HEALTH LITERACY AND HEALTH SEEKING BEHAVIOR OF PARENTS OF YOUNG CHILDREN: A STUDY OF EARLY EDUCATION AND CARE PROGRAMS IN NEW CASTLE COUNTY, DELAWARE

by

Pialee Roy

A dissertation submitted to the Faculty of the University of Delaware in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Urban Affairs and Public Policy

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ABSTRACT

This study investigates parental health literacy and parental health seeking behavior for pediatric primary care utilization as a response to childhood obesity among 220 parents from 12 Head Start and Non Head Start preschools in New Castle County, Delaware. Four paper surveys collected data with the Newest Vital Sign, STOFHL-A, a Parent Survey, and Consumer Assessment of Healthcare Providers and Systems (CAHPS). Green and Kreuter's 2005 Precede-Proceed model is applied to an original logical model for determining a need for a preschool health literacy intervention to inform better child health outcomes. Results indicate that low-income, minority families, have fewer health books at home, which is associated with lower parental health literacy, higher child BMI, and more health care referrals for managing childhood obesity. Nutritional health literacy scores are lower among Hispanic parents who are Head Start participants. Black parents who are Head Start participants had significantly lower parent functional health literacy. Head Start programs offer more parent health education and twice the rate of referrals for the same level of health seeking behavior as Non Head Start parents. Health seeking behavior was lower overall for Black parents from the Head Start program. Further study should explore cultural notions and family characteristics associated with lower pediatric health care utilization in relation to both health literacy scores and health care referrals.

Chapter 1

INTRODUCTION

Parents or primary caregivers predominantly provide the care needed to sustain the health of young children either through family caregiving support or formal clinical pediatric health care utilization. For this reason, the health literacy of parents is of particular importance and is defined as their "ability to obtain, process, and comprehend" health care information (Institute of Medicine, 2004, p.32). Increasing knowledge about health would enable parents to better understand the conditions that support the health of their children and to act more effectively in seeking out the health care needed by their children. Parental health literacy's association to pediatric health seeking behavior and health outcomes for young children, (ages three to five years old) especially who are coping with chronic weight management problems, has not been extensively explored in the existing literature. The need for early education interventions and family support to offset socioeconomic disparities in educational achievement and health access, caused by poverty, race, and lower educational attainment, has been in need of further inquiry. Weight management problems for families with young children are a concern because obesity impacts all income groups.

This study examines the health literacy and health seeking behavior of parents of young children, ages three to five years old in northern Delaware. The study also

considers how parental demographic factors, including household income status, are associated with health literacy and health seeking behavior. The setting for the study is New Castle County, Delaware, a region with both low-income and higher income neighborhoods, and where many parents of young children are at risk for obesity. The study examines high quality preschool environments that include Head Start programs that serve low-income families and Non-Head Start programs that serve higher income families. Preschool programs generally serve young children between the ages of 2.5 to 4.5 years of age, allowing enrollment of children who may have a birthday reaching 5 years of age during the academic school year, but not older than 5 years of age. Pre-kindergarten program serve children who are 4 to 5 years of age, (Bright Horizons, 2018).

Preschool for this study were chosen according to providing service for three to five year olds. The preschool age is different from very young infants, because the preschool age child generally has more developed motor skills and actively mobile play activities and increasing amounts of corresponding nutritional needs, (Santrock, 1998). Reported childhood obesity rates, however, often include the age range of two to five year olds, (Asfour, Natale, Uhihorn, Artheart, Haney, and Messiah, 2015; Ogden, Carrol, Kit, and Flegal, 2014.) Preschools included are in nonresidential settings serving three to five year old children in both federally and non-federally funded programs. Head Start is a federally funded program for which eligibility to participate is determined by federal poverty guidelines for low family income. In

2017, low-income was considered to be $24,600 for a family of four (Federal Register, 2017). Non Head Start preschool programs serve a range of income groups, but those included in this study were predominantly serving a higher income population. Low-income is defined as two times the federal poverty level (FPL); poverty is below FPL; deep poverty is (individually) earning less than $6,000 per year or raising a child on less than $7,600 per year" (Trust for America's Health and Robert Wood Johnson Foundation, 2017). Generally, "a family is officially classified as poor if its cash income (wages, pensions, social security benefits, and all other forms of cash income) falls below the poverty threshold," (Kids Count in Delaware, 2018, p.110).

Childhood Poverty

Contrary to the notion that most people in the United States live in abundance, poverty is a reality for many children (National Center for Children in Poverty, 2015). "Nearly half of infants and toddlers under 3-years-old live in low-income families; 24 percent live in poverty; and 6.6 percent of the U.S. population lives in deep poverty," (National Center for Children in Poverty, NCCP, 2015, p.1). Minority children experience poverty at disproportionate rates: "Seventy percent of Black, 66 percent of Native American, 64 percent of Latino and 34 percent of White children under the age of three live in low-income families, (Trust for America's Health and Robert Wood Johnson Foundation, 2017). In Delaware, poverty affects 22% of children below the age of 6 years, (NCCP, 2018, p.1).

Costs such as "housing, child care, health care, and transportation have increased as priorities rather than food being the main expense as it was in the 1960s" (Kids Count in Delaware, 2018, p.110). "The 1964 measurement is still relied upon to determine prevalence of poverty and needed programs and services" (Kids Count in Delaware, 2018, p.110). In northern Delaware, the cities of Wilmington, New Castle, and Greater Newark regions represent higher rates of poverty than in other locations, such as Hockessin. In terms of actual numbers, the cities comprise approximately 6400, 4063, and 1347 respectively, children living in poverty compared to Hockessin where only a total of 298 individuals are found to be living in poverty overall (Data USA, 2018, p.1; Kids Count in Delaware, 2018, p.114).

In Delaware, there are significantly more children living in poverty among single parent households (39.1%) compared to two parent households (9.5%). The rate of children living in poverty among female headed households is lower in Delaware at a rate of 27.5% compared to 35% in the nation. (Kids Count in Delaware, 2018, p.118). For children who may age into the preschool system of care, family poverty may persist as a risk factor for health and education problems which further impedes kindergarten readiness. Therefore, it is important to assess risk factors for lower literacy rates among lower income parents and understand any existing disparities for those families with young children.

Parental Health Literacy Research

Approximately eighty million people or at least one-third of U.S. adults have low health literacy and this characteristic is more prevalent in low-income families (Hersh, Salzman, & Snyderman, 2015). Health literacy, as defined by Ratzan and Parker (2000) is "the degree to which individuals have the capacity to obtain, process, and understand basic information and services needed to make appropriate decisions regarding their health," (Institute of Medicine, 2004, p.32). Health literacy is a concept that has been used since the 1970s to describe an individual's ability to understand health information in order to make informed decisions about health (Institute of Medicine, 2004). Lack of health literacy skills may result in difficulty in carrying out basic health access tasks, such as reading and comprehending "…wording on medication bottles, food labels, appointment slips, discharge instructions, informed consent documents, medical forms, insurance applications, medical bills, and health education materials", (Hersh, Salzman, & Snyderman, 2015, p.119). These skills are vital for supporting good health status of adults and their dependent children.

Screening for parental health literacy, therefore, should occur along side of child development screenings during the first thirty to forty-five days of a child's attendance at preschool. Developmental screenings are important to identify physical health or behavior problems, delays, or disability and then provide related healthcare referrals (Marks and Glascoe, 2010). In fact, for children in poverty, below the age of 6 years, neurodevelopmental disabilities have increased (AAP, 2013). For younger

children, parental health literacy, including the ability for a parent to comprehend and adhere to the recommendations of a pediatrician for their children, is vital to children's well-being, especially in weight management. "…[A]dequate parental literacy is necessary for appropriate management of the child's health needs during acute/minor illness episodes as well as for long-term treatment management of their child's chronic condition," (Betz, Ruccione, Meeske, Smith, Chang, 2008, p.231).

Parental health literacy is not routinely checked. However, several studies have measured parental health literacy's association with older children's health outcomes. For example: Marks (2015) suggests that parents with lower health literacy inaccurately perceive their children's weight problems and that prevention efforts for children's obesity should start in formative years. DeWalt & Hink (2009) found that parents' low health literacy is associated with less knowledge about their child's medical condition and fewer health promoting behaviors related to their child's condition, (Liechty et al., 2015). Parental obesity also is associated with child obesity (Liechty, et al., 2015). Therefore, positive health messaging and health literacy promotion of parents is important because it may impact both adults and children.

There is a dearth of studies regarding the relationship of parental health literacy to preschool age children's health status. Although past research has reviewed parent knowledge of nutrition concepts for infant care, there is still a gap in research knowledge regarding level of nutrition literacy among parents of preschool age

children, and, even more generally, there is a dearth of information about parental health literacy pertaining to pediatric health outcomes.

In other words, past health literacy research has not extensively studied the health literacy of parents of young children. Earlier health literacy studies have typically focused on parental nutritional health literacy for infant care, adolescent health literacy's association with adolescent health outcomes and adult health literacy's association with adult health outcomes (Chari, Warsh, Ketterer, Hossain, Sharif, 2014; Institute of Medicine, 2004; Sharif & Blank, 2010). Also, past research on health literacy has typically taken place in clinical research settings for parents of adolescents or children at least five years of age or older, rather than understanding the effects of preschool setting programming as a diagnostic and screening site for early interventions for both parental health literacy and weight management, (Chari, et al., 2014, Institute of Medicine, 2004; Sharif & Blank, 2010).

There may be demographic disparities in parental health literacy (Castellanos, Downey, Graham-Kresge, Yadrick, Zoellner, and Connell, 2013). Where educational attainment levels may vary, health literacy skills may offset those negative trajectories towards worse weight management scores. Therefore, it is also important to consider the home health literacy environment or number of health books at home in order to provide effective family support to those individuals exhibiting lower education attainment. The effort of increasing knowledge of preventative care through parental health education is important. The effect may be that families are then diverted from

overuse of costly emergency rooms by encouragement of reliance on a regular primary care medical home for their children (Kurth, 2010). The critical point of intervention in health literacy for families with young children may be high quality preschool programming that offers parental health education, as well as developmental screenings and referrals for children to primary or specialty care for health maintenance and intervention for chronic health conditions such as childhood obesity. Therefore, research is needed in a preschool setting to consider the level of parent education received about nutrition and physical activity, (as a response to the exhibited level of parent health literacy scores) and the impact of health care referrals stemming from developmental screenings, or lack thereof, especially for children with a chronic illness such as obesity.

Childhood Obesity

Over the past several decades, childhood obesity has been one of the predominant chronic health issues facing two to five year olds. Childhood obesity affects all income groups, however, the problem persists more acutely in minority and low-income families who exhibit low health literacy (Klebanov, Evans, and Brooks-Gunn, 2014; Marks, 2015). Approximately one quarter of young children, two to five years of age, are overweight, and ethnic minority groups are disproportionately affected (Asfour, Natale, Uhihorn, Artheart, Haney, and Messiah, 2015; Ogden, Carrol, Kit, and Flegal, 2014). Hispanic and African-American toddlers have higher rates of obesity than Caucasian toddlers (Klebanov, et al., 2014).

The measurement of Body Mass Index (BMI) indicates childhood overweight and obesity. In 2000, the Centers for Disease Control and Prevention (CDC) recommended use of body mass index (BMI) to describe the weight status of children and adolescents, designating BMI ≥95% as "overweight" and BMI ≥85% as "at risk for overweight" (Flower, Perrin, Viadro, Ammerman, 2007). Families in poverty or who are from poor neighborhoods also exhibit more cases of high BMI among children over time. In Delaware, where approximately 40% of children are from low-income families, nearly one third of children are overweight or obese (Alliance for a Higher Generation, 2017; National Center for Children in Poverty, 2018).

In Delaware, obesity affects children at the following rates: 41.3% of Non-Hispanic Blacks, 39% of Hispanic, 35.9% of others, and 33.4 % of Non-Hispanic White youth below the age of 18 years (Kids Count in Delaware, 2018). For the preschool population 34.2% of children have obesity which is comparable to rate of obesity among 36.3% of 6 to 11 year old children and 35.7% of 12 to 17 year olds. More male children at 37.8% have obesity compared to 33.2% of females (Kids Count in Delaware, 2018).

According to the National League of Cities (2018), there is a serious economic burden to society for childhood obesity, especially for those who then become obese adults:

> "The estimated annual health care costs of obesity-related illness are a staggering $190.2 billion or nearly 21% of annual medical spending in the United States. Childhood obesity alone is responsible for $14 billion in direct medical costs" (p.1).

Health Seeking Behavior Literature

Early screening of young children is important to identify attainment of physical and socioemotional health milestones or behavior problems, delays, or disability (Marks and Glascoe, 2010). The global definition of health by the World Health Organization (WHO) is that: “health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (Poortaghi, Raiesifar,Bozozad, Golzari, Parvizy, Rafii, 2015, p.1). Therefore, health seeking behavior may refer to “the promotion, of maximum well-being, recovery, and rehabilitation,”(Poortaghi, et al., 2015, p.2). Health seeking behavior may be of two types: utilization of the system or illness response, (Mackian, 2005). For the purposes of this study, health seeking behavior is defined as the frequency of obtaining or utilizing pediatric primary care visits.

Health seeking behavior for pediatric primary care may offset unnecessary emergency care use for preventable chronic illness related issues including childhood weight management problems (Kurth, 2010). Whether or not pediatric primary care is sought is partly dependent on the rate of developmental screenings completed and health care referrals offered by high quality preschools. Most high quality programs promote some aspect of parent education or family engagement, as well.

The Preschool and Primary Care Responsibility for Developmental Screenings

Completion of development screenings and provision of parent education is a required standard of high quality preschools in Delaware as incorporated in the quality

management program, Delaware Stars QRIS: Quality Rating Improvement System. Out of a total of 478 preschools in Delaware who participate in Stars, at least 20 programs or 4% are presently at level 1 or "starting with Stars"; 15% or 72 programs are at level 2, 17% or 79 programs are at level 3, 20% or 99 programs are at level 4, and 44% or 208 programs are at level 5. Those programs that are rated 4 or 5 stars out of 5 on the state's quality rating improvement system (QRIS) are considered to be high quality and the number of programs attaining this level has been increasing (Delaware Institute for Excellence in Early Childhood, 2018). It is a commendable achievement that in 2018, preschools have improved QRIS standards, however, many programs still lag behind acceptable standards.

In 2007, Delaware ranked last among all states in the completion of developmental screenings because primary care providers did not have enough time to complete them during a regular health care visit, so other venues such as preschool settings were where screenings were encouraged to be completed (National Institute for Children's Healthcare Quality, 2018). As a result, health professionals in Delaware may have had less opportunity than those in other states to ascertain health problems among young children, provide treatment recommendations or additional referrals to specialty care. Childhood health problems including unhealthy weight status thus go undetected from lack of completion of developmental screenings. To offset the low rate of screenings, Delaware included financial reimbursement and the requirement of preschools that to be considered four or five stars out of five stars on the Delaware

Quality Rating Improvement System, screenings would be necessary as part of preschool standards of care (Delaware Institute for Excellence in Early Childhood, 2018). With more developmental screenings taking place at the preschool setting, necessary immunizations and vaccinations take place in pediatric primary care.

Low Health Literacy Causes Unnecessary Healthcare Expenditures

It is more economical to have regular primary care visits than go to rely on the more expensive emergency room for care (Herman & Jackson, 2010; Sanders, Shaw, Guez, Baur, and Rudd, 2009). In 2007, approximately 18 billion dollars was estimated to be spent in avoidable emergency room use in the United States (Cook, Hicks, O'Malley, Keegan, Guadagnoli, & Landon, 2007). Many low-income families, continue to address health concerns at the emergency room instead of having a routine primary care physician, (Herman & Jackson, 2010). Therefore, early education and care (EEC) programs are an ideal potential intervention site for preventable health care conditions including chronic health problems like obesity. Representing 7 to 17 percent of personal health expenditures, some reports estimate that the cost of low health literacy to the U.S. economy is between $106 billion to $238 billion annually (Vernon, Trujillo, Rosenbaum, DeBuono, 2018). Therefore, in order to offset unnecessary expenses, identifying earlier needs and points of intervention are necessary.

This study explores disparities in parental health literacy and preschool provided healthcare referrals for preschool age children who may have weight

management problems. The inquiry will clarify needs for promoting parental health literacy and early intervention needs for child weight management in relation to health seeking behavior for pediatric primary care. More specifically, because there are larger numbers of disadvantaged children in Head Start programs vs non Head Start programs, it is important to consider what differences in school type may mean for addressing the needs of enrolled parents and children. Programs like Head Start that serve economically disadvantaged children may compensate for low-income risk factors for childhood obesity by offering more parent education programs and referrals in contrast with Non-Head Start programs. This compensating effort may help to get families to pediatric primary care and medical homes, who otherwise would not know when, where, and how to seek health care for young children with chronic illness issues, due to low parental health literacy. It is also important to recognize that parent education alone may not be sufficient for implementing a behavior change towards a status of good or optimum health. It is important to understand disparities in parental health literacy skills because this effort informs a knowledge asset or risk base for child health status. Furthermore, preschool provided health education and referrals to get the family to health support at pediatric primary care may vary according to parental health needs and cultural notions about health seeking behavior.

Research Focus

The focus of the research is on how parents from different income groups differ in functional and nutritional health literacy scores, and to what extent early

education and care (EEC) programs, which provide care for income specific groups, differ in resulting children's health outcomes measured by child BMI. The results then reflect a varying need for health care referrals and pediatric health care utilization. For example, federal funding responds robustly through program standards to supporting (low) income eligible families to receive comprehensive EEC services in order to bridge the gap in quality of services allotted by private pay or state subsidies for higher income groups. It is important to check for the level of parent education support provided to these non-federally funded families, whose children also exhibit weight management problems. Although parents from higher income groups may have higher educational attainment, many people still struggle with navigating the health care system. Without adequate parental health literacy and parent health education, in either income group, it is possible that less optimum attainment for children's health in weight management still occurs due to lack of health literacy skills or EEC programmatic differences.

Preschool standards and policies like Stars QRIS standards support better quality care regardless of funding streams. Based on examination of the literature, the main outcome variable is health seeking behavior as a function of characteristics associated with parental health literacy. The following variables may be associated with health literacy scores: demographic factors (age, race/ethnicity, and education attainment level), number of health books at home, and parent health education. The

consequent child BMI status and frequency of health care referrals result in a level of health seeking behavior in combination with perceptions of health care quality.

The quantitative research design studies parents of young children attending twelve high quality preschools in New Castle County, Delaware. Because the schools were selected for being high quality, it is known that they were all required to complete developmental screenings, which otherwise might impact the rate of health care referrals. Data from four parent surveys request information from voluntary responses about: 1) demographics including home health literacy environment, 2) parent functional and nutritional health literacy score, 3) preschool provided nutrition and physical activity education, and 4) perceptions of health care quality and health seeking behavior.

Organization of the Analysis

Chapter Two reviews the historical background for the establishment of the Head Start program and describes participant characteristics based on past impact study findings. The section describes Head Start as a federal response to the poverty problem as well as the context for society's childcare needs. The chapter discusses why Head Start is necessary for comprehensive health support of young children from low-income families. Evaluating the need for parental health literacy supports in this school type is necessary to improve child health outcomes especially for childhood obesity. The chapter describes associated demographic characteristics including age,

gender, race, living arrangement, income, language and home literacy environment, typical of Head Start attendees along with the summary of past impact study findings.

Chapter Three presents a brief history about childcare in the United States and description of early education and care policies specific to Delaware. Policies, policy instruments, and influential actors in this context are described related to needs for quality preschool programming and standards. A brief review of grant programs and funding streams for early education and care provides descriptive information about the level of quality rating improvement scores. The chapter continues with a review of the preschool as a potential health promotion venue because chronic health issues are worse for those in poverty. The chapter then presents information about the quality rating improvement systems for low-income children known as Delaware Stars QRIS in relation to early education and care program standards.

Chapter Four describes the conceptual framework and logic model for the study. Two main research categories, derived from the literature review explore how health seeking behavior for pediatric primary care is a function of parental health literacy and identification of childhood obesity are possibly mediated by parental health education, health care referrals, and perceptions of health care quality. Past literature review describes that the health literacy scores of parents of young children have not been studied in nonclinical settings. In the prior frameworks, for example, Nutbeam's clinical model, asset based competencies inform health literacy scores to be associated with improved clinical outcomes. Younger populations receive

comprehensive family support and recommendations for early intervention from early education and care centers. However, understanding parental health literacy scores in relations to preschool program supports as not been explored in relation to children's health outcomes. A public health perspective of Green and Kreuter's Precede Proceed model is then also presented which begins with a needs assessment, predisposing, reinforcing, and enabling factors, which in turn inform potential intervention points. Finally an original logic model presents two trajectories for parents from two school types (Head Start versus Non Head Start) in obtaining pediatric primary care. Each path considers the income level of the parent group, low-income or higher income, along with demographic predisposing factors which inform health literacy scores. In addition, the enabling factor of school provided parent health education and health care referrals informs utilization levels for pediatric primary care. Finally perceptions of health care quality may reinforce further healthcare utilization. Accordingly, two research categories, health literacy and health seeking behavior, explore factors of predisposing, enabling, and reinforcing characteristics associated with childhood weight management.

Chapter Five describes the methodological approach for the survey research. From IRB approvals and informed consent processes, to sample recruitment and analysis plan, the study protocols describe the participation of 220 parents of young children for this study. The study design takes a quantitative survey research approach to reviewing parental health literacy and health seeking behavior in twelve preschools

in New Castle County Delaware. In addition to requesting demographic information, four parent surveys obtain data about parental functional health literacy, nutritional health literacy, perceptions of health care quality, parent health education supports and home literacy environment. The paper surveys were sent home to parents who completed the folders of paperwork voluntarily in 2017.

Chapter Six presents a brief statement of the overall results, and then the findings, both narrative and graphical presentations, demonstrate the statistical relevance of the association between parental health literacy and parental health seeking behavior for pediatric primary care. The study results compare Head Start parent versus Non Head Start parents in each category of research questions for parental health literacy and parental health seeking behavior. First demographic associations including race, age, income, educational attainment, and home health literacy environment compare a frequency of scores with parental health literacy outcomes. The research explores demographic factors for child BMI and related health care referrals as well as parental health literacy's association with higher child Body Mass Index (BMI) with a comparison of differences by school type. Regardless of health care referrals, the study reviews where health seeking behavior was lower for minority families or Head Start program attendees. Finally the results of the parent self-report of parental perception of health care quality are stated in relation to level of health seeking behavior.

Chapter Seven presents the conclusion and implications of the study. It addresses demographic differences and associated child obesity rates, parental health literacy and health seeking behavior differences by school type. The concluding chapter goes on to describe potential causes to this disparity in reference to past research findings. The chapter discusses policy recommendations accordingly. This chapter presents several suggestions related to the importance of collaborative partnerships for health care referrals, distribution of health books and health promotional materials made available in cultural, linguistically appropriate, and accessible formats for comprehensive family support towards optimum health literacy.

Chapter 2

THE HEAD START PROGRAM AND PARTICIPANTS

Introduction

Due to the educational and healthcare disparities experienced by low-income families, programs such as Head Start are necessary to close the gap in achievement among different income groups. This chapter reviews historical background about the establishment of the federal Head Start program and its ongoing program goals. The chapter also describes characteristics of participants of this preschool type. Head Start going families may have a potential need for parental health literacy supports due to a multitude of child health issues. The chapter reviews background literature pertaining to demographic associations with these child health issues.

The Head Start Program Background

Initially, the 1965 Elementary and Secondary Education Act (ESEA) formation as part of the war on poverty, addressed the education needs of disadvantaged preschoolers. During the same year, 1965, the Head Start program started as a way to meet the early education needs of low-income children (U.S. Department of Education, 2015; Zigler & Styfco, 2004).

Since 1965, nearly 30 million low-income children and their families have received comprehensive services from Head Start programs to increase children's school readiness. Head Start programs serve approximately one million children in the U.S. every year, including children in every U.S. territory and American Indian and Alaskan Native communities (U.S. Department of Health and Human Services, 2012).

Important contexts that drove the need for the Head Start program included: women's participation in labor resulting in day nurseries for working mothers, socio-economic disparities resulting in welfare reform policies, especially for an increasingly diverse demographic population in the U.S., and simultaneous advancements in research in child development for kindergarten readiness and longterm achievement, (Kamerman & Gatenio-Gabel, 2007; Zigler & Styfco, 2004). For example, war was one major reason for the increase in women's participation in work outside of the home. Therefore, alternatives to child care were also necessary. Concurrently, research about optimum brain development of children occurring in younger years before the age of three, were presented, suggesting that care for young children was a priority. Consequently, after early education and care centers were established, research into disparities in the needs of the population served along with improvements in preschool quality has become an ongoing priority. Research for this effort often credits the short term, Perry Preschool project which was the inspiration for the formation of a regular preschool program known as Head Start (Zigler & Styfco, 2004).

Head Start offers educational support for families of lower socioeconomic status through a comprehensive approach, (Zigler & Styfco, 2004). In addition to education services, the Head Start Improvement Act of 1992 established health services for participants, their younger siblings and literacy training for parents. The program has gone through several reauthorizations since then and impact findings are important to continue funding and reauthorizations in the present and future. Head Start is an ideal intervention site because parent involvement is encouraged, and therefore, a family systems approach to health information is possible. Program involvement of parents includes identifying health providers and services for them including transportation and funding. (U.S. Department of Health and Human Services, 2012; Zigler & Styfco, 2004).

Head Start is federally funded, while non-Head Start programs' financial reimbursement may originate from different sources, including tiered reimbursement for improving quality of services. Therefore, comparing quality or type of programs that are available to different income groups is complicated but necessary. While more structured programming is necessary to close the gap in achievement between the low-income groups that Head Start serves, with curricula or developmental goals of other income groups in Non Head Start programs, the lack of funding in the Non-Head Start programs may lead to lower quality programs being offered to a range of income groups going to those preschools. In this case, low quality may mean, that a safe and nurturing daycare may be available, but not other standards of quality

including: appropriate environment, teacher higher degrees, developmental screenings, referral to health care services, and parent education support.

Head Start Participant Characteristics

The Administration for Children and Families (ACF) has funded Mathematica Policy Research (MPR) to review 2009 Head Start enrollment data to learn about program impacts from the longitudinal program performance study: Head Start Family and Child Experiences Survey (FACES). The FACES studies are presently still be conducted as of 2018. Data collection began in 1997 and other "entering program" participant cohorts studied included years: 2000, 2003, and 2006, (Hulsey, Aikens, Kopack, West, Moiduddin, and Tarullo, 2011). The following section reviews participant characteristics about the program from those findings.

Age, Gender, Race, Living Arrangement

Most children (61%) begin Head Start at age 3. Both boys and girls are participating at nearly equal rates. Hispanic/Latino families, African American families, and Caucasian families, respectively make up 36%, 33%, and 23% of total first-time enrollment. Since 2000, minority family participation increased from 66% to 77% in 2009 (Hulsey et al., 2011). Approximately 50% of children live with their mother only and another 42% live with both mother and father. When not attending Head Start, before and after school care is not utilized by 63% of families, but another 25% receive care from relatives (Hulsey et al., 2011).

Income

Unfortunately, the number of families who attended Head Start and earned household incomes below the federal poverty level increased from 58% in 2006 to 63% in 2009. In other words, the number of families in poverty increased within just a few years. Other household characteristics include that federal funds from additional programs such as the Supplemental Nutrition Assistance Program (SNAP) increased from 44% in 2000 to 64% in 2009. Approximately 68% of children have a parent who earned a high school diploma or GED with 47% of these families having at least one full time working parent, (Hulsey et al., 2011). The merits of Head Start programs which may offset the effect of income inequality needed to be reviewed in terms of parental health seeking behavior given that one of Delaware's goals is to increase the rate of developmental screenings being completed. Furthermore it would be beneficial to children to offset the childhood obesity problem by having effective parent education at the preschool, home, or primary care visit.

