipidemia	3.6 (0.5)
I use the evidence-based guidelines regarding dyslipidemia screening when I perform well-child checks	3 (0.8)
I know when and how to screen for dyslipidemia	3.5 (0.7)
I know how to diagnose dyslipidemia	3.2 (0.8)
I know how to manage dyslipidemia	2.7 (0.8)
The education received was helpful in regards to knowing when and how to screen, diagnose, and manage dyslipidemia in children between the ages of 9 and 11 years	3.8 (0.4)

Title of Project

Dyslipidemia Screening in Children between 9 and 11 Years in a Pediatric Primary Care Clinic: An Evidence-Based Approach.

Purpose

The purpose of this project is to examine the outcome of healthcare provider education on the incidence of dyslipidemia screening in a pediatric primary care clinic. The rates of dyslipidemia screening will be examined prior to providing education as well as afterwards through a descriptive pre and post design. The overall goal of my project is to increase screening rates of dyslipidemia at a general pediatric clinic.

Objectives

#1: Determine baseline dyslipidemia screening rates at the clinic prior to initiating education.

#2: Examine dyslipidemia screening rates after education has been given to staff at 1-, 4- and 6-weeks.

#3: Measure healthcare provider's confidence and knowledge in both screening for and managing dyslipidemia according to evidence-based guidelines.

Fast Facts

- Dyslipidemia is a known risk factor for CVD that manifests during childhood and adolescence
- Dyslipidemia in children is characterized by disorders of lipoprotein metabolism that result in the following abnormalities: high total cholesterol, high low-density lipoprotein cholesterol, high triglycerides, and low high-density lipoprotein cholesterol.
- 20% of children in the United States between the ages of 6 & 19 years have adverse levels of one or more lipid value and often exhibit no signs or symptoms
- It is estimated that 50% of children with abnormal serum lipoprotein values will continue to have elevated lipid levels into adulthood
- Approximately 100,000 children under the age of 17 and 400,000 adolescents between the ages of 17 & 21 would qualify for statin therapy in the United States based on the current NHBLI and AAP recommendations
- An analysis of National Health and Nutrition Examination Survey (NHAMES), it was found that 14% of youths who were normal weight, 22% of youths who were overweight, and 43% of youths who were obese had adverse lipid levels

AAP Practice Recommendation for Pediatric Primary Care
The American Academy of Pediatrics (AAP) in conjunction with the NHLBI Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents endorse that all children between the ages of 9 and 11 years undergo dyslipidemia screening before the onset of puberty

Why Screen?
Through early identification of dyslipidemia, a child's lipid profile can be improved through lifestyle modifications or medication which reduces their risk of developing premature atherosclerosis and CVD in the future

Figure B: Educational burst sent to healthcare providers at a General Pediatric Clinic

To Providers at a general pediatric clinic,

My name is Meredith Toms and I am a Graduate DNP Student at the University of Kentucky. As many of you may know, I am conducting my final DNP project that examines dyslipidemia screening rates in children between the ages of 9-11 years following an education session that has previously been given. This is a friendly reminder to be screening all children between the ages of 9 and 11 years who present to the clinic for a well-child check.

The American Academy of Pediatrics (AAP) in conjunction with the NHLBI Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents endorse that all children between the ages of 9 and 11 years undergo dyslipidemia screening before the onset of puberty. Through early identification of dyslipidemia, a child's lipid profile can be improved through lifestyle modifications or medication which reduces their risk of developing premature atherosclerosis and CVD in the future.