Language and Home Literacy Environment

Culturally and linguistically diverse households participate in Head Start. Approximately 61% of participant households speak a language other than English – most typically Spanish. Approximately 18% of families do not have children's books written in English at home and 14% watch television programs in a language other than English. Not surprisingly, 59% of these families read to their children in a language other than English. In addition, reading to the child at home at least three

times during the past week occurred in only 66% of Hispanic/Latino families and 78% African American families, compared to 88% Caucasian families. Approximately 15% of these children have one or more disabilities, and of those children, speech and language disabilities (86%) and/or cognitive challenges (27%) are prevalent (Hulsey et al., 2011).

Socialization Skills

According to teacher reports, socialization and behavior issues such as being withdrawn were more commonly displayed by Caucasian children than African-American or Hispanic/Latino children. Hispanic/Latino families were reported by teachers as having more social skills, fewer aggressive and hyperactive behaviors and higher approaches to learning scores. African-American children were described as having fewer social/cognitive skills including poor attention, less organization/impulse control, and lower physical activity level than other children (Hulsey et al., 2011). The impact of these disparities on health literacy and health services behavior need to be studied.

Healthcare Disparities and Childhood Obesity

Achievement of developmental milestones is checked by EEC programs or other services with indicators such as the Ages & Stages Questionnaire (ASQ) or Early and Periodic Screening Diagnostic and Treatment (EPSDT) benefit of Medicaid, among other types of developmental assessments. Head Start uses these and other indicators for measuring children's health status.

In terms of healthcare disparities among the 2009 cohort, Hispanic/Latino children were less likely than others to have a regular health care provider, but are more likely to have had a dental checkup in the past year. Approximately 17% of children have a BMI indicating overweight status and another 17% of children are obese. Poor knowledge of healthful behavior and poor nutritional practices may explain some predisposition to the risk for overweight and obesity. Although 67% of children had milk at least twice a day in the past week, approximately only one-third are consuming the recommended servings of fruits and vegetables and a majority (71%) are consuming soda or sweetened beverages (Hulsey et al., 2011). Inquiry into disparities in nutrition education, therefore, are needed.

A major strength of Head Start is its comprehensive approach. Beyond education goals, it is an ideal intervention site for health promotion efforts such as obesity prevention. *About 34% of the 2009 cohort of Head Start children are overweight or obese, most consuming sugary beverages and close to three-fourths do not get adequate servings of fruits and vegetables (Hulsey et al., Hughes, Gooze, Finklestein, and Whitaker, 2010).* However, funding is needed for staff time and access to fresh fruits and vegetables considered to be expensive. *Both teacher and parent training is needed about healthy diet and exercise and awareness of cultural beliefs about what is a healthy weight (Hughes, et al., 2010*).

Obesity and risk factors for diabetes are present in many low-income preschool children, particularly in the Hispanic population and other minority families (Piziak,

2014). One Texas study found that obesity remains elevated among poor families due to lack of neighborhood play areas (Piziak, 2014). Behaviors that also have led to these risk factors include consumption of sugary beverages, and sedentary behaviors from watching television and playing video games. One intervention amongst Head Start children in Texas included a physical activity video which was perceived to increase knowledge and activity amongst the participants, (Piziak, 2014). Therefore, health messaging through the introduction of a physical activity intervention was supportive to health promotion among preschoolers.

In a Michigan study, those who participated in Head Start had a healthier body mass index (BMI) compared to a comparative group of non-Head Start participating children amongst families. Some were Medicaid beneficiaries (Lumeng, Kaciroti, Sturza, Krusky, Miller, Peterson, and Reischl, 2015). This finding indicates that Head Start has the potential to be a positive influence in promoting healthful behaviors that manage BMI and other health risk factors in children. More supports for health literacy and positive health behavior choices in a Head Start program are needed. In a Minnesota study for Head Start, 32 percent of children were obese amongst families where English is spoken as a second language. Mexican-American families had a higher BMI than other ethnic groups, (Hu et al., 2010). These findings suggest that health messages in a Head Start setting are important for minority families and that further study is needed because some programs are improving health status, while others are not.

One specific area related to these issues is how literacy improves well-being across time with Head Start programming support (Puma, Bell, Cook Heid, Lopez, 2006). For many low-income families, English is spoken as a second language, low literacy is common as well as poor behavior choices in nutrition and physical activity (Hu et al., 2010; Piziak, 2014). In one study, parental perception of child obesity was lower due to influences of lower health literacy and other associated variables including child's age, gender, and ethnicity (Tomkins, Seablom, and Brock, 2015). It is possible, that due to low literacy, cultural perspectives, parental modeling, that health knowledge and health literacy, are also lower. This trend, in turn, may create a home environment where healthful behavior practices are not followed as often. Families are then left at risk for chronic conditions such as obesity and poor mental health status that stems from poor health literacy and poor nutrition and physical activity as a result.

Parental Health Literacy in One Head Start Program

Whether to promote health literacy or how best to promote health literacy in preschool settings remains unanswered. In one Kansas Head Start pilot study of health literacy a health book was disseminated to parents to increase their health literacy about what to do if their child got sick (Herman & Jackson, 2010; Kurth 2010). The program acknowledged that less emergency room visits resulted from those that received health literacy support. It is unclear, however, if that indicated that those families then alternatively sought routine or primary care instead or if they

simply had less need for professional health services after having health information and guidance at home from the book.

Health literacy may be a primary predictor of a person's health status. Health literacy training conducted by Kansas Head Start and for those participating found that only three percent have a health book at home (Herman & Jackson, 2010). Understanding participants and their needs in Head Start or other early learning centers will help the program provide appropriate supports for health literacy. Beyond center based support, home visiting offers valuable personalized family support, time to learn, and have clarification of information, guidance, and dissemination of resources with professional, or para-professional program staff. This is another potential health promotion avenue that could show great strides during future impact evaluation studies. For both home visiting and center based programming, parental health literacy has been acknowledged as a possible need. However, to what extent health literacy supports for parents are needed require further exploration. This study delves into understanding that question by comparing center based programming differences between Head Start and Non Head Start preschools on health literacy and health seeking behavior. Furthermore, Head Start policies typically inform priorities for programming, therefore, some of these influential decisions are discussed below.

The Needs of Diverse Families

Although there were generally equal rates of participation across racial/ethnic groups, results of the impact study found that more Head Start participants in the 4

year old group were Hispanic/Latino families (52%) compared to 17.5% of African-American families, or 30% of Caucasian/other families. More Hispanic/Latino children and families participated in the program in the 4 year old group than the 3 year old group. Enrollment of 3 year olds was impacted by parental perception of program support and acceptance of diverse cultural and linguistic and immigrant backgrounds (U.S. Department of Health and Human Services, 2010; Zigler & Styfco, 2004). These findings imply that in order to incorporate a health literacy program, approximately half the materials should be available in both English and Spanish and parent education groups should include speakers that can adapt conversations about nutrition and physical activity for families of diverse background. Understanding parental perception of being offered educational components from the preschool may be relevant in order to obtain further participation. Therefore, additional inquiry is necessary to compare across different parent samples for whether or not nutrition and physical activity health education components were offered from their affiliated preschool either at the center or through home visits. This information may help to increase program planning for how to support increased parental health literacy and effective response to health seeking behavior in primary care.

Overall Findings from the FACES Impact Study

Significant results in support of the program's positive impact on preschool experiences and school readiness were found. The 4 year old cohort benefited from cognitive development and language and literacy in terms of: vocabulary, letter-word

identification, spelling, color identification, letter naming, as well as dental care access. The 3 year old cohort benefited from similar domains as well as phonological processing, motor skills for pre-writing, applied math skills, access to dental care, parent reading to child, family cultural enrichment activities, and mitigating: hyperactive or withdrawn behavior, and decreased parent spanking (U.S. Department of Health and Human Services, 2010). Parent participation through family support also showed benefits from increased shared reading. Therefore, literacy and cognitive development supports are presented early which may support healthy literacy programming. Possibly shared reading of health education materials for both parent and child would benefit the family as a whole. Further inquiry is needed about the member of health books at home that may offer opportunity for increasing health literacy of both parent and child.

Head Start program began as a way to break the cycle of poverty and close the gap of disparities specifically for disadvantaged children through early education and care. Although access disparities exist for any center based enrollment, only 51% of families below the poverty threshold and 55% of children from household income of $20-30K are enrolled in preschool compared to 60% of families with incomes above poverty threshold and 84% of families with incomes of $75-100K (Wright, 2011). (Also, that possibly means, less families being referred for child well visits and completing developmental screenings.) The eligibility expansion trend should be examined in relation to the supply and demand of alternative preschool settings.

Although all children are deserving of quality early education and care, perhaps the Head Start program should limit income eligibility so that more seats are available to those of low-income who do not have an alternative affordable preschool option elsewhere (Zigler & Styfco, 2004). On the other hand, more students enrolled makes a difference in overall numbers of children accessing early education and care. Still, increasing preschool enrollment in high quality programs should be a main focus and goal, especially for low-income children, because they have more limited opportunities for education and working on guided enhancement of health domains. Furthermore, literacy skills for both parents and children are recommended to help offset poor education or work achievements later that impact overall literacy rates. The more efforts toward literacy and health literacy that are invested early on from preschool through the family systems perspective, the better equipped families will be to provide quality care and supports for themselves in the future.

As part of program standards, Head Start provides coordination for access to a patient centered medical home for participating families who do not already have one, in order to help increase the number of families getting to primary care, dental care, and mental health care. The U.S Department of Health and Human Services (2018), Program standard CFR 1304.20 Child health and developmental services, states:

> (i) Make a determination as to whether or not each child has an ongoing source of continuous, accessible health care. If a child does not have a source of

ongoing health care, grantee and delegate agencies must assist the parents in accessing a source of care;

(ii) Obtain from a health care professional a determination as to whether the child is up-to-date on a schedule of age appropriate preventive and primary health care which includes medical, dental and mental health. Such a schedule must incorporate the requirements for a schedule of well child care utilized by the Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) program of the Medicaid agency of the State in which they operate, and the latest immunization recommendations issued by the Centers for Disease Control and Prevention, as well as any additional recommendations from the local Health Services Advisory Committee that are based on prevalent community health problems.

Once families get to primary care, their level of health literacy may impact the quality or effectiveness of their experience. Although language interpreters are often made available at visits, there is an additional need to also comprehend the medical instructions. Head Start is an ideal potential health promotion site for parents to receive support in health literacy skills because programs are already encouraged by policy goals to improve this effort. Therefore, routine assessment of parental health literacy would seem to be a necessary practice. Appropriate health literacy assessment tools seem limited to measuring the understanding of a nutritional facts label with "The Newest Vital Sign" by Pfizer, until the recent development of the Gibbs Nutrition Literacy Assessment Instrument, which is a more comprehensive survey, is made available (Pfizer, 2007; Gibbs & Chapman-Novakofski, 2013; Zoellner, You,

Connell, Smith-Ray, Allen, Tucker, Davy, & Estabrooks, 2011). Health literacy pertaining to nutrition is important for low-income parents of preschool children in order to avoid either malnutrition or overnutrition. Parents have significant influence on their children's health habits especially during early years (Santrock, 1998). Therefore, it is important to build healthy habits early on if knowledge and opportunity are present.

In addition, although several studies about Head Start program impact have occurred, the relationship between health literacy and frequency of health seeking behavior for primary care among Head Start participants has not yet been thoroughly explored, (Institute of Medicine, 2004; Kurth, 2010; Mackian, 2005; Zigler & Styfco, 2004).

Conclusion

The Head Start programs might offer more in terms of parent education, developmental screenings, and health care referrals equipping parents and children to close the gap in reaching developmental milestones between low-income and other income groups. However, Non-Head start programs also need to make sure there are partnerships with parents who have basic health literacy, and primary care sites who are monitoring the developmental progress of young children in a cost-effective way. Some Non-Head Start programs do not claim to offer these basic program needs for developmental screenings and health care referrals, but should as a typical standard of care. The motivation for participating in these efforts is possibly to attain a higher

quality rated program and consequently financial reimbursements accordingly in addition to providing comprehensive supports for school readiness of the children.

Chapter 3

PRESCHOOL AS A HEALTH PROMOTION VENUE IN DELAWARE

Introduction

The preschool setting typically utilizes a family systems approach to providing early education and care for young children. This chapter reviews quality and access related childcare policies, policy problems, policy solutions, and the policy actors involved in early education and care programming. The review furthers understanding of the influence of parent health education and health care referrals that promote optimum welfare and health status of the child. Income disparities, however, place children into different school types (associated with varied funding resources) that aim to bridge the gaps in learning and health status that may occur from socioeconomic risk factors. Therefore, it is worth an exploration of programming policies and funding source differences in order to best promote parental access to health information/ improved levels of health literacy. Parents with improved health literacy, then, in turn, can work in conjunction with preschool programming such as completion of developmental screenings and health care referrals to pediatric primary care to ensure comprehensive health services.

The Head Start program is federally funded and provides robust services for low-income families. A policy problem then emerges: What about educational services for other income groups? Kamerman & Gatenio-Gabel (2015) states, that according to the U.S. Census, "In 2002, 11.6 million children or 63 percent of the 18.5 million infants, toddlers and preschool children under age 5, were receiving some type of care other than from their parents on a regular basis."

Programs that are paid for out of pocket by parents or subsidies also offset costs for preschool attendance. Although no federal policy exists requiring early education and care, one policy solution offered is universal pre-K which refers to legislative efforts and practice efforts to offer any child in the United States, a quality preschool opportunity, regardless of family socioeconomic status, children's abilities, or other factors. The recent policy status to this effort is that several states are still on the path to funding universal pre-K, however, Delaware has not yet adopted this requirement. There are several actors who participate in decision making regarding early education policies that support universal pre-k. The visible policy actors at the federal level include: the President of the United States, the Secretary of Education, the Department of Education and the Department of Health and Human Services. At the local level, level, actors include the State Department of Education, State specific Early Childhood Councils, preschool directors, and teachers. As of 2015, in Delaware, it was estimated that 635 children participated in state sponsored Pre-K. If universal Pre-K were implemented, then 85.8% of all three and four year olds, an

estimated 19,574 children, would have access to a high quality early education, (Lynch & Vaghul, 2015). Accessing high quality preschools is otherwise possible through nonpublic programs. When reviewing supply and demand for educational services for four year olds, overall, across most U.S. states, preschool programming is under- utilized (U.S. Department of Education, 2015).

Preschool as a Health Promotion Venue

A comprehensive approach to children's development is necessary: "Parents, child care center directors, and health professionals believe that enhancing health promotion education in child care could improve child health. Collaboration between pediatricians and early care and education professionals has the potential to improve the breadth and effectiveness of health promotion education," (Gupta, et al., 2005). Therefore, to offset poor health or weight management issues in a child's early years: developmental screenings, health care referrals, and an annual routine well visit to primary care should be a routine family practice. Low-income families sometimes have less access to high quality preschools, however, Head Start may offer opportunity to mitigate race disparities in this occurrence. (Magnuson and Waldfogel, 2005).

Many EEC programs are ideal intervention sites because of the whole child and family systems approach to education. Health care at this age attempts to be comprehensive in its goals for children and their parents. Goals often address development of socio-emotional skills, cognition, and motor skills from physical

development, with the knowledge of healthy relationships, problem-solving, literacy, and nutrition and physical activity. Goals often extend to work beyond the teacher and child dyad to a relationship between the school and parent or community in support of the child as well (Crawford, Schneider, Martin, Spezzano, Algert, and Ganthavorn, 2013).

As an ideal health promotion and intervention site, some preschool settings are beginning to promote parental health literacy skills through policy, staff education, and parent education support. Therefore, preschool locations that equip parents both with health literacy supports as well as the necessary referrals to get to pediatric primary care are then better able to discuss and support children's health status which concurrently supports a child's predisposition for learning, brain development, physical (fine and gross motor skills) and cognitive growth, interacting for developing socio emotional skills, and problem solving abilities. The history of the need for preschool is reviewed in this chapter along with establishment of their typical standards, priorities, and policies that impact health status of children. The Delaware context for quality preschool programming is provided with a description of state standards and quality rating improvement systems.

Funding for Early Education and Care

Federal funding supports both direct services and quality improvement initiatives. For example, the Race To The Top Early Learning Challenge (ELC) grant program is a policy instrument by the U.S. Department of Education and U.S.

Department of Health and Human Services which outlines goals for implementation towards high quality preschool programming including universal Pre-K, (White House Brief, 2013). Overall, the program provides, 370 million dollars of funding for early learning initiatives serving 211,000 (U.S. Department of Health and Human Services, 2014). Delaware was a recipient of $50 million in 2012's Early Learning Challenge Grant competition (Delaware Institute for Excellence in Early Childhood, 2018). According to Kamerman & Gatenio-Gabel (2015) and the U.S. Department of Health and Human Services (2014), other federal funding resources include:

1) The Child Care and Development Fund, $5.3 billion serving 1.5 million children;
2) The Preschool Development Grant Program, $250 million serving 34,000 children in 230 to 250 high need communities;
3) The Federal Child and Dependent Care Tax Credit, $3.3 billion serving 6.2 billion children;
4) Head start/ Early Head Start, 8.6 billion serving 1,034,000 3 to 4 year old children/pregnant mothers and very young children below the age of 3 years; Administered by DHHS, Administration on Children and Families, Kamerman & Gatenio-Gabel (2015) describe the program as providing: "direct grants to local programs providing comprehensive early childhood development, educational, health, nutritional, social and other services to primarily low-income preschool-aged children and their families. Most Head

Start programs are part-day through the school year, though some local grantees coordinate with other programs to provide full-day care," (p.31).

5) Individuals with Disability Education Act (IDEA) which provides special education services for youth with disabilities age, 3 through 21 years old. Part C, is early intervention program for infants and toddlers with disabilities, $438.5 million serving 338932 children;
6) IDEA Part B, preschool grants for children with disabilities, $353.2 million serving 730588 children;
7) Social Services Block Grant, Title XX of the Social Security Act., $238 million;
8) "The Child and Adult Care Food Program provides federal subsidies for breakfasts, lunches, suppers, and snacks meeting federal nutrition requirements that are served in licensed child care centers, schools, and group and family day care homes to children age 12 or under. It is administered by the U.S. Department of Agriculture's Food and Nutrition Service and was funded at $2.1 billion in 2005" (p.31)
9) State Child and Development Care Tax Credit:

Generally, the child care and development fund is administered by the DHHS Administration for Children and Families with the following policy stated by Kamerman & Gatenio-Gabel (2015):

The Child and Dependent Care Tax Credit in the Internal Revenue Code is a

> nonrefundable tax credit for expenses related to the care of a dependent child less than 13 years old, or a mentally or physically incapacitated spouse or dependent. In 2006, the maximum credit for one dependent was 35 percent of the first $3,000 spent on the care of one child and $6,000 for two or more. In 2005, the tax credit was valued at $2.7 billion. The tax credit is administered by the U.S. Department of Treasury, Internal Revenue Service. (p.31).

In 2006, over $5 billion was allotted for the block grant, and $2.2 billion matched with state funds and $1.2 billion from the welfare funds for Temporary Assistance for Needy families (TANF) (Kamerman & Gatenio-Gabel, 2015 & U.S. Department of Health and Human Services, 2016).

The availability of high quality preschool programs is necessary for all income groups, but some designated funding exists specifically for programs that serve low-income groups, like Head Start, in order to bridge the gap in achieving developmental milestones (U.S. Department of Health and Human Services, 2018). Low quality preschool programs are characterized by lack of developmental screening, lack of health care referrals, and lack of parent education that includes information about nutrition and physical activity. Because children from all income groups attend programs with various quality ratings, it is important to afford all the optimum quality early education and care possible, so that no income group falls behind (Karoly, Schwartz, Setodji, & Haas, 2016). The result of attending low quality programs may be that 1) possibly fewer children are being checked for attaining developmental milestones or developmental delays if screenings are not required by the programs, or less opportunity for early intervention from developmental delays not identified 2)

those families may lack a patient centered medical home (regular primary care) and 3) lower health literacy from lack of parent education support, which then leads them to overuse costly emergency rooms.

Given the successes after the adoption of Head Start, which serves low-income families, the program was last reauthorized, and the budget by the Trump Administration to fund comprehensive early education programs for low-income children was approximately $9.25 billion dollars (U.S. Department of Health and Human Services, 2018). This funding allotment is "an increase of approximately $85 million over the fiscal year (FY) 2016 funding level," (U.S Department of Health and Human Services, 2018). In 2014, prior to the most recent reauthorization of ESEA, preschool development grants were a policy instrument, disseminated to 18 states with $250 million in funding for 33,000 students in 200 high need communities (Lieberman & Bornfreund, 2013). The grants were a joint effort of federal level actors: the Department of Health and Human Services and the Department of Education. Given in two parts, some states received preschool development grants, while others received expansion grants for Race to the Top efforts (Lieberman & Bornfreund, 2013).

For families whose gross income falls below 125% of the federal poverty line, (or below $28,290 for a family of four in 2017). Delaware also provides other family support for parents in school or who are working. "The Child Day Care Subsidy Program offers eligible households assistance with child care costs. Eligible households are those in which the parent(s) are working or attending high school and

meet the income guidelines as well as other eligibility criteria listed in the Child Care Subsidy application," (Delaware Opportunities, 2018).

Child Care Program Characteristics in Delaware

This section begins with a description of Delaware Child Care characteristics. According to the 2015 Delaware Code for Title 31 Welfare, Chapter 3, Subchapter III: The Delaware Child Care Act outlines who is a designated caregiver that is compensated for services including in basically three types of child care options: family child care to serve up to 9 children in the home who are unrelated, large family care which serves up to 14 children in the home who are unrelated, and another more structured option that is center based including early education and care centers and preschools.

The average monthly cost of child care in the state of Delaware is $640 which may be paid either out of pocket, or for low-income families: through purchase of care options (a program that allows parents to work or attend training while their child is in other care), or a federally funded programs, like Head Start. In Delaware, a licensed child care provider must include program goals that address the following developmental areas of children's progress: physical, socio-emotional, cognitive, and language/literacy. These goals are accomplished through required activity areas outlined in Standard 66F of DELACARE (2015): "Language and literacy, such as books and writing materials; Dramatic play, such as play materials, furniture, dress-up, and props; Construction/Blocks, such as unit blocks and accessories; Creative arts,

such as drawing materials, clay or play dough; and Manipulative/ Mathematics/ Problem solving, such as puzzles, small construction toys, or objects to sort."

Regarding a process check of developmental progress, screenings are required within 45 days of the child's participation with documentation and follow up or review at least three times annually. According to the State of Delaware, Office of Child Care Licensing (2015), DELACARE standards include that:

> 67A.A licensee shall have and follow an organized system for documenting the annual progress of individual children preschool - age and younger in relation to appropriate developmental and educational goals. The information gathered to document a child's progress shall be kept in the child's file and shared with the parent/guardian at an annual conference. With the parent's/guardian's permission, information may also be shared with other professionals when referring the child for special services.
>
> 67B. A licensee shall ensure that with the approval of the early childhood administrator or early childhood curriculum coordinator, individual plans are developed for each infant and toddler in care within 45 days of the first day of attendance. The plan shall include both age and individually appropriate goals and describe specific developmentally appropriate activities and experiences to be provided by staff in support of these goals. Staff shall record these and note developmental milestones, accomplishments, and concerns. Plans shall be reviewed and updated at least three times over a one year period. This information shall be shared with the child's parent/guardian. (p.46).

Beyond licensing, accreditation is one indicator of high quality early education and services. There are independent evaluation services for this purpose of meeting national standards. Guided by the federal standards, the Quality Rating Improvement system (QRIS) also addresses improvements in the quality of early education and care.

Delaware's version of QRIS is called "Delaware Stars for Early Success" and is managed by the Delaware Department of Education.

Quality Rating Improvement System (QRIS)

According DHHS (2015), Administration for Children & Families, requires participation in the Quality Rating and Improvement System (QRIS) for tiered reimbursement funds that help EEC programs assess and improve their program quality. QRIS is intended to bridge the gap between licensing and accreditation standards. There is financial assistance through direct or portable subsidies and other financial incentives to meet quality standards. As part of QRIS efforts in Delaware, many EEC programs participate in Delaware Stars, a quality rating and improvement system on a five star scale. The domains of the Delaware Stars standards include: 1) Family and Community Partnerships, 2) Qualifications and Professional Development 3) Management and Administration, and 4) Learning Environment and Curriculum which lists developmental screenings as a requirement now for highly rated programs. Programs may implement these domains differently. Also, some programs, like Head Start provide health referrals and others do not. For those, like Head Start, that do provide health referrals for primary care, dental care, and mental health screenings, this type of service connecting to a child's medical home may lead to better child health outcomes and school readiness by bridging health supports directly to the family.

Delaware has a revised Quality Rating Improvement System (QRIS). From prior evaluation, a new objective was established to offer specialized support to improve quality instruction in the classroom. To this end, Delaware added two Infant-Toddler specialists to its QRIS technical assistance group. The Ages and Stages Questionnaire is a standardized developmental screening tool. The state is trying to streamline its use in early childhood development programs including early care and education, child welfare, and maternal and child health programs. Training was implemented for regular use of the tool as goal for end of 2013 (Zero to Three, 2013). In order to manage challenging behaviors in young children effectively, early childhood mental health consultants were hired. Regarding health care referrals, health ambassadors and a new call center have been integrated into comprehensive programming with attention to managing mental health and socioemotional and behavioral health needs (Zero to Three, 2013).

The analysis plan for implementing these Delaware goals include that monitoring and evaluation is needed for several items, for getting "clear, actionable, and reliable information," (Weiss & Gruber, 1984, Zero to Three, 2013). First, the number of qualified early childhood education (ECE) teachers needs to be increased and then retained in programs. Then, monitoring of training for teachers and supplemental salary utilized should be completed. Second, a statewide database is needed for monitoring the attainment of timely child development milestones so that outcome data can be linked to quality instruction across the year or several years.

Third, where intervention is needed, health care referrals should be tracked to identify any prevalence of problematic behaviors that need further support from qualified personnel. Fourth, equipment in the form of computers and database software is needed. Then, trained staff capable of using the software need to be hired to work cohesively with professionals in the classroom and others that offer technical support to those in the classroom (Zero to Three, 2013).

One model of early education and care was suggested by the Alliance for Early Childhood Finance (2008). In a cyclical rotary the components that inform one another and ultimately compose a quality early care and education system are: "1) Quality Standards for Programs and Practitioners, 2) Professional/Program Development to meet/maintain standards, 3) Monitoring and Accountability to ensure compliance with standards, 4) Ongoing Financial Assistance linked to meeting standards, and 5) Engagement and Outreach for selling the vision," (Tarlov & Debbink, 2008). These components are necessary for ongoing process checks of any preschool program that is trying to make sure its standards are being met. Given the many criteria in the QRIS system, following a model like this may be helpful for incorporating a health literacy and health referral piece for increasing health seeking behavior to primary care. In addition, adding a requirement for the completion of developmental screenings within this model may be useful for improving both the quality of the preschool program and the health status of the preschool going child. Prior to the appointment, staff training about health literacy skills may not always

transcend to parent knowledge, however, unless specific health information skills building is introduced.

In regards to implementing any policy, Alexander (2013) talks about why implementation plans do not work due to lack of organizational readiness. Duke (2004) explains individual readiness, organizational capacity, and community capacity are all necessary for successful program implementation such as teacher retention. Duke (2004) "advises leaders to overcome resistance by identifying people who are resisters and noting their reason(s) for resistance." Possibly, the very people we need in the classroom are resistant to participation due to low wages and there is an opportunity cost of a better paying job. Other resisters are the community who may not value early education and care without the knowledge of its benefits. Without awareness, investment by the community and advocacy for better paying wages may be low.

For families whose EEC programs do not refer to other health care resources, getting to primary care is possibly a first step in accessing guidance for nutrition to prevent obesity or malnutrition as well as access to dental visits, mental health screenings, and social services for additional support. Programs that do refer for health care, may be associated with a higher star quality rating than others.

The Delaware Institute for Excellence in Early Childhood (2018), states:

> Delaware Stars for Early Success is a Quality Rating and Improvement System (QRIS). A QRIS is used to assess, improve and communicate the level of quality in early care and education and school-age settings. Participation in Delaware Stars is voluntary and demonstrates a program's commitment to continuous quality improvement. Ratings for Delaware Stars are based on two key components: 1) a formal assessment of the program environment using the ERS (Environment Rating Scales) which is a reliable, independent observation of the program's classroom or home environment; and 2) a verification that the program meets high quality standards in four areas: Family and Community Partnerships, Qualifications and Professional Development, Management and Administration, and Learning Environment and Curriculum. Delaware Stars is a five-tiered rating system. Programs begin in a "Starting with Stars" phase and then are rated from 2 to 5 Stars. (p.1).

The Delaware Stars quality rating system has several components for early education and care programs to follow while working on quality improvements for their centers. In Delaware, this is part of meeting of a quality improvement system of guidance to bridge the gap between licensing and accreditation standards. Of these criteria, the family and community partnerships domain or learning environment and curriculum are domains where health literacy can be promoted to help the programs earn points towards improving their quality rating and potentially qualifying for funding resources to further build that effort. From Delaware Institute for Excellence in Early Childhood (2018), three out of 100 points are allotted for the following standard: "Program implements a child developmental screening for all infants, toddlers, and preschoolers enrolled annually." One out of 100 points are allotted for the following standard: "Program conducts conferences with families at least twice annually." Two out of 100 points are allotted for the following standard: "Program

partners with families with children with diverse needs." Two out of 100 points are allotted for the following standard: "Program systematically gathers information from families and uses data to inform program planning annually."

Non-Head Start programs may have less comprehensive ways of achieving these standards than Head Start. Consequently, either their Stars quality rating may be lower or the potential for health supports may be left unmet. This study is trying to understand the differences. Possibly tiered `reimbursement funding would encourage money to be spent on training towards these types of goals in the future if this study could establish the positive benefit of money spent towards health literacy training, developmental screenings, and health referrals for all sites. Early education and care programs typically support the comprehensive development of a child. "Infant-early childhood mental health (I-ECMH) is the developing capacity of the child from birth to 5 years of age to form close relationships, manage and express emotions, and explore the environment and learn" (Zero to Three, 2016). These are primary activities for a young child and for EEC programs to support. Therefore, as early child development entails good socio-emotional wellness, cognitive-behavioral health, and nutrition and physical activity, these components of a health and wellness domain are best supported through specific family-school-and community partnerships via referral, promotion of family skills needed, and environmental opportunity through school, home, and community to implement positive health behaviors.

The Importance of Improving Developmental Screenings in Delaware

Early learning program standards typically recommend developmental screenings and wellness visits to be completed at either primary care sites or the early learning center as part of health promotion and quality adherence to program standards (Delaware Institute for Excellence in Early Childhood, 2018). Often times, developmental screenings are completed by a parent and then discussed with a teacher at an EEC site. As part of the Delaware state ranking system for quality in early childhood education and care, the Delaware Stars program requires that developmental screenings must be obtained for those programs to achieve a rating of 4 or 5 on a 100 point, 5 star scale (Delaware Institute for Excellence in Early Childhood (2018). Possibly there are barriers to actually accessing needed care identified by the screenings, due to poor health literacy and not knowing how to navigate a system of care, (Sanders, Shaw, Guez, Baur, Rudd, 2009).

In 2007, Delaware was last in the ranking of states for attaining developmental screenings for preschool age children. As of 2012, Delaware ranked as twenty-one, out of all states, with further effort needed (NICHQ, 2018). More recently, 2018, the rank is worse at 36th in the nation for the completion of developmental screenings (United Health Foundation, 2018). It is estimated, as of 2018, that the average percent of children who have had a developmental screenings in Delaware (23.2%) is still lower compared to the rest of the nation (27.1%), (United Health Foundation, 2018). Therefore, the issues of identifying developmental progress through screenings and referrals is necessary to prevent certain chronic health issues like obesity. Head Start

versus non Head Start programs might approach this effort differently or not at all. This study is a first step in understanding what different programs are doing in terms of providing parental nutrition and physical activity information in parent education which may be associated with parental health literacy and subsequent health seeking behavior and perceptions of the quality of that care. These factors in turn are associated with child health outcomes pertaining to healthy child body mass index.

Possibly, in order for health care referrals to be successful, the receiving primary care site needs to be a quality location and the attendees need to have a good level of health literacy. However, different levels of these characteristics or opportunities often result in foregoing regular primary wellness care and resorting to emergency room visits instead. Prevention of unnecessary emergency room use could be achieved by promotion of health literacy and referrals to primary care during family and community engagement meetings from the EEC site (Kurth, 2010). While both Head Start and Non-Head Start programs may have family and community engagement meetings, and developmental screenings or progress of the child may be discussed, not all of these meetings are used necessarily for the opportunity of exploring health literacy and health care referrals. As of now, these referrals and health literacy trainings are not required by all EEC sites (Delaware Institute for Excellence in Early Childhood (2018).

High quality preschools, like Head Start, support the completion of developmental screenings and health care referrals. Lack of enrollment in a quality

preschool could result in lack of completion of developmental screenings and health care referrals, which then lead to undetected unhealthy weight and related health issues among young children. Furthermore, parent education classes are not offered consistently in all preschools, and when they are they are not always attended by the parents. Consequently, lower health literacy may exist for maintaining a healthy weight.

Therefore, the "2007 National Survey of Children's Health placed Delaware as last in the country for the percent of young children (between 10 months to 5 years) who received standardized developmental screenings during visits," (NICHQ, 2018). Thus, during the past ten years or so, there has been a dire need to improve the low rate of developmental screenings in Delaware. By 2012, Delaware ranked 21 out of all states for completion of this task, (DE Department of Education, 2016; NICHQ, 2018). Before 2007 it was observed that primary care clinics had little time to complete a developmental screening in addition to a regular wellness visit. Alternative venues were needed, such as non-clinical settings like early education centers and kindergarten, (NICHQ, 2018). Delaware's Division of Public Health has received several grants, to support improvement efforts, including federal funding from the Maternal and Child Health Bureau, for improvements in early childhood health systems of care (NICHQ, 2018). Funding towards improving the rate of developmental screenings, also includes the Early Learning Challenge Grant (Race to the Top) and the Maternal, Infant, and Early Childhood Home Visiting Program

(MIECHV). Barriers to health supports for health providers and parents are mitigated with the Delaware 2-1-1 call center for information and referrals. Early education providers receive support through Delaware STARS trainings for improving status on the Delaware Quality Rating Improvement System (QRIS) by adhering to completion of developmental screening and correctly interpreting those results (NICHQ, 2018).

Developmental screenings review how well or closely a child is reaching the average standards of developmental milestones. Once the child is tested, parents or providers complete an associated questionnaire. "The American Academy of Pediatrics recommends developmental and behavioral screening for all children during regular well-child visits at these ages: 9 months, 18 months, and 24 or 30 months," (CDC, 2018). In one example of a Pediatric Developmental Screening Flowchart provided from the CDC (2018) activities that take place post-screening inform where to consider additional intervention strategies. This figure illustrates a proposed continuum of care once a family attains a clinic appointment.

Health Care Referrals and Health Seeking Behavior for Pediatric Primary Care

Once a developmental screening has been completed, pediatric primary care or specialty care may be sought for managing concerns such as overweight and obesity. To what extent or degree primary care is sought for necessary interventions and information may be dependent on a combination of parental heath literacy, rate of developmental screening completion, rate of referrals, and perceptions of health care quality. Therefore, parental health seeking behavior is important to explore between

two different income groups to determine if promoting parental literacy in combination with the completion of developmental screenings can help mitigate the problem of childhood obesity in preschool age children.

Some communities follow a specific health care seeking pattern based on socio-cultural factors. Therefore, when providing services it is important to understand the differences that exist when trying to increase health literacy or any other wellness effort. Perceptions of health care quality, level of health literacy, and other characteristics may mediate frequency of health care visits. For example, culturally, Black Americans, place a "strong emphasis on family bonding and childrearing, a strong authority structure, the importance of spiritualism…present orientation, trust, and individual moral 'strength' compared to mainstream values-individualism, autonomy, achievement, future orientation, and mastery," (Bailey, 1987). Possibly there is also a cultural factor of an "increased tolerance for illness" (Bailey, 1987). Therefore, perhaps, although people are not well or do not have their optimum wellness, they may delay seeking care or avoid care by accepting a less well status. Related to this type of behavior or lifestyle, there are ethnic group differences in knowledge and attitudes towards health care seeking behavior and self-care possibly due to other social determinants of health like discrimination or perceived effects of discrimination. Therefore, a bad experience may lead to less health care seeking behavior thereafter. Low literacy and low-income might be associated factors that lead to poor health literacy and health status due to less use of primary care support.

In one study, (Zoellner, et al., 2011), health literacy and quality of dietary intake was reviewed regarding consumption of sugar sweetened beverages. Increases in health literacy were associated with less consumption of sugar sweetened beverages. Characteristics of participants in the sample from Mississippi included that a majority of the people were African American, low-income and participants in the Supplemental Nutrition Assistance Program.

Among Hispanic families, characteristics of religious faith coincide with wanting someone to trust regarding health care, which along with the perception of more serious symptoms of health concerns led to more prompt physician visits/health seeking behavior from someone they could trust. Perceptions were mediated by past experiences and wanting medical help from someone who is close in trustworthiness (Larkey, Hecht, Miller, Allatore, 2001).

Conclusion:

Quality improvement in early education and care services has improved with some great strides in provision of family support, however, further improvements are needed. Furthermore, the intersection of preschool education and comprehensive care through referral services and pediatric primary care medical homes are increasingly necessary to offset chronic health conditions, and respond to early intervention needs to better prepare for educational success. If there is any room for improvement, perhaps, highly rated programs, like Head Start could provide parental health literacy supports as a regular part of their staff and parent education. Quality Rating

Improvement Systems are necessary to ensure robust services. Then, the impact of completing developmental screenings and referrals results in effective support both identifying early intervention needs and for pediatric primary health care utilization.

Chapter 4

CONCEPTUAL FRAMEWORK

Introduction

Characteristics of high or low health seeking behavior by parents may be mediated by the predisposing factors of demographic characteristics, high or low parental health literacy, and healthcare referrals from the EEC program for various health and social service needs. High quality preschools' support for children's health outcomes towards weight management is researched in this study by measure of the level of parental health literacy scores (a needs assessment for parental nutrition health literacy and functional health literacy), and education and health care referrals to utilization of pediatric primary care. Without health care referrals, some families avoid routine care, and rely on expensive emergency room visits. Coping with chronic illness or a health issue by seeking routine clinical care, instead of emergency room (ER) use, may be more frequent in those families who have learned what to do when their child needs health support. Differences may exist in Head Start and Non-Head Start programs based on differences in staff training, parent education, and completion of developmental screenings.

Developmental screenings review how well or closely a child is reaching the average standards of developmental milestones. Once the child is tested, parents or

providers complete an associated questionnaire. "The American Academy of Pediatrics recommends developmental and behavioral screening for all children during regular well-child visits at these ages: 9 months, 18 months, and 24 or 30 months," (CDC, 2018). The Pediatric Developmental Screening Flowchart provided from the CDC (2018) presents the activities that take place post-screening. The diagram informs where to consider additional intervention strategies. This figure illustrates a proposed continuum of care once a family attains a clinic appointment. In a sense, the model represents a continuation beyond the original proposed model for this study, depicted in Figure 2, which evaluates health utilization up until the critical point of getting to pediatric primary care. The pediatric developmental screening flowchart represents a second tier of opportunity for where parental health literacy supports can then further benefit the child in the clinical setting. Potential interventions occur for parent education and improved child health when the physician discusses screening results and concerns with the parent.

Parental health literacy levels are important to understand before getting to the clinical setting, however, because of the lack of time available to review both parental health literacy and children's health in the same clinic visit. Therefore, how preschool provides early intervention from a family systems perspective may result in better child health outcomes and trajectories for family wellbeing. For example, health literacy skills for nutrition and physical activity through parent education programs offered through center based or home visiting support for preschool children and their

parents. Different health literacy models and definitions have been offered in the literature (Sorensen, Van den Brouke, Fullam, Doyle, Pelikan, Slonska, and Brand 2016). Therefore, some conceptual models of health literacy are important to review. Nutbeam's 2008 model for health literacy establishes a clinic perspective that may be considered in line with the CDC's pediatric developmental screening flowchart.

These flowcharts are juxtaposed with Green & Kreuter's Precede Proceed health promotional approach that can be applied in nonclinical education settings. Nutbeam is important to describe because it establishes that parents' skill level when going to clinical care at times reflect that they are unprepared to comprehend the health information provided. Therefore, parent education for those with young children are important to support prior to the appointment. The Precede Proceed model then provides a nonclinical guide for where to intervene, possibly in the preschool setting from a public health strategic approach. This chapter reviews both of these models and then offers an original logic model for this study.

The Nutbeam Model for Health Literacy

One perspective of health literacy is to define these types of skills as individual capacities within a clinical context. "The Institute of Medicine considers cultural and conceptual knowledge, listening, speaking, arithmetical, writing, and reading skills as the main components of health literacy," (Sorensen, et al., 2016). Characteristics of health literacy knowledge and skills include, how to comply or adhere to medical treatment, medications, and make decisions about health care based on literacy and

numeracy capabilities. Given the IOM report that is widely accepted as providing one of the popular definitions of health literacy, the ability to obtain, process, and comprehend health information, this study considers factors that influence the frequency of parental health seeking behavior according to social determinants of health, namely, low-income and exposure to parent education.

Another perspective of health literacy, The Nutbeam model, offers a population health literacy perspective which goes beyond the individual and medical context by illustrating how attained health literacy skills allow for increased personal autonomy and empowerment in health decision making. Furthermore, these increased skills allow for better personal management acknowledging improved social determinants of health, such as income level's interaction with educational attainment and health literacy skills that involve access to the appropriate type and level of health care. The three types of health literacy addressed by the model are described by Sorenson et al., 2016, p.7:

> (1) *Functional health literacy* refers to the basic skills in reading and writing that are necessary to function effectively in everyday situations, broadly comparable with the content of "medical" health literacy referred to above;
> (2) *Interactive health literacy* refers to more advanced cognitive and literacy skills which, together with social skills, can be used to actively participate in everyday situations, extract information and derive meaning from different forms of communication, and apply this to changing circumstance; and
> (3) *Critical health literacy* refers to more advanced cognitive skills which, together with social skills, can be applied to critically analyze information and use this to exert greater control over life events and situations.

Parents need information gathering skills, analysis skills, and health decision making skills in order to provide appropriate care for their child's health. These skills are important in order to learn, hone, and support for effective comprehension and communication of health information. These skills represent the fact that there are both language and numeracy abilities that inform level of health literacy. According to Sorenson, et al., (2016), the individual must apply their basic or functional, interactive, and critical health literacy as a "patient in healthcare, as a consumer at the market, as a citizen in the political arena, or as a member of the audience in relation to the media," (p.7). Stemming from this perspective, parents of young children are considered to be both a client in the preschool market and partners for pediatric health care utilization on behalf of their children. To effectively participate in these school and health care realms, the functional health literacy, interactive health literacy, and critical health literacy skill sets are necessary.

The definition of health literacy provided by the Institute of Medicine (2004), necessitates review of how and where these skills are evaluated. "Nutbeam (2008) conceptualized health literacy as three sequential levels of competencies of ascending proficiency and complexity: functional, communicative/interactive, and critical literacy. This conceptualization of health literacy reflects a developmental approach that is expected to result in greater autonomy and self-sufficiency," (Betz, Ruccione, Meeske, Smith, & Chang, 2008, p.231). These functions are critical for parents of young children to attain, however poverty, access, or language barriers require

preschool level interventions to offset deficiencies in knowledge about child development or appropriate nutrition and physical activity standards for their young children. Many low-income families rely on emergency room visits instead of establishing a primary care medical home, so opportunities for building health literacy skills are fewer and otherwise lower literacy skills lead to worse health outcomes even after care is received (NICHQ, 2018).

In line with Nutbeam's asset based health literacy model, Betz et al. (2008) gives the example that parents and youth who have achieved a critical literacy level would be able to understand health information, from a clinical setting, and alter behavior accordingly, if necessary. Therefore, after a doctor explains laboratory results and vital sign values, if eating patterns need to be altered, the family would have gained understanding in the clinical setting in how to manage the child's body mass index to reduce the child's risk for being overweight. The approach assumes that an assessment to parental risks and assets for health literacy would have occurred.

Relevant survey measures are therefore needed to test parents' level of functional health literacy, (with the Short Test of Functional Health Literacy) for how well the individual comprehends basic medical instructions. Basic numeracy skills testing and information comprehension can be tested with the Newest Vital Sign which provides an evaluation of how well an individual reads and comprehends an ice cream label. The Newest Vital Sign evaluates both interactive and critical health literacy skills for discerning quantity and type of nutritional content. The benefit to

assessing these skills for baseline data, is that existing programming for parent education can be enhanced to better improve child health outcomes. In order to understand disparities in the attainment of these types of skills, this study also collects information about demographic background, parent education, and health seeking behavior.

Green & Kreuter's Precede-Proceed Framework

Extending the conceptual theory of Nutbeam's health literacy model which acknowledges increased autonomy and health knowledge skills building and important in the interaction of the individual as a client in the (healthcare) market, another framework is important to consider placing the individual in a given context: the preschool setting as a potential school based public health intervention site. Green and Kreuter's Precede Proceed framework (See Figure 1):

> "…describes factors influencing health outcomes and provides a comprehensive structure for a health needs assessment, program design, implementation, and evaluation of health promotion programs. The PRECEDE phases include social, epidemiological, behavioral and environmental, educational, ecological, administrative and policy assessment. The model posits that predisposing, reinforcing, and enabling factors have an effect on behavior and the environment; therefore, through behavior and environment, predisposing, reinforcing, and enabling factors have an impact on quality of life," (Hu, Wallace, Tesh, 2010, p.2).

The PROCEED component of the model includes monitoring and continuous quality improvement to measure short term and long term impact of a given health promotion effort or intervention.

For this study, therefore, it is apparent that health literacy assessments are needed as part of regular parent education that could lead to a home visit, or center based support, for increasing parental knowledge and skills in support of health care for themselves and their child for weight management. Staff training to support this effort would help improve health and likely attendance at both preschool and care coordination at medical homes for primary care, especially for those with chronic health conditions like obesity (Castellanos, Downey, Graham-Kresge, Yadrick, Zoellner, and Connell, 2013). It is therefore important to identify and target these factors in health promotion in two parts: a health literacy assessment, and then a health care utilization assessment based on intervening variables and apply a relevant framework like The Precede-Proceed model (See Figure 1).

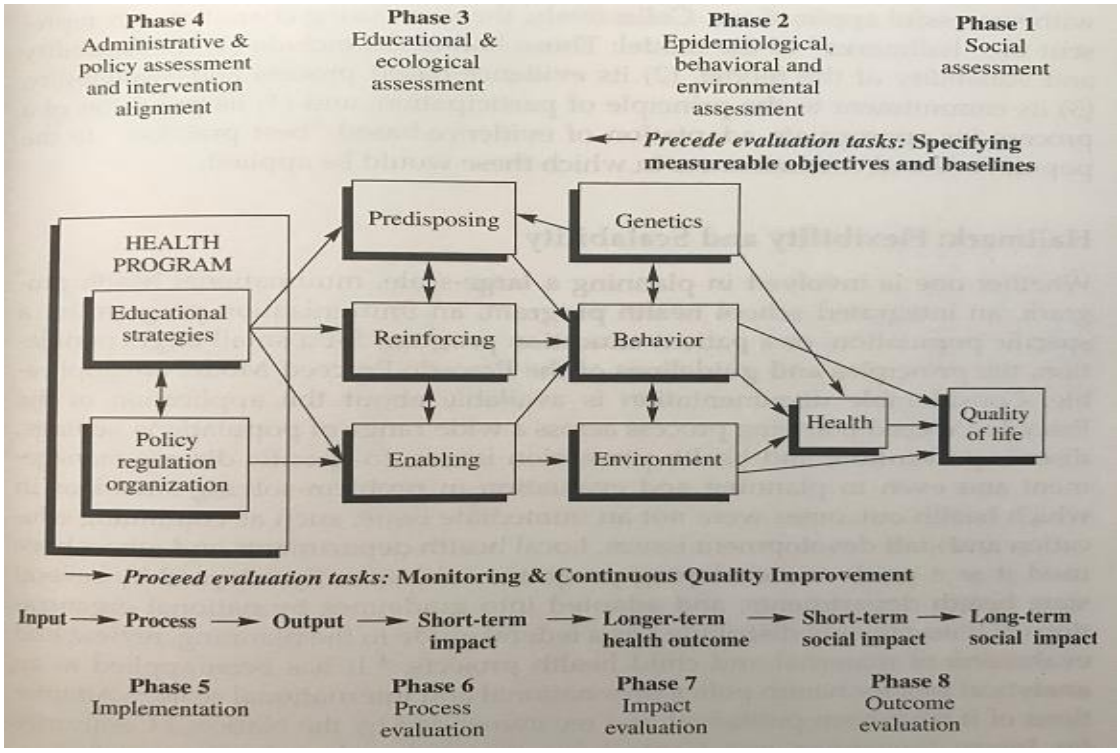

Figure 1. The Precede-Proceed Model. (Green & Kreuter, 2005)

Given that health literacy may enable people to have less emergency room visits, an indicator of good quality of life, the factors that enable health literacy and behavior choices seem to be measured best by the precede-proceed framework. This study uses a precede-proceed framework for reviewing factors of association for demographic variables and perception of health visit encounters that impact health literacy and health seeking behavior among Head Start families and a comparison of early education and care programs.

As a first step, a social assessment is completed, which this study applied various surveys for to determine who participates in the preschool and what their need for health literacy supports are, what their children's BMI levels are, and as a response from the preschools: what level of referrals and parent education is provided, which in turn may impact level of health seeking behavior for pediatric primary care.

The Proceed framework is used to make recommendations for what early education and care programs can do to incorporate health literacy promotion or health seeking behavior supports. Health status will be measured by child BMI or healthy weight and frequency of primary care wellness visits.

The parent-child dyad is influenced by neighborhood factors, and stress or supports may influence the amount of health seeking behavior, health literacy, shared-reading time or health literature that is found in the home (Froiland et al., 2013; Santrock, 1998). These factors, in turn, may influence healthy weight status based on the kind of health behaviors that are practiced from knowledge, motivation, and

environmental opportunity. The supplemental parent survey asks about some of these resources, including, the number of health books available at the home. The survey relates BMI of the child to various demographic factors and whether or not health referrals were discussed with the school or if the parent felt comfortable seeking information from school or primary care.

For the population of Head Start families there are competing factors of low-income and language challenges that may influence the frequency of health seeking behavior and knowledge of or opportunity for health support resource use, such as discussion of health behaviors and perception of quality of care that in turn promote health behavior and simultaneously equip the individual with the information needed to make healthy nutrition and physical activity choices. Health literacy is necessary to inform behavior choices such as health seeking behavior.

Applying the model to early education and care programming, this study tries to understand 1) if parents of young children in the preschool setting needed a potential parental health literacy intervention for managing children's weight and 2) if the preschool could be a potential intervention point for promoting health literacy. More comprehensively, the precede part of Green & Kreuter's model focuses on predisposing, reinforcing, and enabling factors for health promotion. Applying the precede-proceed framework, this research explores how two school groups (Head Start and Non-Head Start), representing lower income and higher income families may

display different needs and rates for response for childhood obesity due to different levels of parental health literacy and health seeking behavior.

Derived from the Precede Proceed model, Figure 2 below illustrates a logic model for two paths to the same level of health seeking behavior by preschool participants in either the Head Start or Non-Head Start program.

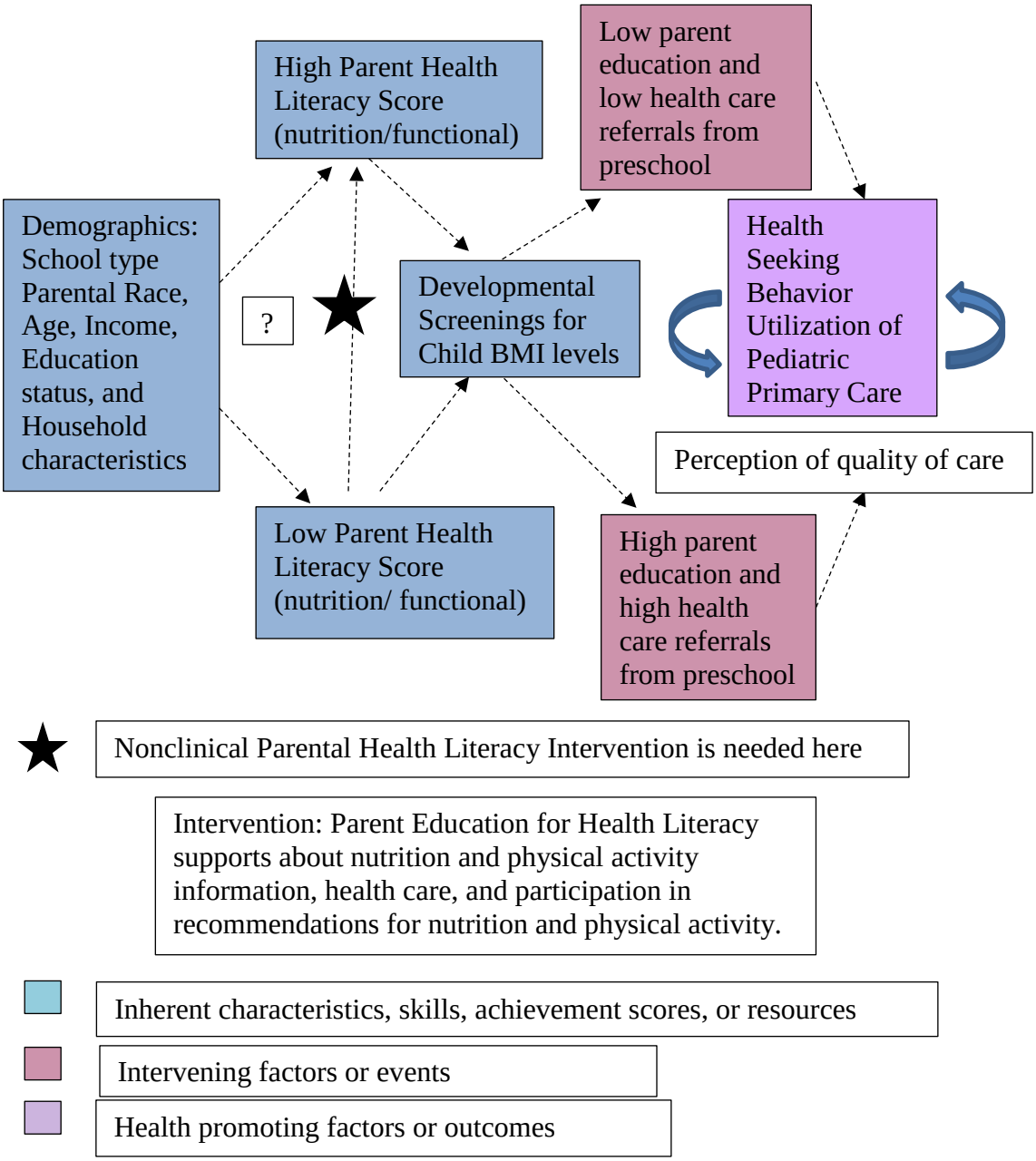

Figure 2. Logic Model of Parental Health Literacy and Health Seeking

The two school types being compared represent a low-income group and higher income groups, given Head Start and Non Head Start programs respectively. Therefore, the start of the logic model shows: “Inherent characteristics, skills, achievement scores, or resources”. In other words: the demographic variables being considered include race, age, educational attainment status, and household characteristics such as number of health books at home.