Thank you for taking the time to read this and for taking such good care of all kids seen at this general pediatric clinic! If you have questions about the study, please feel free to ask; my contact information is given below.
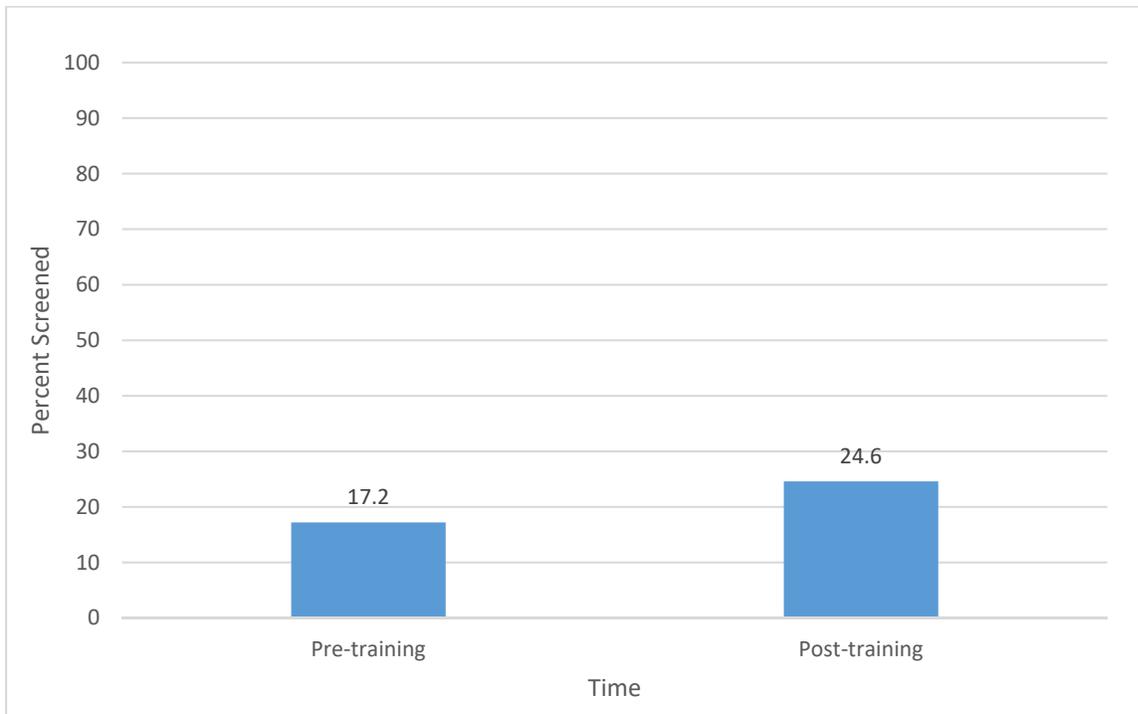
Sincerely,

Meredith Toms, RN, BSN, Graduate DNP Student

University of Kentucky

513-600-6401

mrco225@uky.edu

Figure C: Graph of Dyslipidemia Screening Pre- and Post- Healthcare Provider Education

References

Cholesterol. 2017. Retrieved January 15, 2018, from https://www.cdc.gov/cholesterol/facts.htm

Cook, S., & Kavey, R.E. (2011). Dyslipidemia and pediatric obesity. Pediatric Clinic North
America, 58(6), 1363-1373. doi: 10.1016/j.pcl.2011.09.003

De Ferranti, S., & Newburger, J. (2017). Dyslipidemia in children: Definition, screening, and
diagnosis. UpToDate. Retrieved January 15, 2018, from
https://www.uptodate.com/contents/dyslipidemia-in-children-definition-screening-and-
diagnosis

DeFerranti, S., Rodday, A., Parsons, S., Cull, W., O'Connor, K., Daniels, S., & Leslie, L. (2017).
Cholesterol screening and treatment practices and preferences: a survey of united states
pediatricians. *Journal of Pediatrics, 185*, 99-105.

Gami, A., Rader S., Svatikova, A., Wolk, R., et. al. (2007). Familial premature coronary artery
disease mortality and obstructive sleep apnea. Chest, 131(1), 118-121.

Kuklina, E. V., Tong, X., George, M. G., & Bansil, P. (2012). Epidemiology and prevention of
stroke: a worldwide perspective. Expert Review of Neurotherapeutics, 12(2), 199–208.
http://doi.org/10.1586/ern.11.99

Lozano P, Henrikson NB, Morrison CC, et al. Lipid Screening in Childhood and Adolescence for
Detection of Multifactorial Dyslipidemia Evidence Report and Systematic Review for the
US Preventive Services Task Force. *JAMA*. 2016;316(6):634–644.
doi:10.1001/jama.2016.6423

Stipelman, C., Young, P., Hemond, J., & Brown, L. (2016). Dyslipidemia Screening of 9-to-11-

Year-Olds at Well-Child Visits by Utah Pediatricians. Clinical Pediatrics, 56(14).

doi:https://www.ncbi.nlm.nih.gov/pubmed/28006979

US Preventive Services Task Force. Screening for Lipid Disorders in Children and

AdolescentsUS Preventive Services Task Force Recommendation

Statement. *JAMA*. 2016;316(6):625–633. doi:10.1001/jama.2016.9852

Zachariah, J. P., & de Ferranti, S. D. (2013). NHLBI integrated pediatric guidelines: battle for a

future free of cardiovascular disease. Future Cardiology, 9(1), 13–22.

http://doi.org/10.2217/fca.12.72