The model shows how these characteristics then inform a path which can diverge with the top row exemplifying the experience of those higher income families attending Non-Head Start programs and the bottom row exemplifying the experience of those lower income families attending Head Start. The former set of families are often characterized as having higher health literacy, and then access to developmental screenings. Overall, if child BMI scores are closer to healthy typical levels, the school system provides less health education support for nutrition and physical activity information (an intervening factor). The latter set of families are characterized as having lower health literacy and then given developmental screenings for their children. These families then may have unhealthy child BMI and be programmatically exposed to more parent education (again, an intervening factor). Both sets of families attending high quality early education centers which offer developmental screenings and health care referrals for participants of the system that have health status of weight management problems for different reasons affiliated with social determinants of health.

Therefore, the model depicts the possible association between higher parental literacy and normal or typical child BMI. The results then influence a trajectory that interacts with lower parental education, screenings, and referrals, to yield an unknown level of health seeking behavior. The second path depicts the possible association between lower parental health literacy and high child BMI interacting with parent education, screenings, and referrals, to yield another unknown level of health seeking behavior. The two groups are then compared, with differences in perception in quality of care as a possible mediating factor influencing frequency and utilization of pediatric primary care.

However, childhood obesity impacts families of all income groups, so it is interesting to inquire about how school standards for different levels of health education supports intervene for this health status, or if the burden is placed ultimately at pediatric primary care. This finding would further necessitate promoting parental health literacy scores earlier on by supporting parent health education for all income groups.

The figure above presents the theory that those parents with low health literacy have children with worse child health outcomes (higher child BMI and obesity) and are likely in need of more parent education and referrals to pediatric primary care referrals. A first step in measuring whether or not preschool programs' health care referrals make a difference in levels of health seeking behavior is to compare those programs that offer referrals based on prevalence of unhealthy weight status in

combination with the level of parent education offered. In other words, given that weight management problems affect all income groups but disparities may exist between the association of income level and level of educational attainment informing need for programmatic support, some families are referred to primary care while others are not. The mix of factors that lead to primary care thus varies. Although both income groups may exhibit weight management problems, the higher income group, lacks parent education opportunities at times, possibly due to their otherwise exhibited higher parental education attainment status. Therefore, parent health education is still needed somewhere as a follow up to the pediatric primary care they are getting because children of higher income groups still experience obesity. The lower income group may receive more supports to get to same base level of primary care as the other groups, but also possibly display a need for parent education at two time points: the first to get to primary care, and the second to follow up with treatment recommendations.

Referrals as a program characteristic may be associated with standards of higher quality rated programs, like Head Start. Most high quality rated programs try to incorporate developmental screening as part of the learning and health environment for school readiness. Possibly then, Head Start is a model program and some of these activities should be incorporated into other EEC programs to improve quality of other programs beyond developmental screening alone. A second step then is to understand how effective the health care was in terms of the perceptions of the parent attending

the care because opinion of health care quality may be associated with frequency of use of routine primary care. Perceptions may also be associated with level of health literacy which, for parents of young children, could be promoted by an EEC program. The parent education component of EEC programs is an ideal place to promote health literacy which then also reduces the costs of expensive and unnecessary emergency room visits when staff training and parent education includes health literacy as a topic. Therefore, the referrals that Head Start provides in addition to any health literacy training may be an important model for other EEC programs. The monetary resources needed to fund quality early education programs may be gained from preventing unnecessary emergency room use. Investing in the health domain of EEC programs then are possibly a worthwhile investment for state policy makers to consider.

Studies of quality in early education and care are important in reducing racial disparities. Magnuson and Waldfogel (2005) studied race factors in early education and care. Overall, those who attended preschools had a higher level of school readiness. However, "Black children are more likely to attend preschool than White children, but may experience lower-quality care. Hispanic children are much less likely than White children to attend preschool, (Magnuson and Waldfogel, 2005). Minority children, especially Black and Hispanic, were more likely than their Caucasian counterparts to attend Head Start, (Magnuson and Waldfogel, 2005). Possibly, however, minority groups had lower attendance in preschools before due to lack of affordability, but programs like Head Start are catered to low-income families

and therefore the problem is being mitigated (Magnuson and Waldfogel, 2005). Other changes like making preschool "universal for three- and four- year-old children in and increasing the quality of care could close up to 20 percent of the Black-White school readiness gap and up to 36 percent of the Hispanic-White gap" (Magnuson and Waldfogel, 2005). Lack of preschool attendance leads to programmatic opportunities foregone for kindergarten readiness and family support for school based health promotion efforts.

As Head Start and other early learning center programs recommend child well visits through primary care or developmental screenings, data is needed that informs an overall assessment of the health literacy levels of the parents seeking care for themselves and their children. There may be a gap between parental understanding and expectation for how a health care visit works or lower comprehension of health information disseminated due to a multitude of factors relating to literacy and health literacy. Therefore, although health care referrals may occur by some EEC programs, correlating that with health literacy and health seeking behavior still needs to be determined.

According to Green & Kreuter's Precede-proceed model, families have several predisposing, reinforcing or enabling characteristics to supporting children's health when entering the preschool system. This study focuses on how these factors, such as health literacy scores, or level or parent education received, or perceptions of health care quality, may then predict health seeking behavior for pediatric primary care in

order to manage children's weight. Where to promote parental health literacy, if at all, within the preschool venue, may be dependent on the needs of the attendees of a particular preschool program. For example, those parents with higher educational attainment may be less likely to participate in parent education but may have children with weight problems just as with any income group and therefore what factor predicts health seeking behavior may vary according to asset and risk factors. Perhaps, it is important to remember that the preschool's goal is not necessarily to reduce health seeking behavior for pediatric primary care, but to make it more effective or to reduce the need for emergency room visits or specialty care for managing a healthy weight. This is further enabled if parents perceive the health care to be of high quality. If the school can offer specific skill building such as in negotiation and self-management beyond just nutrition and physical activity information, that also works to improve health literacy as a mediating factor to participation in good health choices and resulting positive outcomes. High quality preschools that offer both screenings and referrals, are an ideal health promotion and intervention venue for parents who have low health literacy in order to offer a true comprehensive family systems approach for positive welfare of the preschool child.

Research Questions by Research Category

For this study, an original logic model informed by the Precede-Proceed model is applied to a pediatric setting where the parent's skills influence child health outcomes. Health literacy skills supplemented by parent education about nutrition and

physical activity mediate child health outcomes represent the precede phase of the applied model.

Demographics variables may be associated with parental health literacy and child BMI according to school type. Furthermore the child BMI and school type may inform the level of health care referrals which are associated with parental health seeking behavior. While some associations seem intuitive, the prevalence of the childhood obesity in all income levels necessitates inquiry as to how high quality preschool programs may make a difference in response to childhood obesity. A comparison of Non Head Start programs, serving all families, and Head Start programs, serving low-income and which is federally funded may be shown to have a positive impact in health seeking behavior for pediatric primary care as a result. Also, this study includes both Spanish and English speaking families in order to measure possible risks of language barriers in parental health literacy which could further impact child health outcomes.

Because parent health seeking behavior is being evaluated as a function of parental health literacy among those families with young children, it is important to review what associations exist between demographic characteristics and parental health literacy skills, as measured by the Newest Vital Sign and the Short Test for Functional Health Literacy. To summarize the first question which attends to predisposing characteristics from the precede proceed framework: What are the demographic and household characteristics (income, education, race, age, number of

health books at home) associated with nutritional/functional health literacy scores by school type? (In the original logic model these are inherent factors that are explored for associations with health literacy.); Next, additional review of predisposing characteristics include whether or not higher/lower nutritional and functional health literacy scores among parents lead to healthy child BMI or unhealthy child BMI. (These are also inherent factors that are explored for associations with child BMI levels).; Next the following reinforcing/intervening factors are studied: how school type intervenes to provide the parent education needed to support better parental health literacy or referrals to primary care?; and, What is the association between level of health care referrals and health seeking behavior, by school type?; Finally the health outcomes factor from health care utilization is influenced by parental perception of healthcare quality, so these levels are explored as well. The Table on the next page itemizes each research question.

Research Category 1: Parental Health Literacy
1a. What are the demographic differences/disparities (income, education, race, age, home literacy environment), if any, for nutritional/functional health literacy by school type?
1b. Is there an association between parental nutritional/functional health literacy and child BMI status by school type?
1c. Is there an association between parental health literacy and school provided parent education mediated by child BMI levels?
Research Category 2: Family Health Seeking Behavior (for Pediatric Primary Care Utilization)
2a. What is the association between child BMI and health care referrals, by school type?
2b. What is the association between level of health care referrals and health seeking behavior, by school type?
2c. Is perception of health care quality associated with parental health seeking behavior among preschool attending families?

Table 1. Research Questions by Research Category

1a. What are the demographic differences/disparities (income, education, race, age), if any, for nutritional/functional health literacy by school type?

As a first step, in researching this sample, it was important to consider how demographics were associated with health literacy scores. Parents with lower income and lower educational attainment are expected to have lower health literacy scores. Alternatively, parents with higher income and higher educational attainment (which may be confounded) are expected to have higher health literacy scores. More specifically, whether these trends are found in both functional health literacy and nutritional health literacy is also studied according to school type. Furthermore, income disparities are explored in seeking health care, as a result of programmatic interventions such as varying levels of parent education and referrals.

Health literacy levels prior to getting to the clinic appointment for an effective visit is necessary, however, and therefore if having more health books at home increases other income groups' associated health literacy levels, this is an intervention point for lower income families.

1b. Is there an association between parental nutritional/functional health literacy and child BMI status by school type?

Health literacy skills may be associated with child BMI levels and varying need for parent education about nutrition and physical activity, so this difference in health literacy skills is explored in the research as well. These correlations, in turn, then result in a need for reinforcing developmental screenings and referrals.

Therefore, the need or demand to educate parents with health information from the school about nutrition and physical activity or to refer to primary care for further discussion is important to understand.

Low numeracy and low comprehension skills may be indicated by low scores on the nutritional facts survey referred as "The Newest Vital Sign". Therefore, if an intervention is to be planned, after low parental health literacy is identified, the school could disseminate health books at home and offer targeted numeracy skills building, nutrition and physical activity concepts comprehension support, as well as chronic disease self-management support to families. Therefore, as a first step, it is important to identify that demographic characteristics of families in each school type (Head Start and Non Head Start) that are associated by a set of precede (predisposing, enabling, reinforcing) skills.

1c. Is there an association between health literacy and school provided parent education and parental health literacy mediated by child BMI levels?

The diagram above shows that the demographic characteristics associated with low parental health literacy is correlated with high child BMI while high parental health literacy is associated with low child BMI. Exposure to health vocabulary through health reading materials at home also seems to be associated with higher parental health literacy. Therefore, this may be a potential point of intervention that is more influential than just parent education alone by the school. Possibly center based parent education by the school is ineffective because it may be difficult for some

families to participate due to scheduling conflicts and parent education through home visits or programming at the home is more easy to attain. The mediating factor for lower income families to get to the same level of health seeking behavior for pediatric primary care as the other income groups appears to be getting a health care referral.

2a. What is the association between child BMI and health care referrals, by school type?

Although it would seem to be an intuitive to have health care referrals based on high child BMI, a combination of influences from predisposing educational attainment and reinforcing school provided parent education may also influence whether or not a health care referral is necessary. Therefore, it is important to explore the base level frequency of referrals made as a result of high child BMI and then understand what other factors are associated with getting families of different income background to pediatric primary care in order to improve child health outcomes.

2b. What is the association between level of health care referrals and health seeking behavior, by school type?

Early education and care quality standards may include referrals to routine wellness care, dental visits, and mental health visits along with completion of developmental screenings, and related staff education. Some staff also may participate in health literacy training. These components of staff awareness and education, in addition to the parent's own demographic characteristics of education background and personal agency, may influence higher or lower parent health literacy scores when

teachers interact with parents. The combination of these reinforcing factors then, in turn, may lead to either high or low health seeking behavior that results in access to a primary care visit.

2c. Is perception of health care quality associated with parental health seeking behavior among preschool attending families?

Whether or not a health care client perceives their health care to be of high quality or not may be associated with the likelihood and frequency of health care utilization. As a first step to ascertaining whether or not there may be cultural notions or personal preference in health seeking behavior which mediates frequency of pediatric primary care use, this question helps to understand whether or not clients of pediatric primary care perceive their health providers to be providing high quality health care if and when they seek care.

Conclusion:

Therefore the original logic model can be applied to all research questions in order to better understand parental health literacy and health seeking behavior for pediatric primary care. Research category one explores the predisposing/inherent factors of parental younger age, lower income, and less educational attainment in the Head Start group as possible risk factors for associations with parental health literacy scores and associated childhood obesity. The number of health books at home may be also be a predisposing/inherent factor associated with parental health literacy scores. Given parental health literacy is possibly associated with young child BMI, the

trajectory of healthcare referral may vary depending on the findings of developmental screenings, and programmatic standards for parent health education. The second research category explores further associations, therefore, between inherent (predisposing), intervening (reinforcing) factors, and parental health seeking behavior for pediatric primary care (a designated health outcomes). This study is a first step in establishing a need for a parental health literacy intervention based on variation in the two trajectories described. The research inquiry of this study addresses these questions in the methodology of analysis described in the next chapter.

Chapter 5

METHODOLOGY

Introduction

The quantitative study about the health literacy and health seeking behavior of parents of young children involves a total of 220 participants. The research design for the proposed study is a quantitative survey research methods approach because information was coded into a numerical format and analyzed in a formal, objective, systematic process. The data were analyzed to test the relationship between variables from survey data including: parent demographic factors, the characteristic of who attends high quality Head Start and other high quality Non Head Start early education and care programs, high and low parent health literacy, parent perception of high and low quality of health care, and parent high and low health seeking behavior, according to school type. Therefore, the dependent variable: level of health seeking behavior is a function of the independent variables: demographic characteristics, level of health literacy, program characteristics, perception of level of health care quality. Other variables pertaining to parent education are also explored by demographics and school type as it pertains to health literacy and health seeking behavior. The variable child

BMI is also compared with parent health literacy, health care perception, and health seeking behavior levels.

The chapter first describes the research participants which includes parents of three to five year old preschool attending children in New Castle County, Delaware. The information needed for the study is then explained and justifies the selection of the four data collection survey measures: The methodological approach/ research procedures, and analysis plan, are then stated along with strengths and limitations of the study.

Programs, like Head Start, are specifically geared towards support for low-income families. Therefore more robust support services may help bridge the gap between developmental outcomes for otherwise disadvantaged children and those that are from families with higher level incomes. However, developmental screenings, health care referrals, and parent education are advantageous to children from all income groups. As a result of different program supports from Head Start versus Non Head Start programs, disparities may exist between the health seeking behavior of parents of young children and related developmental health status. Understanding the differences is important in order to provide the best school readiness supports for all income groups. The twelve selected schools are representative of families in a range of household income levels. From an online list of preschools participating in the quality rating improvement system (Delaware Stars QRIS) high quality rated schools or those that were rated as five stars out of five were selected for recruitment. Then, school

sites were selected based on high or low-income areas in order to get a demographically representative range of families for the study. The study controlled for high quality by selecting only programs which are required to complete developmental screenings and related health care referrals. Otherwise, the low quality programs, which do not necessarily offer developmental screenings and referrals, would have skewed results for family health seeking behavior. By this approach to studying the sample data about the two groups of parents, mediating factors to actual health seeking behavior are more accurately understood.

Two groups of four Head Start programs were chosen, after speaking with program directors, totaling 125 lower income earning families. One non-Head Start group of four schools was selected from two locations: Hockessin and Newark, representing 95 higher income earning families. Therefore, a total of 1005 families were approached to participate in this study. The 22% response rate results in a final sample number of 220 parents who voluntarily completed the informed consent process and surveys, (See Appendix A). In order to measure basic nutritional health literacy this study did a baseline assessment of how well parents comprehended a nutritional label. In order to measure general health literacy, a baseline assessment was conducted of how well parents comprehended basic medical jargon in sentence completion tasks for the typical type of medical instructions received during an office visit. How health literacy levels are associated with various levels of child BMI was then explored, which in turn leads to different rates of health care referrals. Referrals

then lead to health seeking behavior and the level of pediatric primary care sought may be mediated by perceptions of health care quality. In the analysis, both health literacy and health care referrals as dependent variables were mediated by demographic variables such as race, income, education, and age according to school type. Health seeking behavior was also compared with program characteristics such as provision of parent education about nutritional and physical activity information and level of health care referrals. This study, therefore, explores differences in parental health literacy and health seeking behavior by school type. The revised logic model of associations depicted below is based on the conceptual framework but now includes the factors related to differences in school type as analyzed in this study.

Research Participants

Four regions were recruited from in New Castle County Delaware. The outreach efforts yielded twelve participating preschools from Wilmington, Newark, New Castle, and Hockessin. Families (the parent-child dyad) for this study were included from Wilmington, Delaware.

The city of Wilmington in New Castle County Delaware is in the northern part of the state and includes many Spanish speaking families among the total city population of 71,442. The racial make-up of the city is approximately 58% Black, 32.6% White, 12.4% Hispanic or Latino, 1% Asian & Pacific Islander, and 0.4%

American Indian or Alaskan Native. The median household income is $40,465 with a poverty rate of approximately 25% (U.S. Census Bureau, 2017).

Newark, Delaware has a population of 32,740 people, of which approximately 76.7% are White, 8.5% African-American, 6.9% Asian, 6.2% Hispanic. The median household income is $54,187 with a poverty rate of 25.6%, (Data USA, 2017).

Preschools in New Castle Delaware provided the remaining research locations. The population in the area is approximately 5,371 people. The racial distribution is 61.6% White, 20.3% Black, 15% Hispanic, and 0.7% Asian. The median household income is $56,307 with a poverty rate of 13.7%, (Data USA, 2017).

Four preschool programs were included from Hockessin Delaware. Hockessin, Delaware includes 13,527 people, of which approximately 80.5% are White, 12.7% Asian, 5.1% Black, 0.9% Hispanic. The median household income is $121,680 with a poverty rate of 2.82% (Data USA, 2017).

The participating Head Start preschools are part of the national Head Start program which is federally funded and part of the U.S. Department of Health and Human Services. Head Start prepares children towards their education goals through various social skills supports, education and health objectives, including nutrition and social services as well as involvement of persons with disabilities, and male involvement. Family involvement and parent education are strong components in

achieving service goals. The Wilmington participating preschools includes four early education and care centers which serve a total of approximately five hundred children and their families from Head Start. The children who participate in school readiness and support services are three to five years old. The program has existed since 1984 and works with families throughout the city with support from a Parents Committee and a Policy Council.

The final sample count was 220 parents which comprised 125 Head Start participants and 95 high quality Non-Head Start program completing paper surveys sent to their home. The response rate was 43% among Non-Head Start parents however, the low-income population was tougher to elicit responses from and resulted in an 18% response rate. Overall, the average response rate was then 22%. This may still be a good response rate for mailed home surveys where working with a low-income population implied that not all would have access to a computer for emailed surveys. The folders of surveys were distributed by the school managers or teachers by placing the folder in the children's cubicle or handing the folder directly to the parents at the school. Both parents of walkers and children who were bussed were included. Both English and Spanish speakers were included. There was variation in the demographic background of participants in these programs in order to include both high and low-income families. For example, Head Start schools in Wilmington predominantly serve low-income families but is a 5 star quality rated program. On the other hand, a Hockessin area preschool is also a high quality rated program but may

serve all income families including higher income. The participants at the programs represent a racially diverse sample from northern Delaware. The table below lists the participating schools and parent response rates according to high and low-income recruited families.

School Name	Total Outreach	Total Response	Response rate
All Income (mostly higher income): Hockessin and Newark			
1. Preschool 1	35	21	
2. Preschool 2	28	16	
3. Preschool 3	40	27	
4. Preschool 4	118	31	
	Total: 221	95	43%
Low-income: Head Start A			
5. Preschool 5	50	11	
6. Preschool 6	50	7	
7. Preschool 7	110	13	
8. Preschool 8	80	20	
	Total: 290	51	18%
Low-income: Head Start B			
9. Preschool 9	104	15	
10. Preschool 10	120	19	
11. Preschool 11	154	21	
12. Preschool 12	116	36	
	Total: 494	91	18%
(Some parent responses were repeat responses for siblings.)	Total Outreach: 1005	Total Response: 237	24%
FINAL Total Response:	**Total Outreach: 1005**	**Final Total: 220**	**22%**

Table 2. List of Participating Regions and Parent Response Rates

The study of Head Start families and comparison groups required collection of survey data on families (parent-child dyad) to understand more descriptively the interaction that results from health referral and parent education and various health literacy or health seeking behavior scores. It will be important to know how health literacy may vary according to demographic characteristics and how many survey materials will need to be translated or made available in both English and Spanish. High health literacy scores will likely to result from those who have higher educational background and who may obtain parent health education from higher quality rated EEC programs. Consequently, there may be improved BMI among those parents who have higher health literacy than those who do not. This study may find that the characteristics of who has high and low health literacy to correlate with who has high and low health seeking behavior. The association of children's BMI could then be explored based on these parent characteristics. Low-income or less educated families in particular may be overwhelmed with choices of navigating health and education systems, especially if they have low health literacy. Therefore, factors that contribute to predisposing, reinforcing, and enabling characteristics towards health seeking behavior that are mediated by health literacy scores should be explored and are described in other sections of this paper.

Because childhood obesity can be offset by understanding and practice of good nutrition and physical activity in early years, the collaborative support received from

primary care and early education and care programs, is an important one for families. Therefore, a goal of this research inquiry is to understand health literacy scores of parents and perception of the quality of primary care because level of health seeking behavior may be influenced by these factors. The rationale for this study is that good health is necessary to support good learning and school readiness. Good health is supported by primary care visits and parent education provided by preschool supports among other predisposing, reinforcing, and enabling factors. Therefore, programmatic policies that have standards of parent education opportunities pertaining to health literacy and health promotion may be necessary to optimize program support for families for child wellbeing and readiness for learning.

Introduction to Data Sources

The assessment of health literacy includes vocabulary and numeracy comprehension. However, factors that measure nutrition literacy are still being developed. In a preschool that encourages family involvement as a support system for children, health goals are often met through parent education of health care navigation, system utilization, and increase of knowledge of what to do for various child health care and education needs (Herman & Jackson, 2010).

Reviewing past research (Carbone & Zoellner, 2012) has shown gaps in health literacy measurement including that health literacy skills assessment comprises more than capability for reading and arithmetic, and therefore a broader assessment of

comprehension of health information is needed. Gibbs' Nutrition Literacy Assessment Instrument is validated and resolves many issues about health literacy assessment, however, it has not yet been widely used (Gibbs & Chapman-Novakovski, 2013). Feedback from other surveys results could be very valuable to understanding nutrition health literacy from comprehension of a nutrition level for the Head Start program to provide guidance or family support for.

The parent paper surveys, distributed to parents, gathered the necessary data to run analyses. The measures include: the Short Test of Functional Health Literacy in Adults (STOFHL-A), (See Appendix A), for sentence completion tasks involving recognition of health vocabulary, The Newest Vital Sign for comprehension of a nutrition label, (See Appendix A), and the *Consumer Assessment of Healthcare Providers and Systems* (*CAHPS*) Clinician & Group Surveys Visit 2.0 for the child, which reviews frequency of visits in the past 12 months, quality of care perceptions and collects some demographic information, (See Appendix A). A supplemental parent questionnaire will also be completed (See Appendix A). Parents will be asked from where they feel comfortable receiving health information. Please see the Appendices for research recruitment flyer, parent surveys, and the validated measures for this research study. All measures were available in both English and Spanish. Children's books will be disseminated for completing the survey.

Description of the Data Sources:

Three out of four surveys were previously validated and reliable tools. The fourth parent survey was a study specific tool created by the researcher primarily for calculating child BMI, healthcare referrals, and number of health books at home.

The Short Test of Functional Health Literacy in Adults (STOFHL-A)

Typically administered in clinical settings, the Short Test of Functional Health Literacy in Adults is a reliable and validated measure of how well someone comprehends and navigates the health system accurately. An adequate level of functional health literacy may support discussions and negotiations with clinical staff for the purpose of obtaining quality health care. Numeracy and reading comprehension is assessed through different sentence completion tasks in this validated and reliable survey tool. Baker (1999), and Ramirez-Zohfeld, Rademaker, Dolan, Ferreira, Eder, Liu, Wolf, Cameron, (2015), described the scoring mechanism for the STOFHL-A:

> The reading comprehension portion of the test includes 36 items to measure a patient's ability to read and understand common medical scenarios via use of the Cloze procedure, where reading passages are missing every fifth to seventh word and participants must choose the correct replacement from a multiple choice list. Four items comprise the numeracy portion of the test to measure one's ability to read and understand numbers. Scores on the STOFHLA range from 0–100 and are divided into three categories of health literacy: inadequate (0–53), marginal (54–66), and adequate (67–100), (p.3).

The Newest Vital Sign (NVS)

Also typically administered in clinical settings, this validated and reliable survey by Pfizer, asks participants to review a full page "Nutrition Facts" label from a pint of ice cream in either English or Spanish. Then, participants are typically interviewed to respond to six label-related questions "Numeric scores on the NVS range from 0–6 and are divided into three categories of health literacy risk: suggests high likelihood of limited literacy (0–1), indicates the possibility of limited literacy (2–3), and almost always indicates adequate literacy (4–6)," (Ramirez-Zohfeld, Rademaker, Dolan, Ferreira, Eder, Liu, Wolf, Cameron, 2015, p.3) There have been some past examples of paper administration of the Newest Vital Sign as this study has used the tool, (Weiss, Mays, Martz, Merriam-Castro, DeWalt, Pignone,.Mockbee, Hale, 2005).

Consumer Assessment of Healthcare Providers and Systems (CAHPS)

"Since its launch in 1997, this survey has become the national standard for measuring and reporting on the experiences of consumers with their health plans and services," (Agency for Healthcare Research and Quality, 2018). The CAHPS offers a standardized questionnaire with optional supplemental items that can be administered to adults and children enrolled in Medicaid and commercial health plans in the previous 12 months (Agency for Healthcare Research and Quality, AHRQ, 2018). The agency, AHRQ, (2018) states:

A version of this survey is conducted in almost every State in the U.S. Sponsors of this survey include health plans, State agencies that purchase and regulate health care, and Federal agencies, such as the Department of Defense and the Centers for Medicare & Medicaid Services…All versions of the CAHPS Health Plan Survey produce the following measures of patient experience:

- Getting needed care
- Getting care quickly
- How well doctors communicate
- Health plan customer service
- How people rated their health plan

The survey also collects basic demographic information about participants. (p. 1).

Parent Survey

This one page survey created by the researcher includes only eight questions that comprise data collection for the following variables: child date of birth, child height and weight (for BMI calculation), number of health books at home (for measuring home health literacy environment), whether or not a health referral had been received (to primary care, dental care, or mental health care support), and household income (with information requested about the number adults and children living at the house). Each question had the option for a "don't know" or "prefer not to say"/ "refuse". This one page document could have been administered as a qualitative phone interview, however, it was disseminated as a paper survey instead to the family. Missing data and child height and weight were verified by phone call to the preschools according to parental permission obtained from the informed consent document.

Research Procedures

Institutional Review Board Approval

In November 2017, the proposal of the research was submitted to University of Delaware's Institutional Review Board (IRB). The process involved human subject protection training for all study personnel (Principal Investigator and Spanish Speaking Research Assistant) online through CITI, an online forum for training and regulation purposes. After an expedited review of the paperwork, the IRB approved this study by January 2017 for English and Spanish speakers to be surveyed at twelve New Castle County Early Education and Care Centers. This project does not involve any conflict of interest. This protocol was not submitted to any other IRBs. All relevant document were uploaded to IRBNet in support of the application to conduct ethical research of human subjects in New Castle County, Delaware.

Methods of Data Collection

Potential research sites were identified by checking their Delaware Stars quality rating online on the website for Delaware Stars housed at University of Delaware's Institute for Excellence in Early Childhood. Stars ratings are on a 5 point quality scale. Recruitment for participation occurred from emailing and calling the programs making sure to get a range of programs from New Castle County Delaware. School meetings and data collection by the researcher began almost immediately afterwards. First, school directors were contacted, who gave permission to work with school program managers. Meetings took place between the researcher and the twelve

school site program managers to describe protocol for implementing the study. The managers then coordinated outreach to the classroom teachers who distributed materials to parents via the children's storage cubbies. The program managers distributed folders containing informed consent forms and four surveys to parents (See Appendix A). Of the preschool students, both walkers and bus takers were included. The age group of the children included three, four, and five year olds attending early education and care programs. Because the study focuses on weight management, through support for education of child nutrition and physical activity, this research focuses on three to five year olds who are more mobile in terms of reaching physical gross and fine motor skills development compared to an infant or two year old group of children. In other words, the nutrition and physical activity needs of infants and two year olds may be different than that for an older preschool population therefore the study eligibility requirements for participation included only those parents of preschool children ages three to five years old that could be grouped in a category of similar physical activity and nutrition needs.

Recruitment began in January of 2017. As part of the study and in exchange for completing tests and surveys, research participants were initially given a set of three children's books (a value of $13.50). After one month, when recruitment began with the Head Start Schools and more incentive was needed to increase parent participation amongst the low-income population, a $10 (visa) gift card was added to the three children's books, upon approval from the IRB. Parents were allowed to keep

the books and gift card in exchange for completing the paper tests and surveys. Therefore, the final total value of compensation was $23.50. There is no other compensation for participation. The School of Public Policy and Administration funded the cost of the books (~$5400), photocopies of the surveys for the research project (~$1200), and salary of the Spanish Speaking Research Assistant (~$1200). The gift cards, locking file cabinets, folders, and other miscellaneous supplies were paid for out of pocket by the researcher.

Informed consent was obtained through written consent along with follow up verbal conversations by phone describing the study and answering or clarifying any questions or concerns of the participants to verify agreement to participate in the study. English and Spanish surveys were completed at the participant's home. Then the documents were returned in the folders to school teachers and program managers. The researcher then completed weekly pick up of the folders from program staff. Data was then deidentified, coded and scored and entered into an SPSS statistical database according to participant case numbers which were created by the researcher.

The total number of folders distributed was 1005 with a response by 235 parents amounting to a response rate of 23%. Some responses were ineligible due to repeat responses by parents of siblings. Only one parent from each family was being asked to participate. In some cases, some parents submitted folders without completing an entire survey and were not reachable by phone for follow up. After

determination of any ineligible participants or responses, the total final sample count was 220. And the final response rate was 22%.

In terms of eligibility for participation, all parents must have been able to read and write in English or Spanish. Data collection occurred in January through May of 2017. Participants were told their total participation time would take approximately thirty minutes of filling out paperwork including the informed consent process. For each individual the data collection procedures may have taken approximately 1 to 2 school weeks with follow up, by phone call, to correct data or complete missing data up to 1 to 3 months afterwards. During the course of the study proceedings, participants were told that if they decided to drop out of enrollment in the participating preschool, then research participation would also end and their participation will be terminated, without penalty, by the researcher. Any data collected up until that time would be included in the research study. Research participants had the option to inform the researcher in writing or phone call that they would like to stop participation and had the contact information of the researcher, the advisor of researcher, and the Spanish Speaking research assistant to ask any questions or express any concerns. None of the enrolled participants dropped out of the study. Only some folders of data were eliminated due to duplication for families of parents that had more than one child enrolled in the preschool.

Research Study Risks and Benefits

This was a minimal risk study. Research participants were informed that some of the paper surveys they would be asked to complete as part of the study could increase participant level of stress while thinking of the answers. The surveys asked some questions that may be personal to participants such as the child's height and weight and participants' household income. Participants were informed that some basic math and reading skills were also needed to complete the surveys and participants might have found this frustrating. Research participants had the right to refuse to answer any questions without negative consequence. Therefore, in the researcher's opinion, the risks listed above were minimal. Minimal risk means that the level of discomfort in the research are likely not greater than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests.

Participants received a case number and the number was affiliated with the forms completed instead of individual names on each survey or test. The individual respondent names are not linked to the surveys and tests that they each completed. Each folder was individually numbered. The informed consent document with names in the folder were filed separately. A separate document linking the names of the participants to the case number was filed away from the database of survey information gathered about the participants with two separate jump drives, and was destroyed at the end of the study. Therefore:

- Confidentiality of records was maintained. The researcher kept information learned about the participants confidential.
- The actual completed tests and surveys were not available for public use.
- Participants received a number on their folder and the number was affiliated with the number on the survey forms instead of individual names on each survey or test.
- Paper data was kept stored in a locked file cabinet or storage box accessible only to the researcher to ensure security of the data. Data entered into SPSS, a statistical program, was on a computer that had a user login and password only accessible to the researcher. The files were saved on a jump drive that were locked in a file cabinet after use.
- Participants were informed that: The findings of this research may be presented or published. Also, any shared results will be reported as a group and no individual will be identified.
- Participants were informed that: De-identified data will be kept for future studies. However, data was not and will not be shared with anyone other than on this research team.
- There was no audiotape, photograph, or videotape during this study. The research participant or volunteer's identity was and will continue to be protected.

Data Analysis

Analyses involved a non-experimental design of quantitative data interpretation through descriptive analyses, correlations, chi-square for goodness of fit, and multiple hierarchical linear regression. The research units are the parents at the various preschool programs. Data was acquired from review of paper surveys. Data was organized into SPSS, a statistical software. Then, information was tallied quantitatively as frequency of occurrence of the following components: completion of developmental screenings, health referrals and parent education. For other data collection and analyses, quantitative methods were chosen to simplify and organize data into numeric responses for ease of analysis. These results were then analyzed by school type. Descriptive and inferential data analysis plans include the following: 1) T-tests were run to find overall differences between the means of the two groups of parents (Head Start and Non-Head Start) by school type; 2) Correlations and Chi-squares were conducted to compare associations with any continuous or categorical variables; and 3) Multiple hierarchical linear regression was completed to compare differences in variance and one variable's ability to predict another, by school type or race.

Strengths and Limitations of the Study

Strengths of these methods include, that the main questionnaires are validated tools with minor modifications (for the purpose of self-administration instead of interview style of data collection), supplemented by a brief parent survey. Strengths

also include that the survey pool is inclusive of diverse participants, of all race backgrounds, including Spanish speakers. Also, there is a potentially large sample of participants to pool from as there are many early education and care centers participating in the Delaware Stars high quality rated programs. Research also must be careful to pool from both high and low-income groups in the high quality programs and check to see if the parents' demographic background yields variation in high to low health literacy scores based on their income and education levels. This research assumes that high and low health literacy scores and high DE Stars quality rated programs are associated with high and low health seeking behavior which further may inform healthy BMI status of children who are at risk for childhood obesity. Because this research involves human subjects, approval by the university's institutional review board was necessary and completed for human subjects' protection.

Limitations include that some questions ask for yes or no responses instead of more descriptive qualitative answers. The yes or no answer type limits the analysis approach to a chi-square instead of regression analysis for some data which yields non-causal correlational association results only. Also, some selection bias is present because some parents received surveys directly from school staff by being present at the school to drop off or pick up their children. That allowed for the possibility of more interaction with school staff or bias towards completing the surveys versus those parents who simply received the paperwork at home from their child, including bus takers, without communicating with the school staff. Also, the question on the parent

survey about the number of health books at home does not specify a definition for what is considered to be a health book. Therefore, respondents may not have included additional books about relevant health related topics and the results could potentially represent a lower frequency count than is accurate for what some participants assumed to be a health book. The study also assumes that health seeking behavior for pediatric primary care is the desirable goal. However, for less severe health issues that can often be self-managed at home, health seeking behavior for pediatric primary care, specialty care, or emergency care is not necessary. The health literacy assessments gauge the level of the parent's health literacy levels to work on these issues, but does not ask additional follow up questions for how often the child experienced a specific health issue related to nutrition, physical activity, and weight management. The CAHPS survey asks questions about the frequency of health seeking behavior in the past year, and whether or not the need for going to pediatric primary care was based on care that was needed "right away". The qualitative details of the participant response to this question, however, are not included, to discern what is considered to be an immediate care need versus a health issues that can be resolved by the family at home. Furthermore, the Parent Survey should have included a follow up question to better evaluate the *need* for pediatric primary care but relies mainly on BMI calculation from developmental screening as the indicator for referring to primary care for weight management issues. Finally, the study assumes, with the Newest Vital Sign survey tool, that the ability read a nutrition label is a desired skill. However, the

cultural notions about reading nutritional labels for healthy food choice may be different by race/ethnicity and country of origin, and this study does not delve further into how food choice and level of physical activity participation per week is decided upon. The study, therefore, is limited by the lack of research about the decision making process for the proposed desirable health behavior for weight management to achieve a healthy BMI. Finally, another limitation is that one of the research sites that was included for recruiting higher income parents, also included some Head Start participants as an all income provider site. This broader enrollment eligibility allows that preschool to receive some federal funding to offer more robust programming for all preschool attendees regardless of household income. Therefore, when drawing conclusions about this set of families, the research is somewhat limited in determining what the mitigating preschool factors were that led higher or lower staff and parent health literacy and health seeking behavior because these families are also supported by Head Start program goals.

Conclusion

Therefore, this quantitative study was survey research of 220 parents with a range of household income levels to represent responses from four data collection instruments to further understand disparities in parental health literacy and health seeking behavior for healthy weight of young children. Three out of four of the survey instruments were reliable and validated tools used in past research. The fourth survey, the parent survey, was a data collection tool developed by the researcher

mainly to calculate BMI of the children, and collect information about referrals, home health literacy environment, and household income. All data collection was conducted ethically with informed consent and IRB approval. Incentives included children's books and gift cards in exchange for voluntary participation. Participation required approximately thirty minutes of paperwork at the participants' home or anywhere of their voluntary preference. In other words, completing forms at the university or preschools was not required. Data collection required coordination of the researcher, a Spanish speaking research assistant, preschool directors, managers, teachers, and parents. Data was coded, entered, and analyzed with SPSS, a statistical software. Deidentified forms were stored in locking file cabinets with other data stored on jump drives. The next chapter will represent the study findings.

Chapter 6

STUDY FINDINGS

This chapter presents the results of the study. The chapter first provides a narrative of the demographic differences in the two school types: Head Start and Non-Head Start, followed by a series of charts illustrating the findings. Next, results of various analyses are presented by research question along with more charts to illustrate frequency or percentage differences in these categories for each topic according school type. Data was analyzed using SPSS, a statistical software. The quantitative data, (in English and Spanish) was coded numerically, and reviewed to understand what pieces were categorical or continuous data. The appropriate analysis was selected accordingly, which included descriptive analyses and inferential analyses such as: correlations, chi squares, and hierarchical multiple linear regression.

The literature describes Head Start schools as mainly serving low-income students (Zigler & Styfco, 2004). Therefore, it would make sense that the variable: "school type" and "parent income level" are associated. This study sampled from preschools in northern Delaware. The Head Start going families, in this sample, attend schools in poorer neighborhoods. Often associated with poor neighborhoods is lack of educational opportunity and educational attainment (Wodtke, Elwert, and

Harding, 2012). In line with this fact, this sample similarly showed that the Head Start parents had less educational attainment than Non Head Start counterparts which is associated with significant differences in health literacy scores. Specifically, lower education attainment and income significantly predicted lower health literacy scores.

While past research has looked at health care settings as venues for studying differences in health literacy scores among adults or parents of older children, this study focused on early education and care settings that served either Head Start or Non-Head Start programs. Main programmatic differences, among the range of preschools were controlled for by selecting high quality programs that received 5 out of 5 stars on the quality rating improvement system (QRIS). Findings showed that there was a significant difference in nutritional and functional health literacy scores by school type. These tests were offered in both English and Spanish. Differences in health literacy scores may partly be attributed to differences in level of educational attainment of the parents at those schools.

More specifically, findings include racial disparities in nutritional health literacy scores in that Hispanic parents score significantly lower than other races. Both Hispanic and Black parents scored significantly lower in functional health literacy than other races. In terms of differences in school type, Head Start parents score lower on both the nutritional health literacy assessment and functional health literacy assessment than Non-Head Start parents. Head Start is also known to regularly make referrals to primary care and dental care. There were significant differences by

school type in level of health care referrals. Head Start schools referred to primary care and dental care significantly more than Non Head Start schools. Possibly there was a greater need for the referrals. Body Mass Index (BMI) was different by school type with more underweight, overweight, and obese children found among the Head Start schools compared to Non Head Start schools. Increases in nutrition and functional health literacy scores resulted in lower child BMI scores. Head Start parents reported receiving more school provided parent education classes about nutrition or physical activity than Non Head start parents. In terms of health education received from primary care, the findings show that a Hispanics parents received higher levels of health education from primary care than other races. There was no difference among Head Start or Non-Head Start parents for the latter finding.

Health seeking behavior for this study was defined as attending a pediatric primary care appointment. English speaking families from both school types had higher health seeking behavior than Spanish speaking families. Hispanic families received significantly more health care referrals, however, due to their enrollment in Head Start. Overall, families who received less health care referrals had less health seeking behavior. In this sample a higher proportion of those parents who received primary care referrals had children with normal BMI levels. Therefore, receiving a health care referral results in an important interaction with the primary health care system, especially for obesity prevention. There were no significant differences in perceptions of health care quality by school type or race. Most parents rated their

primary care physician highly and stated they would recommend the provider to someone else.

The next several pages represent graphs and charts of demographic and other data representing the results of the study. A brief caption explaining the information depicted in the graphs and charts is also included.

Demographics

The following graphs and charts represent a profile of the sample of 220 participants.

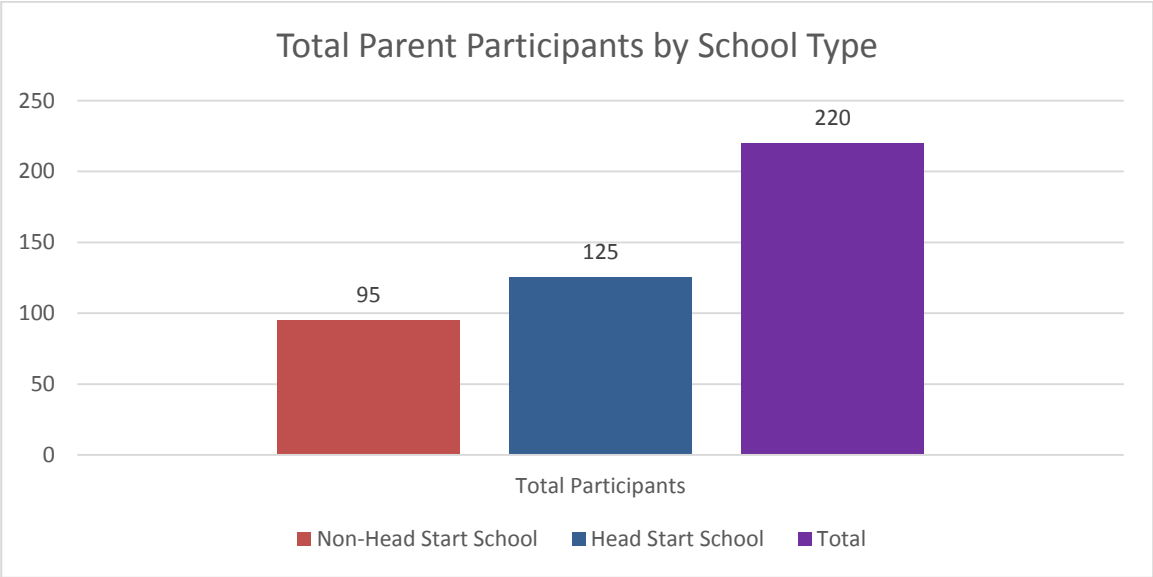

Figure 3. Total Parent Participants by School Type

School Distribution: Approximately 43% (n=95) of the sample were from Non Head Start and approximately 57% (n=125) of the sample were from Head Start programs.

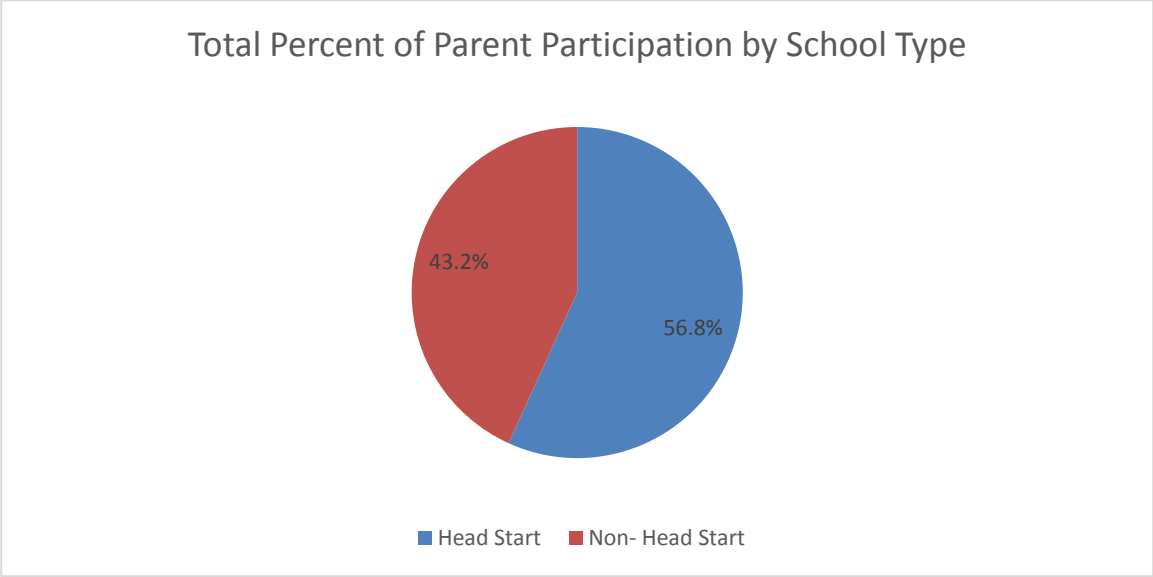

Figure 4. Total Percent of Parent Participation by School Type

Language: About one quarter of the total sample was Spanish speaking. Spanish was the primary language spoken in approximately 45% of the Head Start group. Non-Head Start parents all spoke English as a primary language.

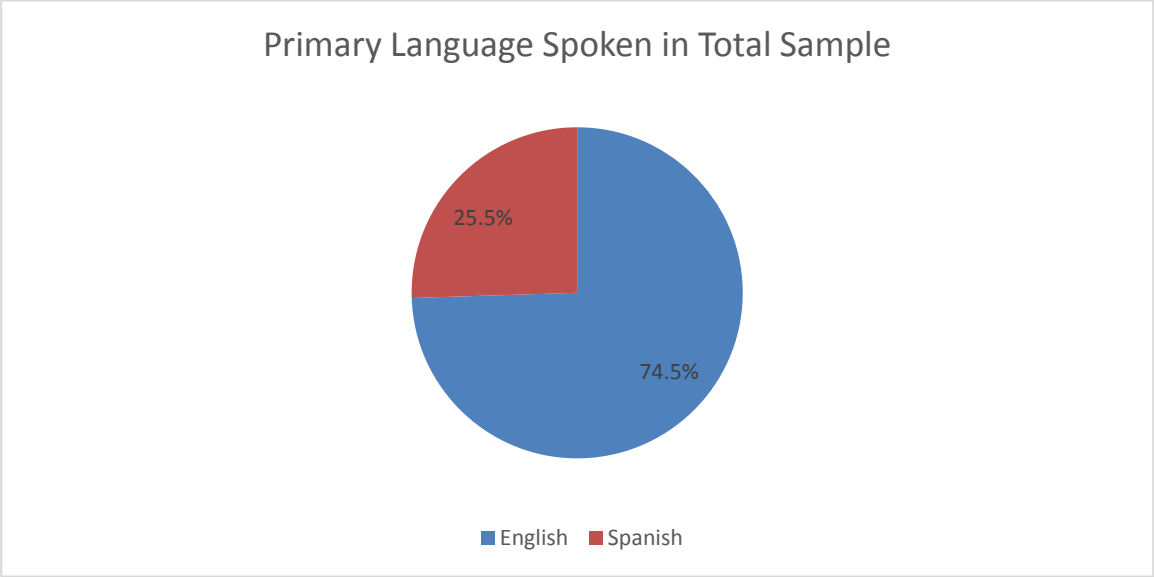

Figure 5. Primary Language Spoken in Total Sample

Primary Language: Three-fourths of the participants spoke English as their primary language, while approximately one quarter of the participants were Spanish speaking.

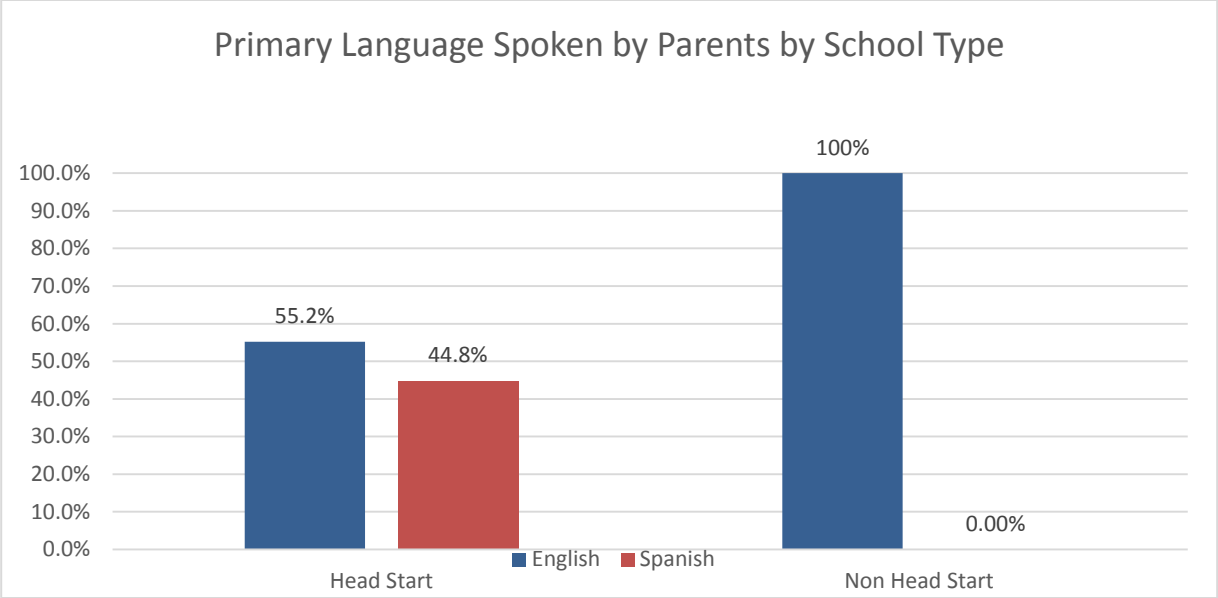

Figure 6. Primary Language Spoken by Parents by School Type

Income: About two-thirds of the sample were low-income earning parents. Of the Head Start group, approximately 94% were low-income earning parents. Of the Non-Head Start group, approximately 85% were high income parents.

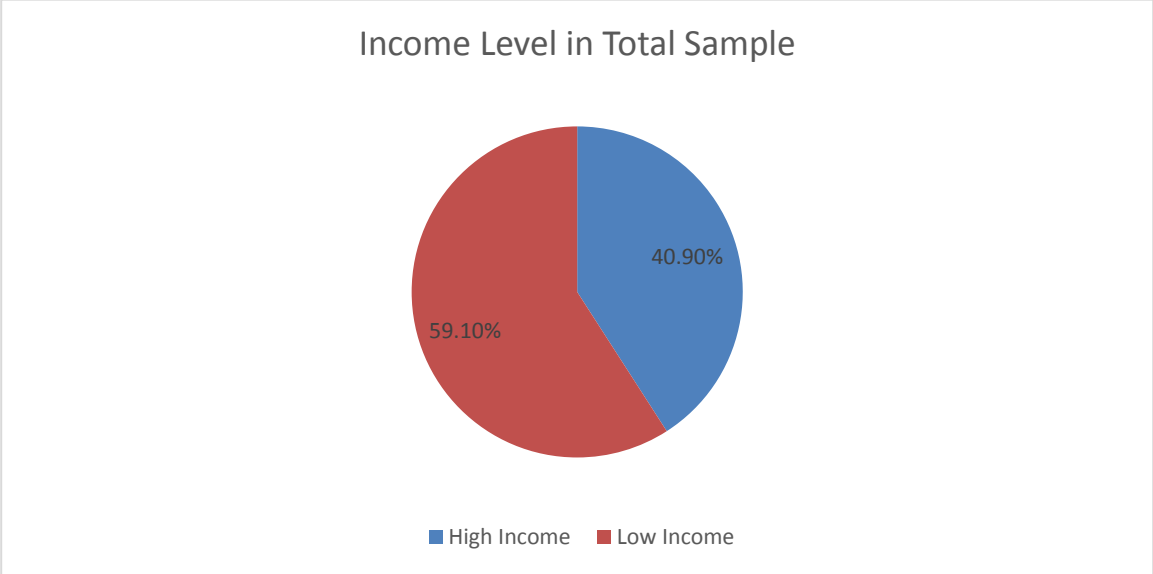

Figure 7. Income Level in Total Sample

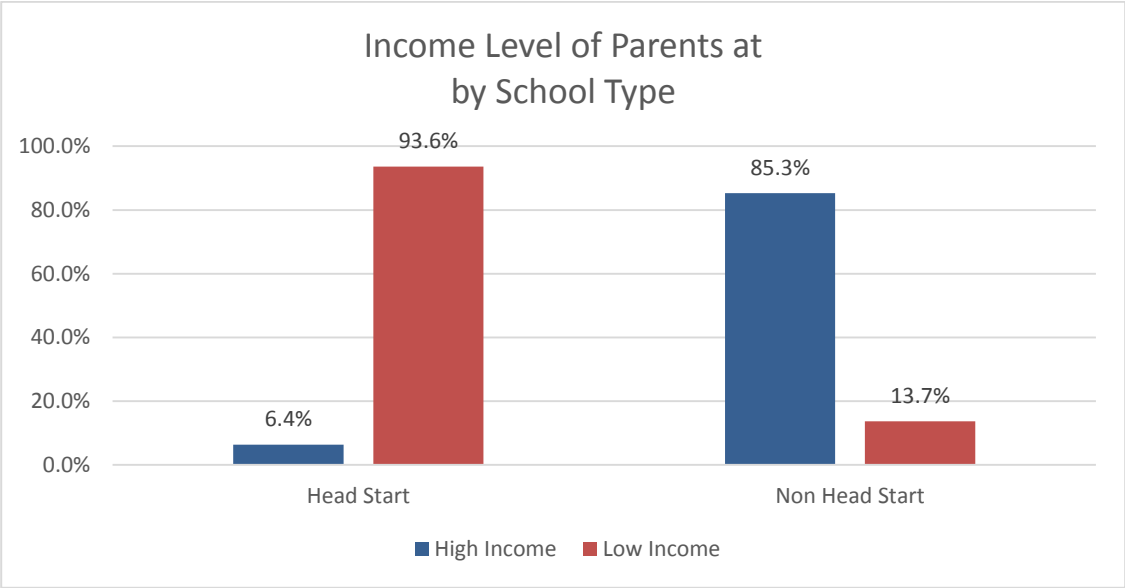

Figure 8. Income Level of Parents by School Type

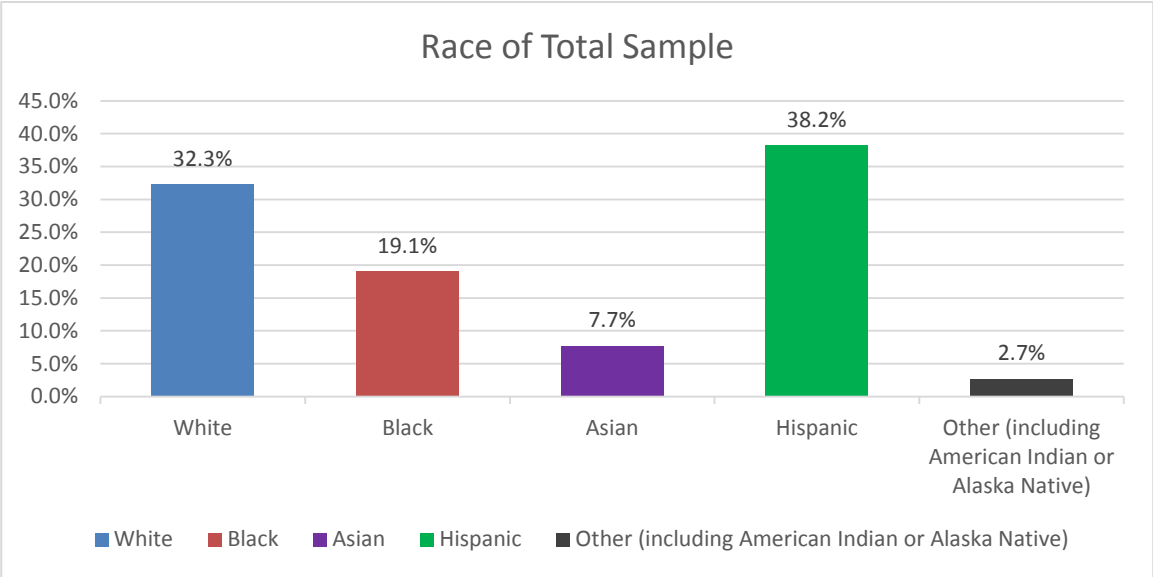

Figure 9. Race of Total Sample

Race of Total Sample: In terms of racial distribution of the total sample, approximately 38% of the parents were Hispanic, 32% were White, 19% Black, 8% Asian, 3% Other.

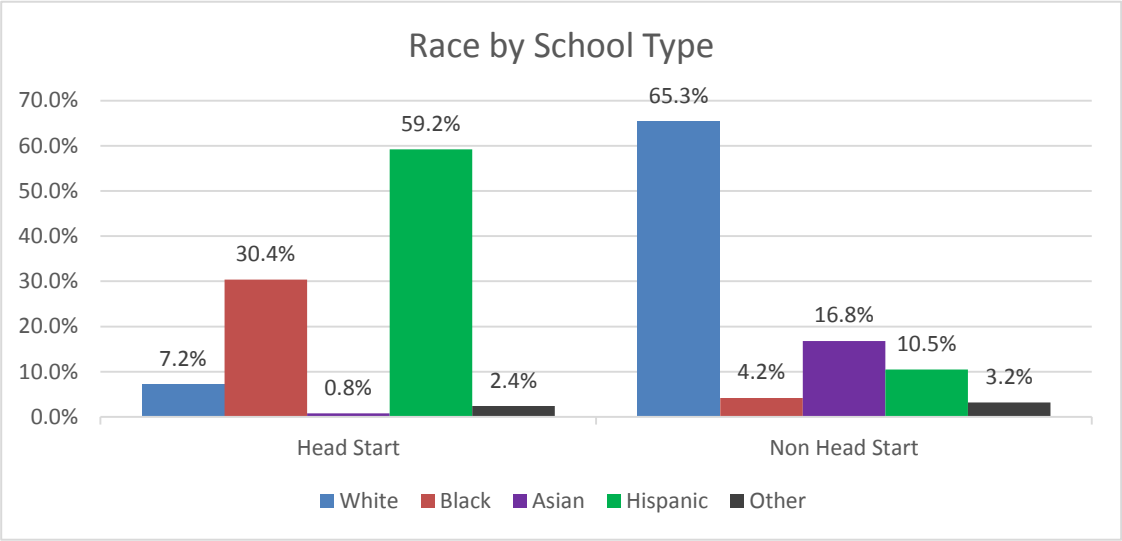

Figure 10. Race by School Type

Race by School Type: In the Head Start schools, the majority of respondents were either Hispanic (59%) or Black (30%). In the Non-Head Start schools, the majority of respondents were White (65%), 17% were Asian, 11% Hispanic, and 4% black.

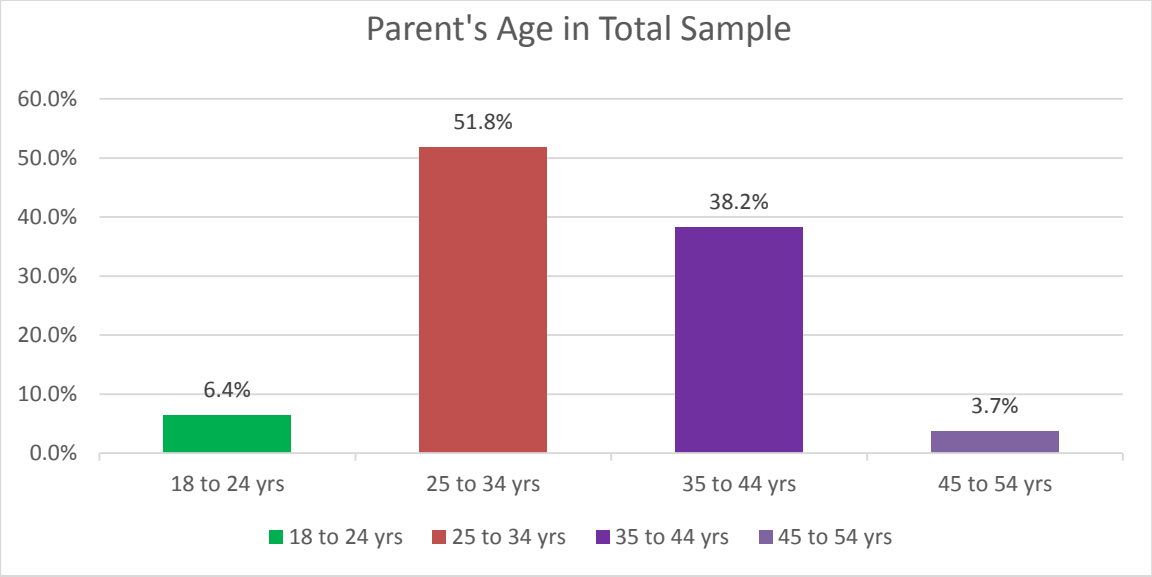

Figure 11. Parent's Age in Total Sample

Age: For these parents, most were in the age range of 24 to 44 years old. Head Start schools, however, served more parents (70%) in the 24-34 year old age range, while the Non-Head Start schools served more parents (64%) in the 34-44 year old age range. In other words, younger parents had children attending Head Start while older parents had children attending Non-Head Start. When grouped according to 18-34 years of age or 35 and older years of age, 80% of the Head Start parents fell into the younger group, while 71% of the Non-Head Start parents fell into the older group. (Note: a few parents were older adoptive parents.)

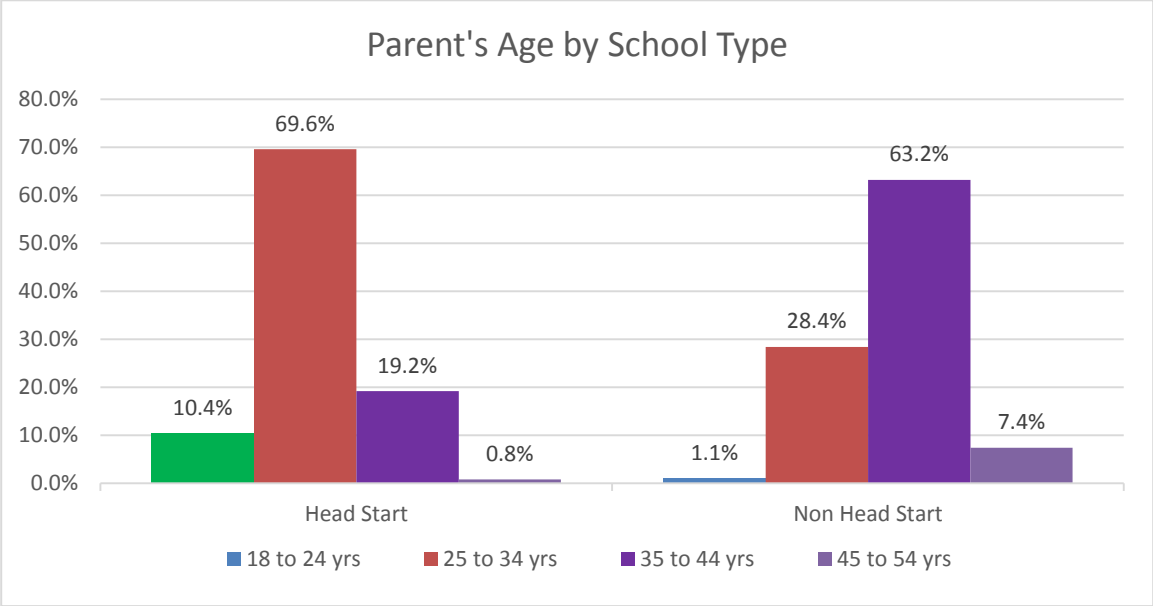

Figure 12. Parent's Age by School Type

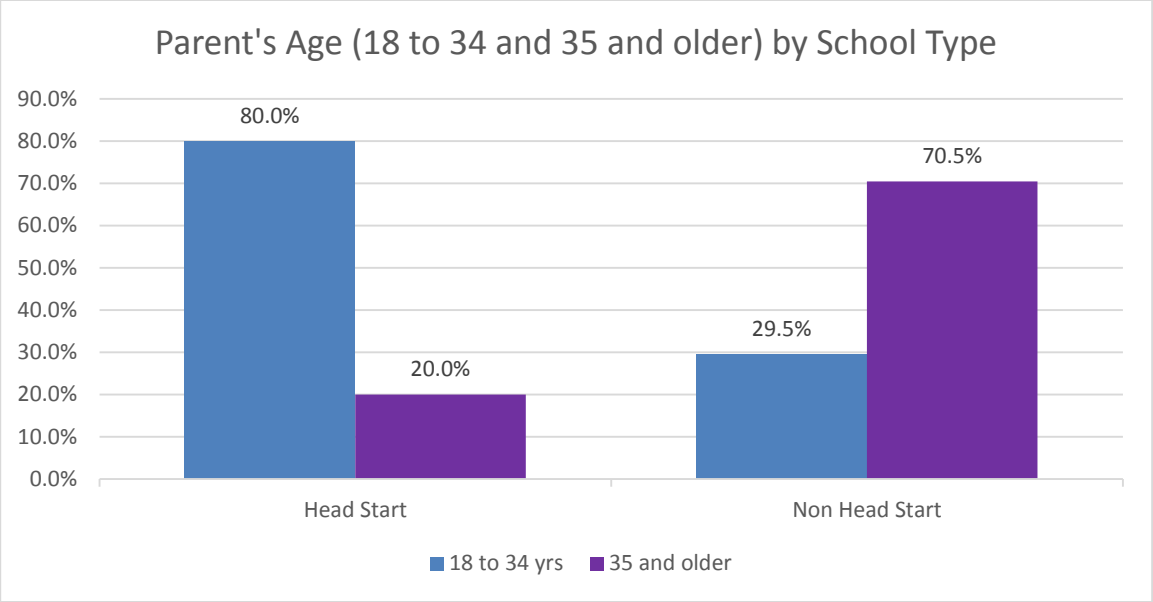

Figure 13. Parent's Age (18 to 34 and 35 and older) by School Type

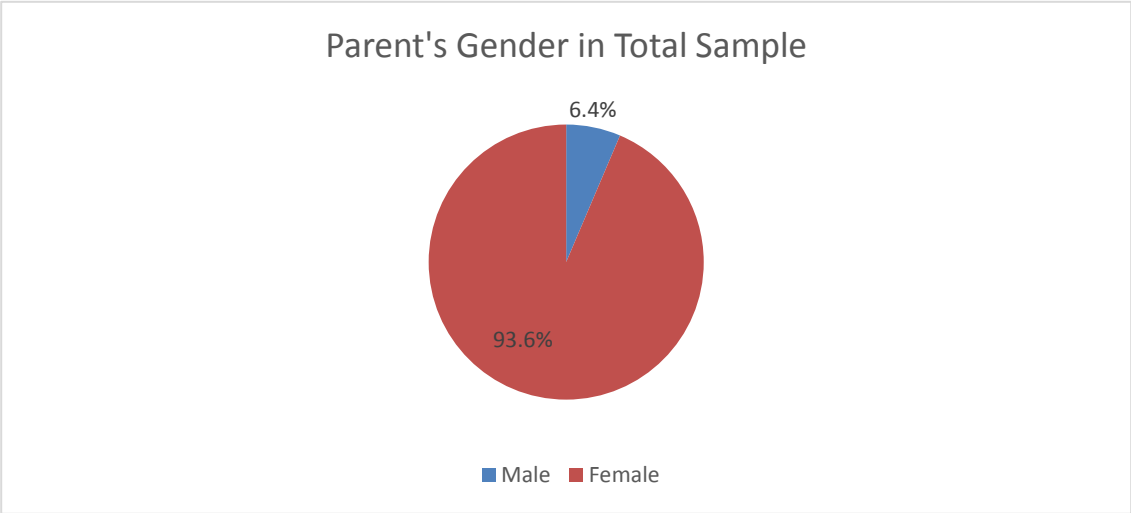

Figure 14. Parent's Gender in Total Sample

Gender: The majority (94%) of the parent participants in the research sample were women.

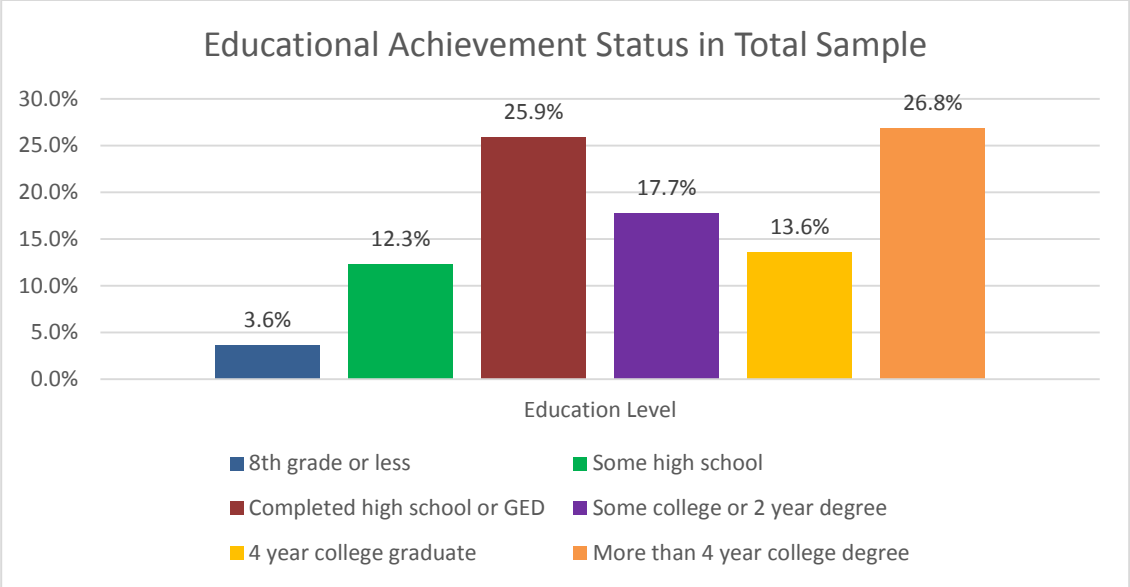

Figure 15. Educational Achievement Status in Total Sample

Education: The Non-Head Start group was more educated than the Head Start group with 94% having completed some college compared to 31% of Head Start parents. Approximately 69% of the Head Start parents had a high school education or GED or less compared to only 6.3% of Non-Head Start parents.

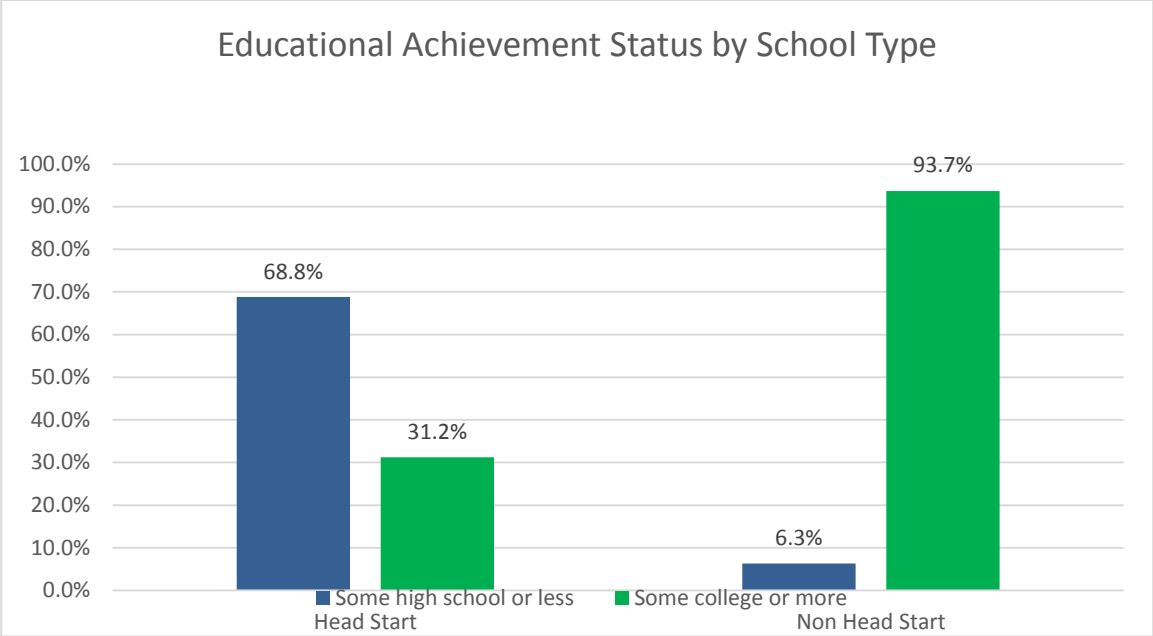

Figure 16. Educational Achievement Status by School Type

Home Health Literacy Environment: Also, approximately 64% of Non-Head Start parents had three or more health books at home compared to 30% of Head Start parents.

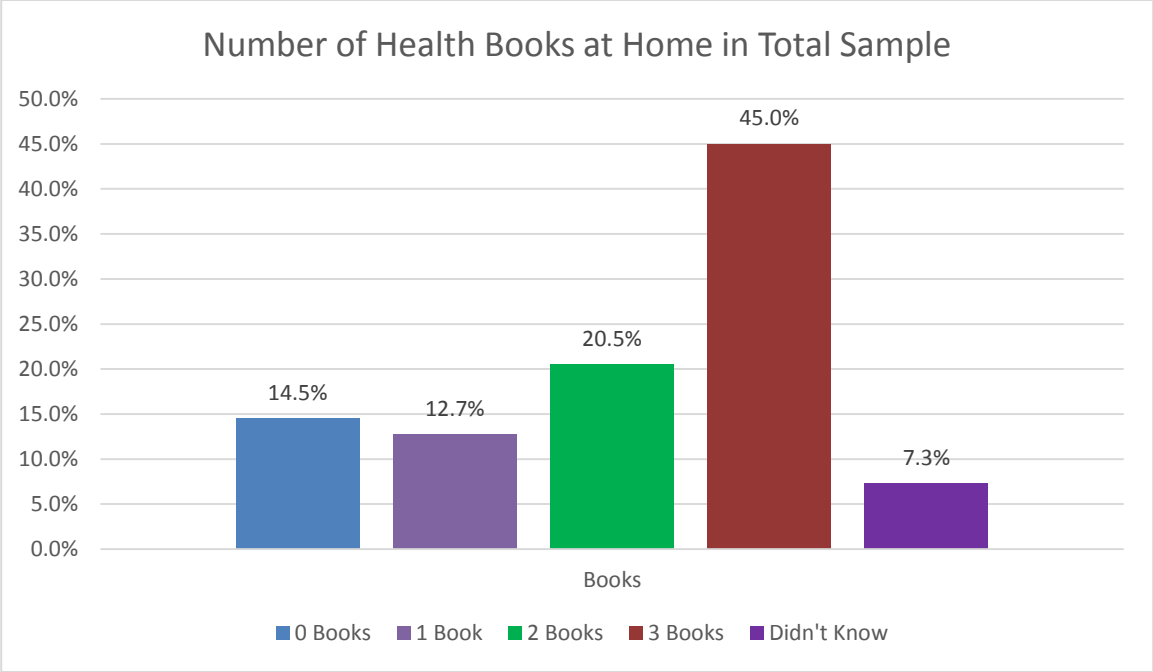

Figure 17. Number of Health Books at Home in Total Sample

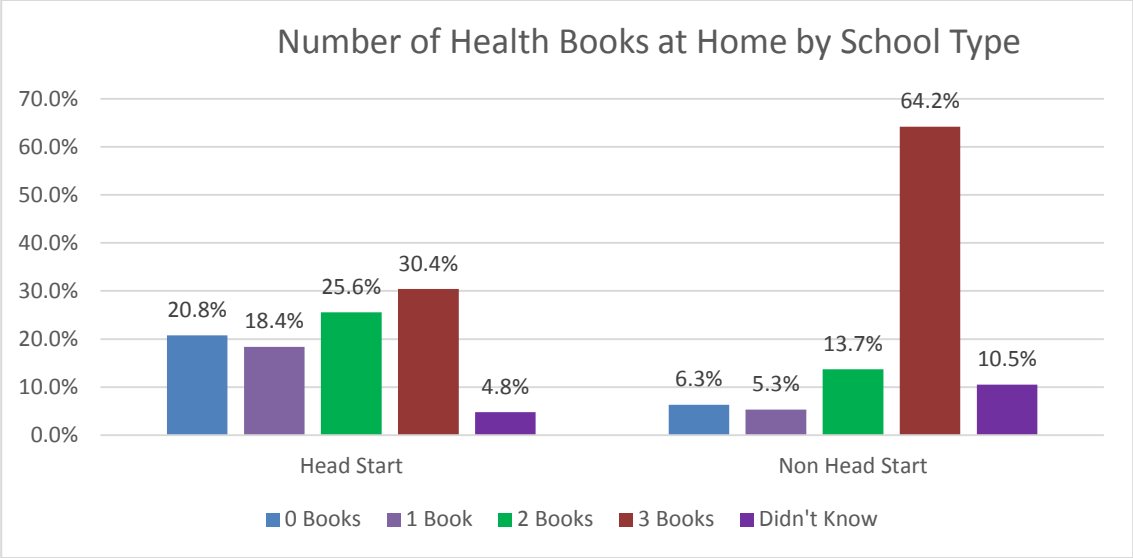

Figure 18. Number of Health Books at Home by School Type

Health Literacy Scores:

Nutrition Health Literacy was measured by analysis of participant responses to the Newest Vital Sign, which includes six questions about interpreting a nutrition facts label. Functional Health literacy was measured by analysis of how well respondents performed on sentence completion tasks indicating comprehension of basic medical instructions. The majority of all participants from both school types scored well on the test for comprehension of basic medical directions. However, there is a large disparity between nutritional health literacy scores of Head Start versus Non Head Start parents. Approximately 90% of the higher income Non Head Start group had high literacy scores compared to 60% of the lower income Head Start group. Among Head Start parents, 26% had two health books, 18% had one health book, and 21% had no health books at home. This finding may indicate the need for allotted funding to be channeled to the specific parent education effort of health literacy skills building.

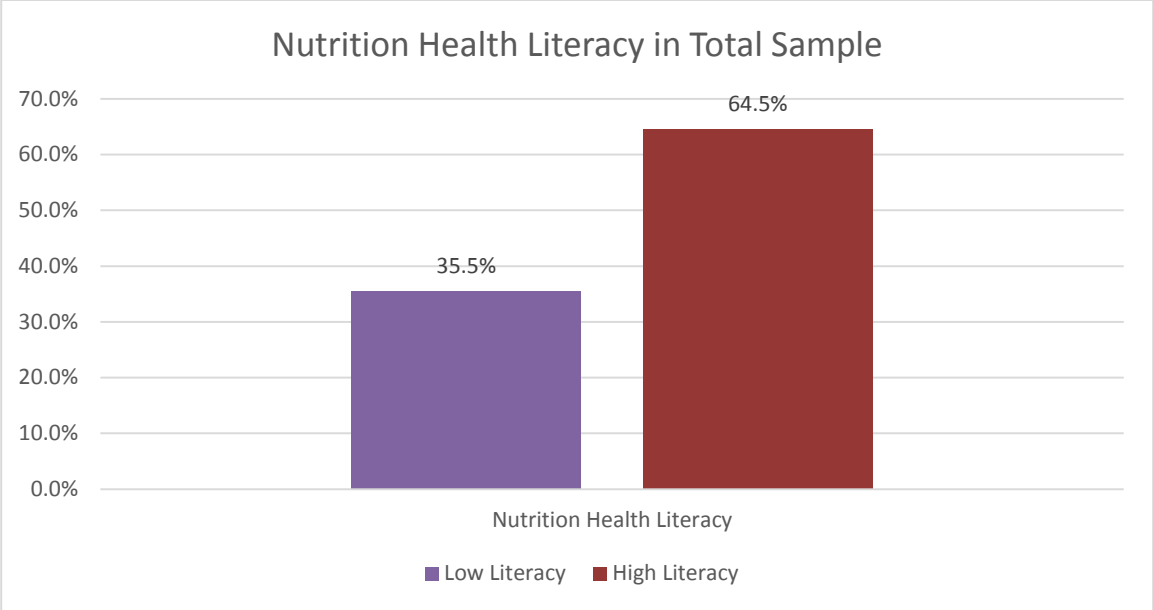

Figure 19. Nutrition Health Literacy in Total Sample

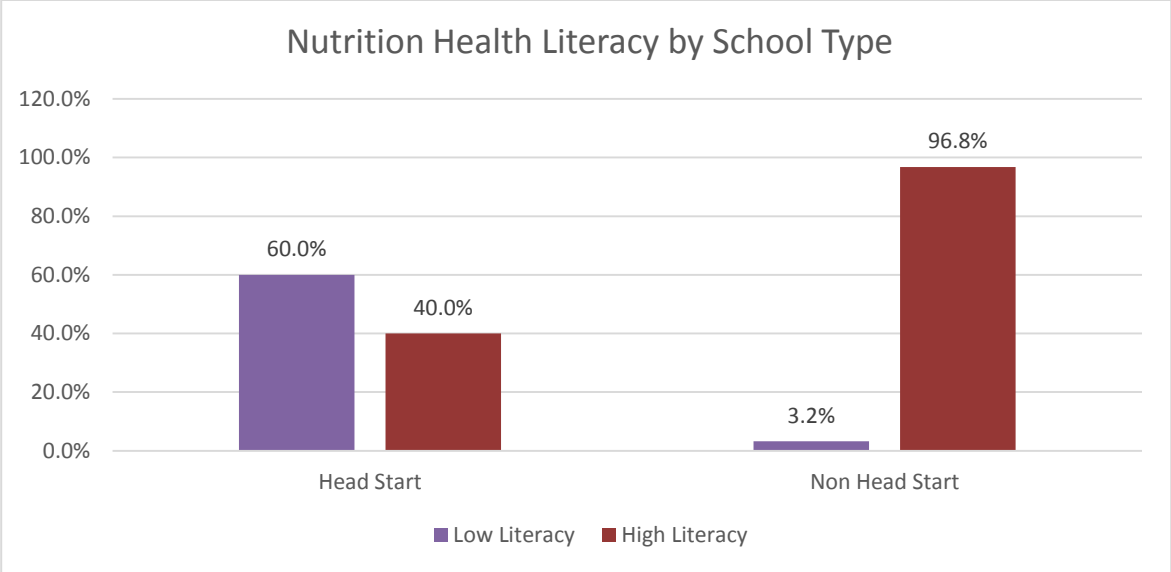

Figure 20. Nutrition Health Literacy by School Type

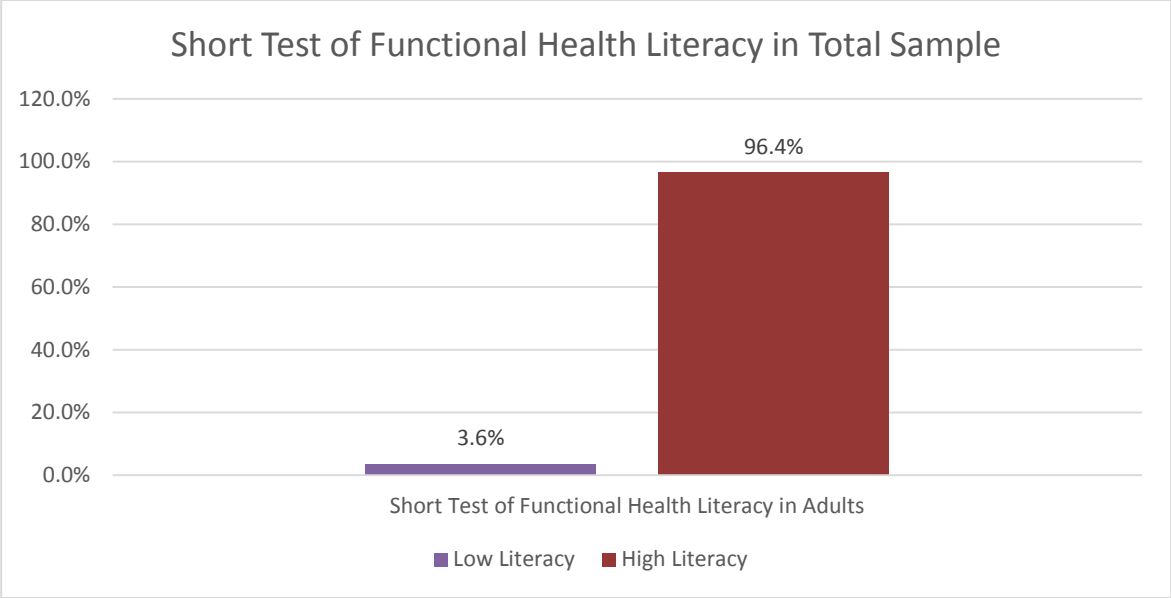

Figure 21. Short Test of Functional Health Literacy in Total Sample

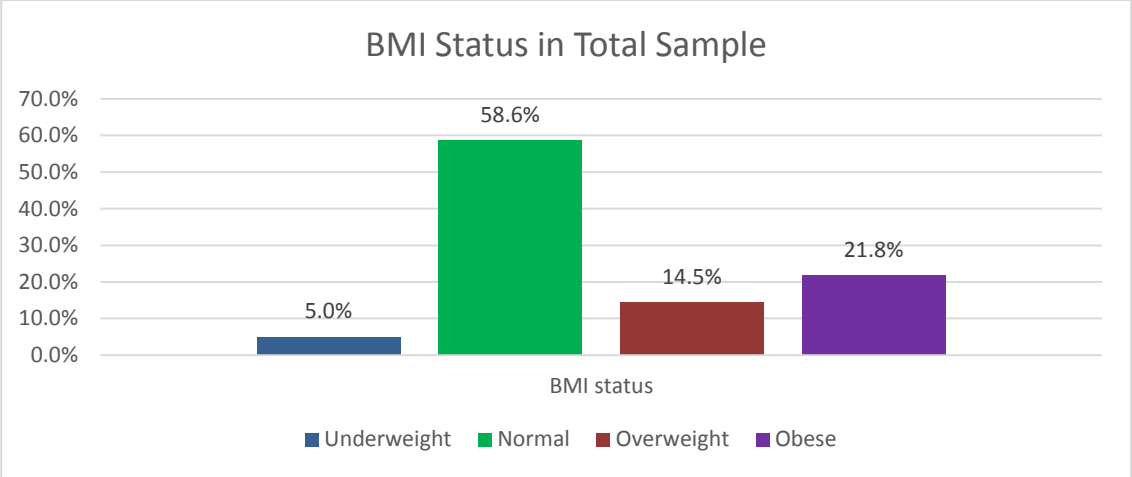

Figure 22. BMI Status in Total Sample

BMI Status*:* Figure 22 shows that in the total sample approximately 59% of the children were of normal BMI status, followed by 21.8% Obese, 14.5% Overweight, 5% Underweight. Figure 23 shows that In the Head Start population approximately 25.6% of children fell into either the obese compared to 16.8% of Non-Head Start going children.

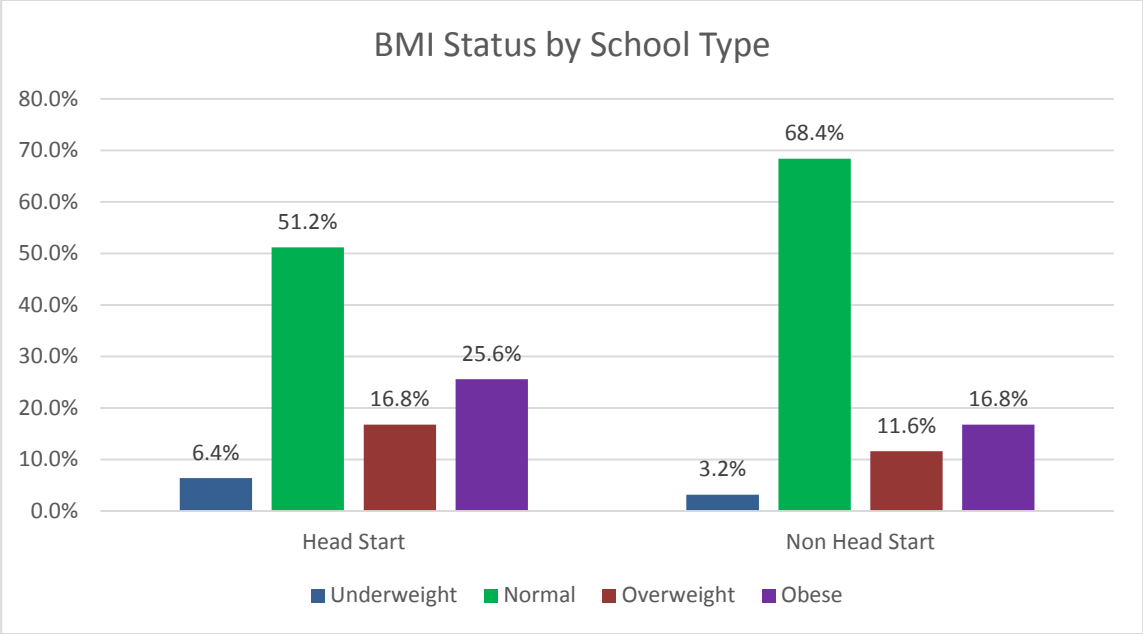

Figure 23. BMI Status by School Type

Analysis Results by Research Question: The next section describes analysis results by research question. Some findings are presented in two parts to represent, at first, associations with nutritional health literacy, and then functional health literacy.

Research Question 1a: What are the demographic differences/disparities (income, education, race, age), if any, for <u>nutritional health literacy</u> by school type?

An independent samples t-test was conducted to compare the nutritional health literacy scores from the Newest Vital Sign (average scores from an individual score of 0 to 6 points out of 6 possible correct answers), for Non-Head Start parents and Head Start parents. There was a significant difference in scores for Non-Head Start (M=5.5, SD=1.05) and Head Start (M=2.5, SD=2.42; t (178.48) = 12.61, p<.001, two-tailed). The magnitude of the differences in the means was 3.05 (95% *CI:* 2.57 to 3.52) and the effect size was large (Cohen's d = 1.6). Therefore, there is a significant difference in the two groups.

So, we know from the literature that Head Start predominantly serves a low-income group of families. Therefore, it is expected that school type will be associated income level. Analyses were conducted to check how much income was associated with school type in this sample.

School Type and Income Level

A Chi-square analysis was conducted on 220 participants to evaluate whether school type was associated with income level. The two variables were: school type

(Non Head Start or Head Start) and level of income (high or low). There was a significant association between school type and income [Pearson χ^2 (1, N=220) = 142.605, p< .001]. The proportion of low-income earning parents participating in Non-Head Start and Head Start schools was 10% and 90% respectively. The proportion of high income earning parents participating in Non-Head Start and Head Start schools was 91.1% and 8.9% respectively. The findings show a higher proportion of low-income earning parents participating in Head Start, while a higher proportion of high income earning parents participated in Non Head Start schools. Therefore, the two variables have an association.

Next, given that school type is significantly associated with income levels, further analyses were conducted to understand the association between income level and health literacy scores as measured by the Newest Vital Sign survey and the Short Test in Functional Health Literacy in Adults. Although the Head Start schools predominantly serve low-income families, occasionally some higher income parents are allowed to attend the program. Likewise, some of the Non-Head Start schools serve a mixed income group. Therefore, the first set of analysis will check for associations between income and health literacy scores and the second set of analysis will check for associations between school type and health literacy scores.

Income Level and Nutrition Health Literacy

A Chi-square analysis was conducted on 220 participants to evaluate whether income was associated with no, low, medium or high nutrition health literacy scores.

The two variables were: level of income (high or low) and level of nutritional health literacy (no, low, medium, or high). There was a significant association between income and nutritional health literacy scores [Pearson χ^2 (3, N=220) = 61.773, p< .001]. The proportion of high income earning parents having no, low, medium, or high nutritional health literacy was 4.4%, 0.0%, 10.0%, 85.6% respectively. The proportion of low-income earning parents having no, low, medium, or high nutritional health literacy was 38.5%, 9.2%, 18.5%, and 33.8%, respectively. The findings show a higher proportion of high income earning parents received a high nutritional health literacy score compared to low-income earning parents, while a higher proportion of low-income earning parents earned no or low nutritional health literacy scores. Therefore, the two variables have an association.

Parental Educational Attainment Level and Nutrition Health Literacy Score

A Chi-square analysis was conducted on 220 participants to evaluate whether education was associated with no, low, medium or high nutrition health literacy scores. The two variables were: level of education (high school/GED or less and some college or higher) and level of nutritional health literacy (no, low, medium, or high). There was a significant association between education and nutritional health literacy scores [Pearson χ^2 (3, N=220) = 74.67, p< .001]. The proportion of parents with lower educational attainment having no, low, medium, or high nutritional health literacy was 44.6%, 12.0%, 21.7%, and 21.7% respectively. The proportion of parents with higher educational attainment having no, low, medium, or high nutritional health literacy was

10.2%, 0.8%, 10.2%, 78.9% respectively. The findings show a higher proportion of parents with lower educational status with a lower nutritional health literacy score compared to parents with higher educational status who received higher nutritional health literacy scores. Therefore, the two variables have an association.

School Type and Nutrition Health Literacy

A Chi-square analysis was conducted on 220 participants to evaluate whether School Type was associated with no, low, medium, or high nutrition health literacy scores. The two variables were School type (non-Head Start and Head Start) and level of nutritional health literacy (no, low, medium, or high). There was a significant association between school type and nutritional health literacy scores [Pearson χ^2 (3, N=220) = 79.06, $p < .001$]. The proportion of Non-Head Start participating parents having no, low, medium, or high nutritional health literacy was 3.2%, 0.0%, 8.4%, 88.4%.

The proportion of Head Start participating parents having no, low, medium, or high nutritional health literacy was 40.8%, 9.6%, 20.0%, 29.6%. The findings show that a higher proportion of Non-Head Start participating parents received a high health literacy score, while a higher proportion of Head Start participating parents received a low nutrition health literacy score.

Income Level and Nutrition Health Literacy Score

A multiple regression was run to predict nutritional health literacy scores from income and parent educational attainment. The variables statistically significantly

predicted nutritional health literacy scores, F (2, 216) = 38.9, $p < .001$, $R^2 = .27$. Both variables added statistically significantly to the prediction, $p < .001$. The findings suggest that when a respondent has a high income, the model predicts their nutrition health literary score to increase by 1.9 units. When a respondent has higher educational attainment the model predicts their nutrition health literary score to increase by .007 units. The regression equation is as follows:

y' = 2.660 + 1.9*income + .007*Education + ε

Income Level, Education Level, and Nutrition Health Literacy Score by School Type

A multiple hierarchical regression was used to assess the ability of school type to predict nutritional health literacy scores, after controlling for income level and education level. Income level and education level were entered at Step 1, explaining 27 percent of the variance in nutritional health literacy scores. After entry of school type at Step 2, the total variance explained by the model as a whole was 38.1, F (3,215) = 45.8, p<.001. School type explained an additional 12.5% of the variance in nutritional health literacy scores, after controlling for income and education, R squared change=.125, F (3,215) = 45.8, p<.001. In the final model, only household income were statistically significant with school type recording a higher beta value (*beta*=.17, *p*<.05) than education level (*beta*=.020, p=.703). The final regression equation is as follows:

y' = 4.729 + .17*income + .020*Education -.495*School Type + ε

Research Question 1a continued: Are there any significant differences between non-Head Start attending parents and Head Start attending parents for functional health literacy? What is the association between functional health literacy and parents who have higher income or higher education?

School Type and Functional Health Literacy Scores

An independent samples t-test was conducted to compare the functional health literacy scores (as measured by a total score from 36 possible correct answers calculated from the Short Test of Functional Health Literacy in Adults) for Non-Head Start parents and Head Start parents. There was a significant difference in scores for Non-Head Start (M=35.5, SD=0.68) and Head Start (M=32.3, SD=7.69; t (126.6) = 4.71, p<.0001, two-tailed). The magnitude of the differences in the means was 3.26 (95% *CI:* 1.89 to 4.63) and there was a large effect size (Cohen's d = 0.59).

Income Level and Functional Health Literacy Scores

The relationship between income and functional health literacy (as measured by the Short Test of Functional Health Literacy in Adults) was studied using Pearson product –moment correlation coefficient. There was a weak positive correlation between the two variables, r=.174, n=220, p=.01. Increases in income were weakly associated with higher functional health literacy scores. Therefore, there is an association between the two variables.

Education Level and Functional Health Literacy Scores

The relationship between education and functional health literacy (as measured by the short test for functional health literacy in adults) was studied using Pearson product –moment correlation. There was a small positive correlation between the two variables, $r=.267$, $n=220$, $p<.001$, with high levels of functional health literacy associated with parents who have a higher education.

A chi square was then conducted on 220 participants to evaluate whether education was associated with no, low, medium, or high functional health literacy scores. The two variables were level of education (no college and some college or more) and level of functional health literacy (no, low, medium, or high). There was a significant association between education and functional health literacy scores Pearson χ^2 (2, $\underline{N}$=220) = 7.43, $p< .05$. The proportion of parents having less than a college education having no, low, medium, or high functional health literacy was 4.3%, 0.0%, 3.3%, and 92.4%. The proportion of parents with some college or more education having no, low, medium, or high functional health literacy was 0.8%, 0.0%, 0.0%, and 99.2%. The findings show that although both education groups scored well on functional health literacy, a higher proportion of college educated parents received high functional health literacy scores than those parents without a college education. Therefore, the two variables have an association.

School Type and Functional Health Literacy

A chi square was then conducted on 220 participants to evaluate whether school type was associated with no, low, medium, or high functional health literacy scores. The two variables were school type (Non-Head Start or Head Start) and level of functional health literacy (no, low, medium, or high). There was a significant association between education and functional health literacy scores Pearson χ^2 (2, N=220) = 6.31, p< .05. The proportion of Non-Head Start participating parents with high functional health literacy was 100%. The proportion of Head Start participating parents having no, low, medium, or high functional health literacy was 4.0%%, 0.0%, 2.4%, and 93.6%. The findings show that although both School types scored well on functional health literacy, a higher proportion of Non-Head Start participating parents received high functional health literacy scores than Head Start parents. Therefore, the two variables have an association.

Race Disparities in Nutritional Health Literacy, by School Type

A hierarchical multiple linear regression was conducted to predict nutritional health literacy scores using race. The coefficient of determination (R^2) was .33 which means that 33 percent of the variation in nutritional health literacy scores is being explained by the model. The Hispanic (t=-9.801, p<.001) and Black (t=-5.87, p<.001) race variable statistically significantly predicted nutritional health literacy scores for model 1.

For model 2, school type was added and the total variance explained by the model as a whole increased to 42%. The school type variable (for Non Head Start and Head Start) was statistically significant (t=-3.5, p=.001). Results of the second model continued to show that Hispanic parents had a statistically significant different total nutritional health literacy scores (t= -3.49, p=.001). No other ethnic group (including Black parents) was a significant predictor of nutrition health literacy score when race is controlled by school type. (Although there were more minority group participants in Head Start schools, there was not a significant difference in nutritional health literacy scores by School type for any race other than the Hispanic group of parents.)

Model 3 was determined to be the best model for predicting nutritional health literacy scores. The coefficient of determination (R^2) was .41 which means that 41% of the variation in nutritional health literacy scores is being explained by the model using only two independent variables (Hispanic: t=-3.6, p< .001 and School Type: t=-8.4, p<.001). The regression model is statistically significantly and predicts functional health literacy scores F (2, 217) = 76.23, p< .001. The resulting regression model is: **Y' = 5.66 – 1.103*Hispanic -2.514*School Type + ε .** This model predicts that when a parent is Hispanic, their nutritional health literacy score will decrease by 1.103 units and that when school type is Head Start, nutritional health literacy score will decrease by 2.51 units.

Race disparities in functional health literacy, by School Type

A hierarchical multiple linear regression was conducted to predict functional health literacy scores using race. The coefficient of determination (R^2) was .084 which means that 8.4 percent of the variation in functional health literacy scores is being explained by the model. The Hispanic race variable statistically significantly predicted functional health literacy scores F (4, 215) = 4.915, p< .001. Results of the first model showed that for Hispanic parents, their total functional health literacy is predicted to decrease by 3.55 units (t=-3.78, p<.001) compared to other races. No other ethnic group was a significant predictor of functional health literacy score.

After entry of school type at Step 2, the total variance explained by the model as a whole was 12.2%, F (5, 214) =5.95, p<.001. The school type variable explained an additional 4.6% of the variance in functional health literacy sores, after controlling for race, R squared change = .046, F change (5, 214) = 9.34, p<.001. Results of the second model showed that the Black race variable statistically significantly predicted functional health literacy scores which decreased by 2.94 units (t=2.02, p<.05) compared to other races. Therefore, the regression model is significant.

Model 1 regression equation: Y = 34.99 – 3.55*Hispanic + **ε**

Model 2 regression equation: Y' = 35.45 – 2.94*Black – 3.66*School Type + **ε**

Race disparities in perceptions of health care quality, by School Type

Because all p> .05, the race variable did not statistically significantly predict perceptions of health care quality F (5, 214) = .21, p= .96

Research Question 1b.: Is there an association between parental nutritional/functional health literacy and child BMI status by school type?

An independent samples t-test was conducted to compare the BMI scores for Non-Head Start children and Head Start children. There was a significant difference in scores for Non-Head Start (M=16.35, SD=2.16) and Head Start (M=17.39, SD=4.63; t (185.33) = -2.22, p=.03, two-tailed). The magnitude of the differences in the means was -1.04 (95% *CI:* -1.97 to -1.14) and the effect size was small (Cohen's d = .29). Therefore, there is a significant difference in the two groups.

The relationship between nutrition health literacy scores and child BMI status was then studied using Pearson product –moment correlation coefficient. There was a weak negative correlation between the two variables, r=-.122, n=220, p=.071, which is significant using alpha = .10. Results show that increases in nutritional health literacy scores resulted in lower child BMI scores.

Parental Functional Health Literacy and Child BMI

The relationship between functional health literacy scores and child BMI status was studied using Pearson product –moment correlation coefficient. There was a weak negative correlation between the two variables, r=-.02, n=220, p=.081, which is significant using alpha = .10. Results show that increases in functional health literacy scores resulted in lower child BMI scores.

1c. Is there an association between number of health books at home and nutrition health literacy score?

A Chi-square analysis was conducted on 220 participants to evaluate whether number of health books was associated with no, low or high nutrition health literacy scores. The two variables were number of health literacy books (0 1, 2, 3, or "don't know") and nutritional health literacy (low or high). There was a significant association between education and nutritional health literacy scores [Pearson χ^2 (4, N=220) = 32.22, p< .001]. The proportion of parents with high health literacy scores having zero, one, two, or three books was 10.6%, 7.7%, 15.5%, 57.7% respectively. Another 8.5% did not know how many health books they had at home. The findings show a higher proportion of parents with more health books at home scored better on the nutritional health literacy assessment compared to those parents who had fewer health books at home.

1d. Is there an association between school provided parent education and parental health literacy?

Parent Education from the School (about Nutrition or Physical Activity)

Fifty-six percent of Head Start parents reported having received parent education about nutrition or physical activity from the school compared to 40% of Non-Head Start parents.

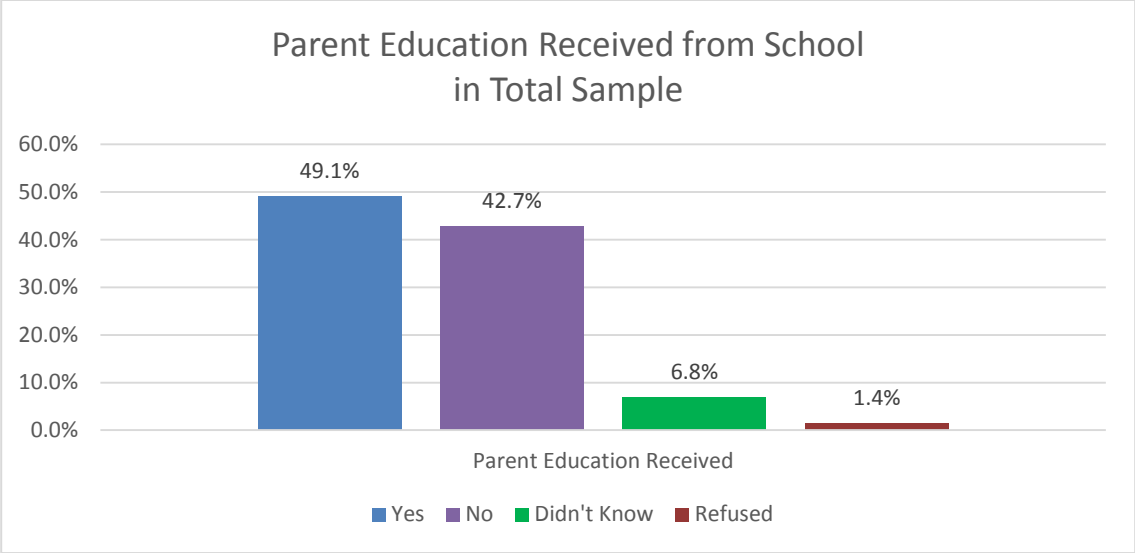

Figure 24. Parent Education Received from School in Total Sample

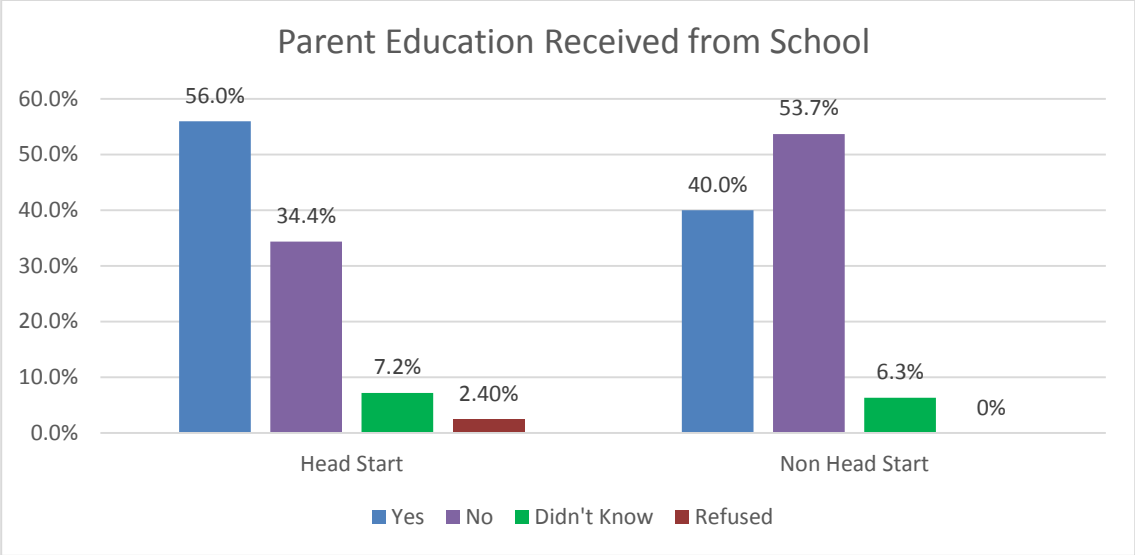

Figure 25. Parent Education Received from School

The relationship between parent education and school type was then studied using Pearson product –moment correlation coefficient. There was a weak positive correlation between the two variables, $r=.159$, $n=220$, $p<.05$. Increases in parent group education were weakly associated with School type, however, Head Start participating parents participate in significantly more parent education pertaining to nutrition or physical activity information than Non-Head Start participating parents.

Parent Education (for Nutrition or Physical Activity Information from School) by School type continued.

An independent-samples t-test was also conducted to compare the group education for Non-Head Start and Head Start parents. There was a significant difference in scores for Non-Head Start ($M=.40$, $SD=.49$) and Head Start ($M=.56$, $SD=.50$; $t(218)= -2.37$, $p<.05$, two –tailed). The magnitude of the difference in the means (mean difference=-.16, 95% *CI*: -.29 to -.027) was small: Cohen's $d=.32$.

Health Care Referrals to Pediatric Primary Care

Overall, Head Start participants received more (38%) health care referrals to primary care than 17% of Non-Head Start participants. A higher proportion (53%) of Head Start parents received dental care referrals compared to 5.3% of Non-Head Start participants.

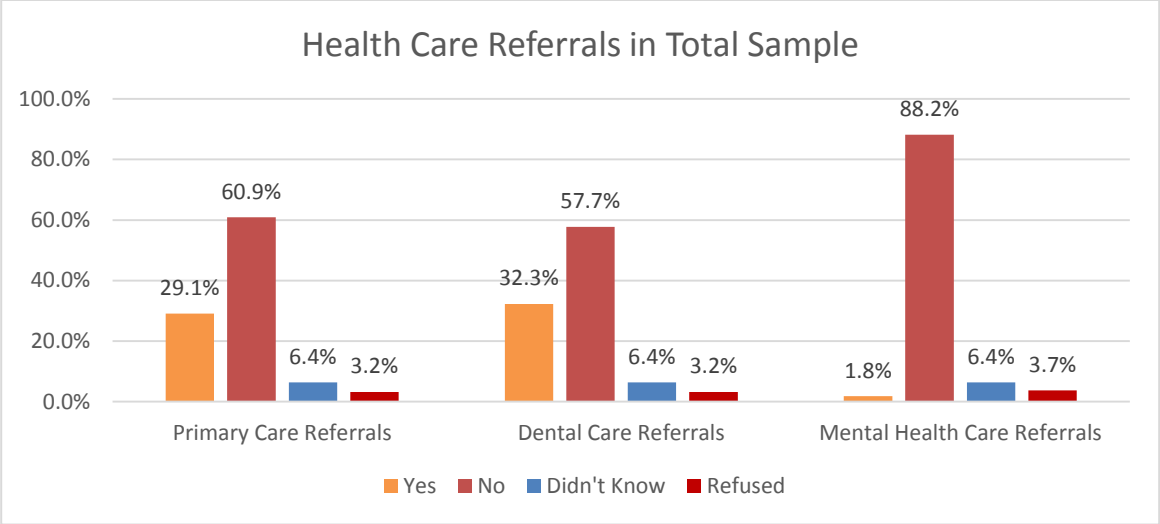

Figure 26. Health Care Referrals in Total Sample

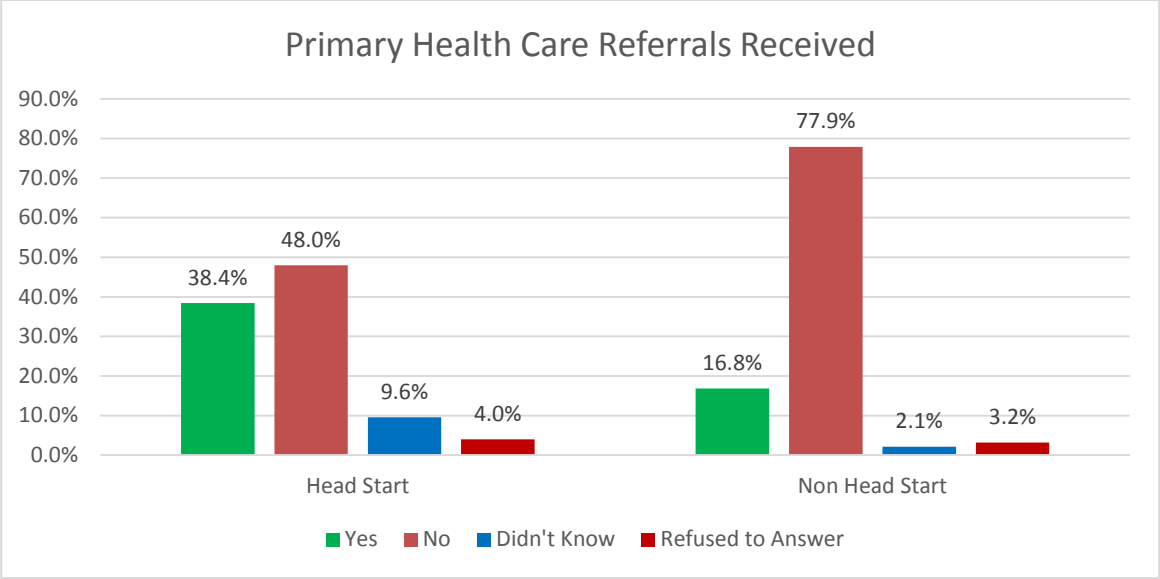

Figure 27. Primary Health Care Referrals Received

Research question 2a. What is the association between child BMI and health care referrals by school type?

The relationship between health care referrals and school type was studied using Pearson product –moment correlation coefficient. There was a weak positive correlation between the two variables, r=.235, n=220, p<.001. Increases in health care referral were weakly associated with school type, however, the results show that Head Start participating parents reported receiving significantly more health care referrals than Non-Head Start participating parents.

An independent-samples t-test was conducted to compare having received a health care referral for Non-Head Start and Head Start parents. There was a significant difference in scores for Non-Head Start (M=.17, SD=.38) and Head Start (M=.38, SD=.49; t(218)= -3.7, p<.001, two –tailed). The magnitude of the difference in the means (mean difference=-.22, 95% *CI*: -.33 to -.10) was medium: Cohen's d=.48. Therefore, there was a significant difference in health care referrals by school type.

Parent Health Seeking Behavior and Child BMI

The relationship between health seeking behavior and child BMI status was studied using Pearson product –moment correlation coefficient. There was a weak negative correlation between the variables, r=-.04, n=220, p=.54. Although there is a trend that as BMI increases, health seeking behavior decreases, the results are not significant.

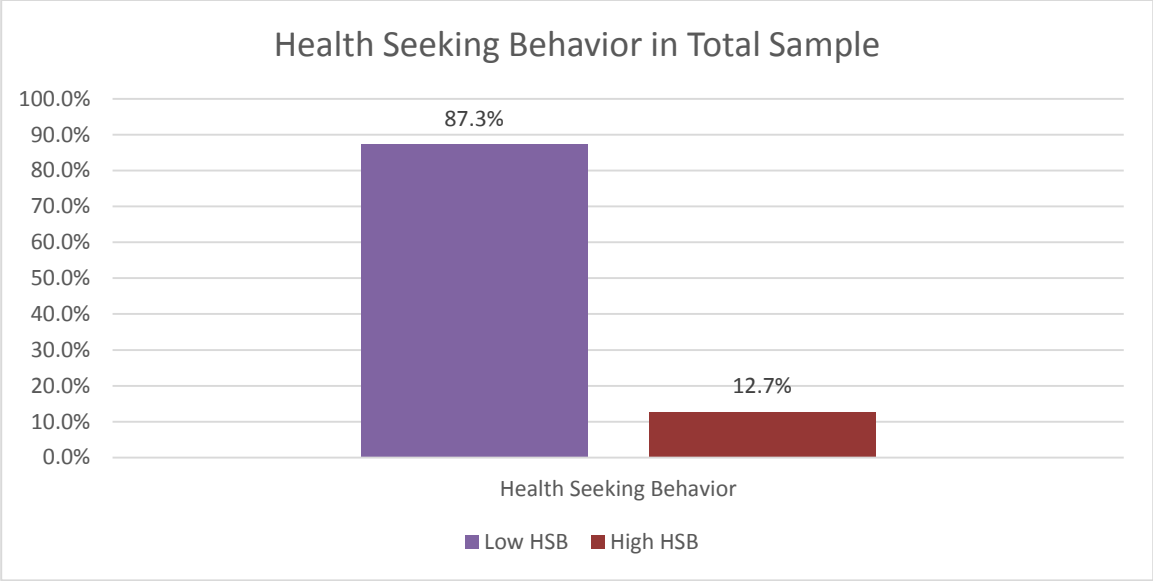

Figure 28. Health Seeking Behavior in Total Sample

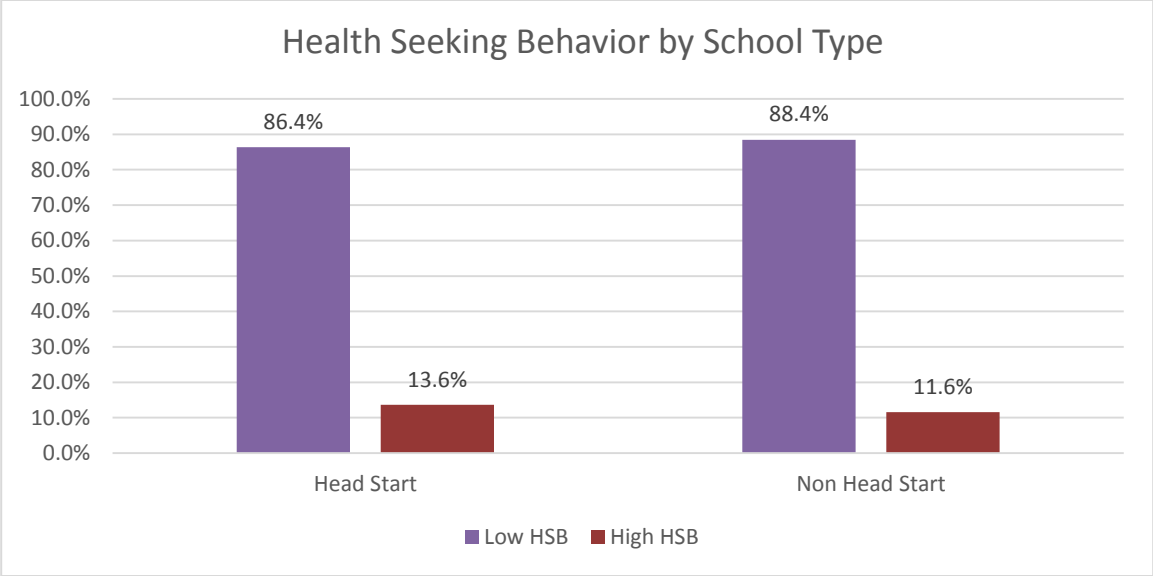

Figure 29. Health Seeking Behavior by School Type

Race disparities in health seeking behavior by School type

A hierarchical multiple linear regression was conducted to predict health seeking behavior scores using race. The coefficient of determination (R^2) was .033 which means that 3.3 percent of the variation in health seeking behavior is being explained by the model. The Black race variable approaches significance in predicting health seeking behavior F (4, 214) = 1.822, p< .10. Results of the first model showed that for Black parents, their total health seeking behavior is predicted to decrease by .692 units (t=-2.14, p<.05) compared to other races. No other ethnic group was a significant predictor of health seeking behavior.

After entry of school type at Step 2, the total variance explained by the model as a whole was 3.4%, F (5, 213) =1.5, p=1.93. The school type variable explained an additional .01% of the variance in health seeking behavior after controlling for race, R squared change = .001, F change (5, 213) = .207, p=.650. Results of the second model showed that the Black race variable statistically significantly predicted health seeking behavior which decreased by .816 units (t=-1.93, p=.055) compared to other races.

Model 1 regression equation: Y = 2.859 – .692*Black + **ε**

Model 2 regression equation: Y' = 2.839 – .816*Black – .159*School Type + **ε**

Research question 2b: Are more health care referrals (for primary care) associated with high health seeking behavior?

A Chi-square analysis was conducted on 220 participants to evaluate whether level of health care referrals was associated with level of health seeking behavior The

two variables were level of health care referrals (low and high) and level of health seeking behavior (low or high). There was a significant association between health care referrals and health seeking behavior [Pearson χ^2 (3, N=220) = 2.95, p< .10]. The proportion of low levels of health seeking behavior by low and high PCP referrals was 72.9%, and 23.6% respectively. The findings show that overall there was less health seeking behavior for those who received less health care referrals.

Racial Differences in Level of Primary Care Education Received

A Chi-square analysis was conducted on 220 participants to evaluate whether race was associated with low or high health education from primary care. The two variables were race (White, Black, Asian, Hispanic, and Other) and primary care health education (low or high). Low education was characterized by communicating one to six health care topics whereas high health education was characterized by communicating seven to twelve health care topics. There was a significant association between race and primary care health education received by parents [Pearson χ^2 (3, N=220) = 9.608, p< .048]. The proportion of low levels of health education received by White, Black, Asian, Hispanic, and Other parents was 29.4%, 13.4%, 17.6%, 37.3%, and n<5. The proportion of high levels of health education received by White, Black, Asian, Hispanic, and Other parents was 33.3%, 20.2%, 4.8%, 77.4%, 3.0%. The findings show that a higher proportion of Hispanic parents reported having received higher levels of health education from primary care than other races. Therefore, the two variables have an association.

A One-Way ANOVA showed that there was a statistically significant difference between groups F (4,215) = 2.363, p = .054). A Tukey post hoc test revealed that level of parent education was statistically significantly different for Asians (5.65 ± 3.04 min) compared to Hispanics (8.11 ± 3.42 min), p=.026.

Differences in education received from primary care according to School Type

There are no differences in education received from primary care according to School Type. [Pearson χ^2 (4, N=219) = .080, p=.77]. This finding indicates that there was the same level of health care utilization from both school types.

Number of Parent Education Topics Discussed with Primary Care Physician

Approximately one quarter of participants reported having discussed 1-6 health education topics with their primary care physicians. Another 75% of participants reported having discussed between 7 to 12 health education topics with their health care providers. Overall a high number of topics was covered in the discussion between parent and provider. The number of discussions was similar between the two school types.

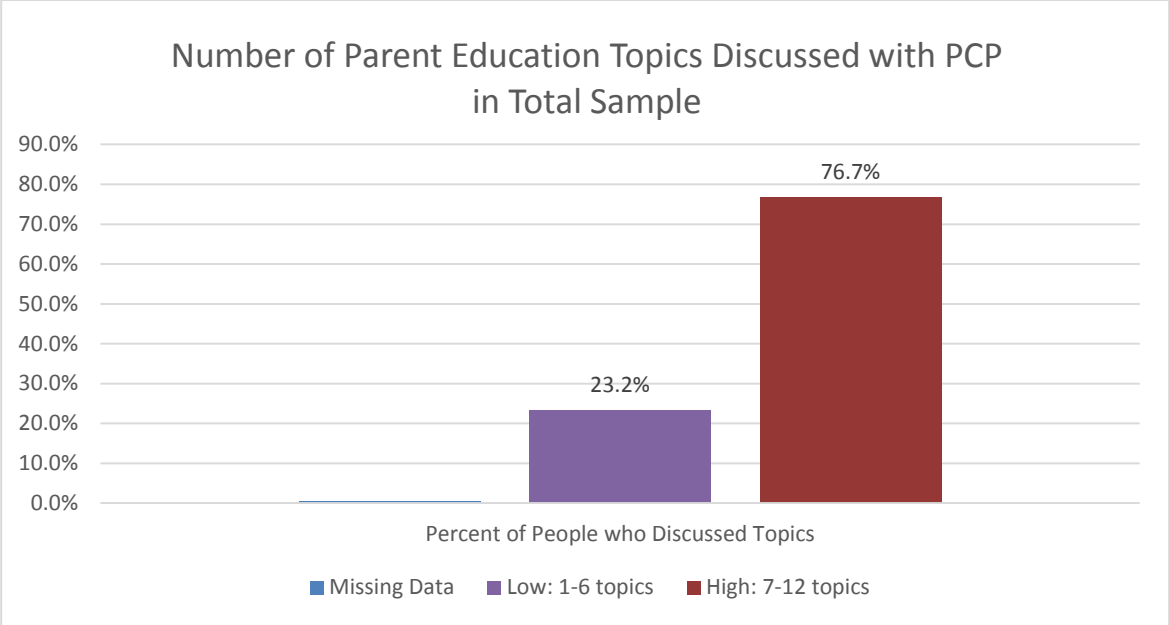

Figure 30. Number of Parent Education Topics Discussed with PCP in Total Sample

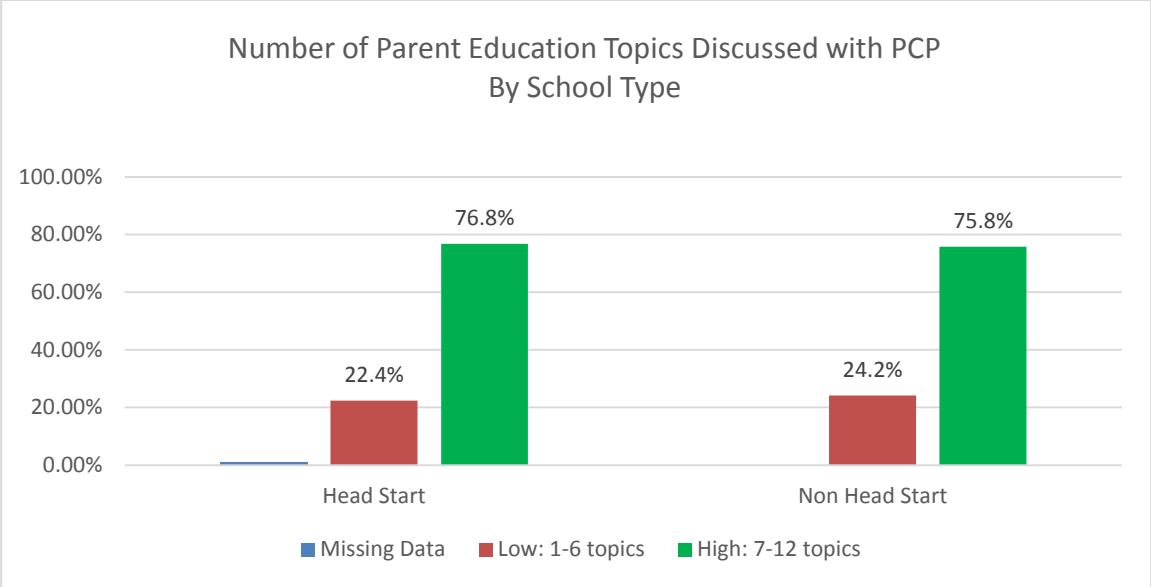

Figure 31. Number of Parent Education Topics Discussed with PCP by School Type

Is there an association between race and nutrition education received from primary care?

A Chi-square analysis was conducted on 220 participants to evaluate whether nutrition education was associated with race categories. The two variables were nutrition education received (no or yes) and race (White, Black, Asian, Hispanic and Other). There was a significant association between nutrition education received and race [Pearson χ^2 (4, N=220) = 10.18, $p < .05$]. The proportion of parents who received nutrition education was 34.25% White, 19% Black, 5.4% Asian, 38% Hispanic, and 3.3% Other. A higher proportion of White and Hispanic parents reported having received nutrition education from primary care compared to Blacks and Asians. The results indicate that possibly not everyone is getting to the same level of health care utilization to receive nutrition education as needed.

Health Seeking Behavior (for primary care visits sought) and Perception of Health Care Quality

Health seeking behavior was similar across both school types. Approximately 86% of Head Start parents and 88% of Non-Head Start parents had between 1-5 visits to primary care in the past 12 months (during the year 2016-2017). Approximately 14% of Head Start parents and 12% of Non-Head Start parents had high health seeking behavior with 6 to 10 visits or more in the past 12 months. Approximately 96% of all parents perceived their health care to be of high quality and would have recommended their primary care provider to someone else.

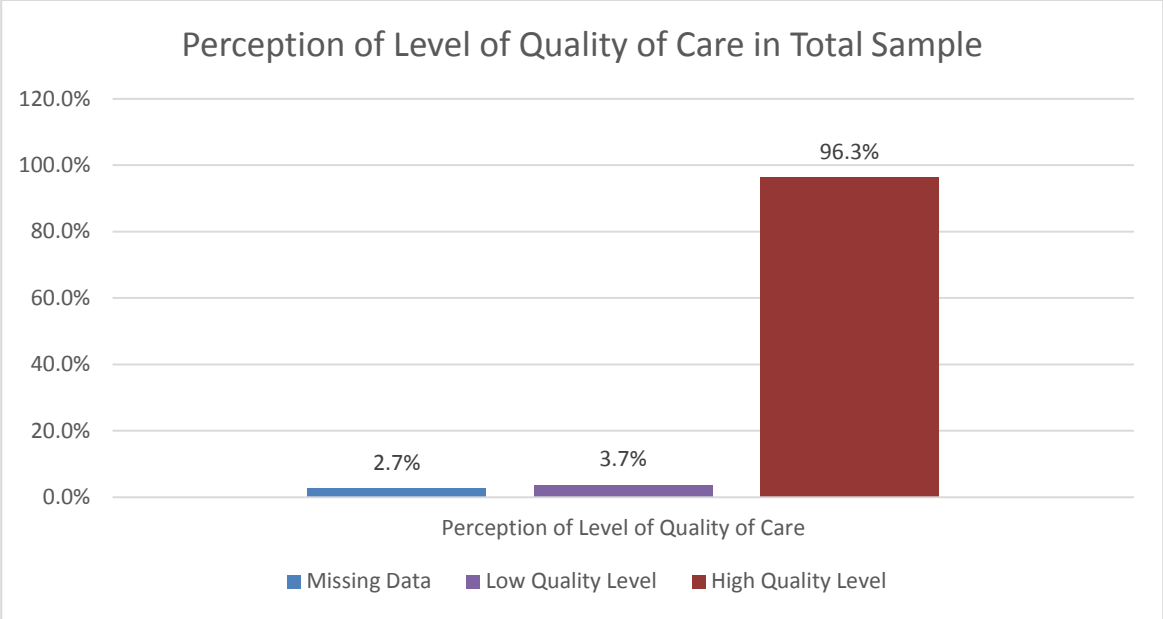

Figure 32. Perception of Level of Quality of Care in Total Sample

Conclusion:

Research question one addresses predisposing/inherent characteristics or demographic influences in parental health literacy scores and how that results in child health outcomes. The study results indicate that fewer health books at home for Head Start parents were associated with lower parental health literacy, higher child BMI, and more health care referrals. Demographic disparities for health literacy existed among Hispanic and Black parents, who had lower health literacy than White and Asian parents. Lower health literacy was associated with higher child Body Mass Index (BMI) and differences by school type. Head Start parents had lower health literacy overall than the Non Head Start parents. From the second main research inquiry, results showed that health seeking behavior from parents of the two school types exemplified the Head Start program offering twice the rate of referrals as Non-Head Start programs. In spite of health care referrals, health seeking behavior was lower overall for Black parents from the Head Start program. Regardless of health literacy levels, all respondents perceived their primary care to be of high quality. Therefore, if high quality preschool programming is getting families with young children to their primary health care, the remaining tasks may be for preschool staff or other professionals to adequately prepare the families with health literacy skills beforehand in order to make that clinic visit an effective one. Support for more effective parent health education to improve parental health literacy may reduce health

risks by parent-provider initiated developmental screenings and health care referrals prior to a pediatric primary care visit.

The findings therefore summarize research results of how demographics, family characteristics, and school type are associated with nutrition health literacy, functional health literacy, and health seeking behavior. The next chapter will discuss the findings and offer perspective about the results from past research and the present study.

Chapter 7

CONCLUSIONS AND IMPLICATIONS

Early childhood is a developmental time of much growth in the emotional, cognitive, and physical health domain. Those who support high quality early education and care programs like Head Start, show the vast ways in which these programs are supportive to multiple health and education domains for the parent-child dyad. High quality preschools conduct an important task of developmental screenings and referrals that lead to pediatric primary care for regular support of child health. This procedure is important for the early detection of a child reaching his/her developmental milestones or identification of health risks, developmental disability and delay. When high BMI is detected the question arises as to possible contributing factors and what response should follow.

For young children, the combined effects of parental knowledge and behavior, school programs, and primary care visits with pediatricians are often jointly responsible for monitoring healthy weight in young children. Programs like Head Start and other preschools are intended as a solution to offset the effects of poverty such as unhealthy weight. Preschools have the potential to serve as a mediating factor for childhood obesity, either through determining need for support through the

completion of developmental screenings and health care referrals, parent education, or nutrition and physical activity programs. However, parents' success in managing their children's healthy weight may also depend on their nutritional and functional health literacy levels.

Increasing parental health literacy is important because young children depend predominantly on their parents as caregivers for their well-being. In order to manage or reduce obesity, routine pediatric primary care visits typically include discussion of BMI of the child and suggestions for achieving or maintaining a healthy weight. "Pediatric primary care is an important place to address obesity prevention given the influential role of pediatric primary care providers (PCPs) and their regular contact with families during well-child visits, particularly during the preschool years when annual visits are the standard of care. Universal obesity risk assessment and a staged approach to pediatric obesity intervention are recommended by the American Academy of Pediatrics (AAP)," (Sherwood, JaKa, Crain, Martinson, Hayes, and Anderson, 2015).

Some families, especially those who are from low-income households, experience barriers in accessing primary care, both for adults or children. Barriers may be considered to be financial, or structural in terms of transportation, or even the lack of knowledge for where to obtain the appropriate care due to low health literacy. Therefore it is important to assess if this problem persists for young children with weight management problems due to health literacy and understand, if alternative

health promotion venues can serve as an intervention site. For example, one option, prior to getting to a pediatric clinic appointment, is that comprehensive health promotion efforts can support children's nutrition and physical activity in school or at home. Therefore, preschools are one ideal intervention and health promotion venue for those at risk for or already diagnosed with childhood obesity, especially if rates of health seeking behavior for pediatric primary care is low for some (low-income) families.

Parental Health Literacy and Childhood Obesity

Improving parental health literacy may be a mitigating factor to low-income families at risk for either obesity or malnutrition, especially among women and children. Past studies have reviewed health literacy and autonomy in self-management of health by parents of older children or of adults, (Casey, Szeto, Lensing, Bogle, & Weber, 2001; Tanumihardjo, Anderson, Kaufer-Horwitz, Bode, Emenaker, Hagg, Satia, Silver, 2007; Monteiro, Moura, Conde, & Popkin, 2004). These studies are typically at a clinical setting to review needed baseline data. They find that child and adolescent health literacy is strongly correlated with obesity (Chari et al., 2014; Sharif & Blank, 2010). Subsequent follow up for treatment adherence is explored within the clinic setting but not much discussion occurs for skills building as an intervention or even when and where a potential health literacy intervention could occur. Furthermore, older children are different than young children in that they have more autonomy to self-manage their care. Young children are dependent on their

parents' abilities to manage their welfare. Therefore, exploring how parental health literacy is associated with younger children's body mass index (BMI) is important.

Perhaps health literacy training of early education program staff can equip both staff and parents with the nutrition or other health knowledge needed to offset these problems. Therefore, a staff and parent health literacy training, especially to acquire nutrition health literacy, would be helpful. The health information towards skills building could be incorporated into home visits, center based parent-teacher conferences and as a goal in a family's Individualized Family Care Plan or as part of family and community partnerships. Setting this type of policy creates a widespread impact of promoting both nutrition health literacy and influencing health seeking behavior as an active way to gather information from the program or equips parents with the knowledge needed to seek further information from primary care as needed. The appropriate amount of program outreach through health care referrals and developmental screenings might also be discovered by finding out frequency of primary care utilized by parents and what is most effective for them.

By implementation of a Johnson and Johnson health literacy training for Head Start staff, it is evident that the Head Start program values family health literacy among many other health and education objectives (Herman and Jackson, 2010). However, not much research has been conducted yet on levels of nutritional health literacy among families that participate in the program. Likewise, staff training of Head Start on the subject of health literacy is rather new. Therefore, staff training may

influence the amount of resources provided to parents to support their health literacy and health seeking behavior. Because some early education and care programs may offer health literacy training to Head Start staff there may be increased positive health behavior among families from some school programs disseminating health education materials which in turn promotes parent-child health literacy and healthy behavior (Herman & Jackson, 2010). Families who have better health are likely to have better participation and attendance in school which also promotes their well-being in other ways (Santrock, 1998). Parent involvement in employment also increases their vocabulary which in turn increases the number of words children also are exposed to (Zigler & Styfco, 2004). Similarly parent involvement in reading and literacy efforts and from shared reading of health education printed materials may increase letter-word and concept recognition among both children and parents, fostering more learning capability in children for their overall health. Alternatively, lower cognitive performance is associated with poor health across the lifespan, especially among disadvantaged preschool age populations (Christensen, Schieve, Devine, Drews-Botch, 2014). Home enrichment, which may include books in the home is associated with improved cognitive performance (Christensen, et al., 2014). Promoting the use of printed materials at home then, in turn, may give more opportunity to review printed materials than not having any printed materials at all and not receiving the information that promotes welfare or guides in self-care or that of family members.

This study assessed parental health seeking behavior as a function of parental health literacy in order the understand weight management needs in both lower and higher income preschool attending groups. Past research has shown that one quarter of preschool age children have been diagnosed with childhood obesity, (Asfour, Natale, Uhihorn, Artheart, Haney, and Messiah, 2015; Ogden, et al., 2014). Approximately 22% of the children in the overall sample were found to be obese, however, the Head Start parents in this sample had 26% of their children as obese compared to 17% of Non-Head Start children. One reason for this disparity may be lower parental health literacy and parental educational attainment. Another reason for higher BMI among the lower income group may be having less health education books at home. Approximately 14% of adults in the United States have lower than basic reading levels, (Goodman, Finnegan, Mohadjer, Krenzke, Hogan, 2013; Kutner, Greenberg, Jin, Boyle, Hsu, Dunleavy, 2003). This fact is especially a concern for parents of young children who are dependent on their caregivers for their wellbeing. The problem then becomes defined as how to improve the health status of children of low-income families given lower health literacy and health seeking behavior of some groups. One avenue to resolving this societal problem is to explore intervention opportunities around health literacy which this study found to be associated with childhood obesity. Also to make a pediatric clinic visit more effective, preparing parents with child health management skills is also necessary. Finally offering developmental screenings and health care referral may bridge the gap among lower

income families in comparison to higher income families who have higher health literacy.

Factors Associated with Parental Health Literacy

Research Category 1: Health Literacy of Parents of Young Children

Demographic Trends in Health Literacy

Gender, age, education level, race, and income, may influence level of health literacy. The National Assessment of Adult Literacy (NAAL) of 2003, showed various demographic associations with health literacy. Women had slightly higher average health literacy levels and more men had below average health literacy levels. Older adults, at 65 years of age or older had lower health literacy scores than individuals who were younger.

These confounding characteristics could lead those who have low literacy, to experience either lack of employment or lower wage earnings, perpetuating families to remain in poverty. Furthermore, financial stability, access to health care services and daily functioning in society depend on the literacy skills to be able to read and write. Similarly, low literacy leads to low health literacy, which is defined as "the capacity to obtain, process and understand basic health information and services needed to make the appropriate health decisions and services needed to prevent or treat illness," (Institute of Medicine 2004). Without these skills, people experience more health care expenditures and poor health, which may result in more emergency department use instead of regular preventative wellness visits (Institute of Medicine, 2004). For better

cost savings and improved health status, prevention efforts including increased health literacy are needed. Those who are low-income and have low literacy visit emergency rooms more often because of lack of comprehension of health information.

Race

Both literacy and health literacy rates are disproportionately lower among racial minorities (Goodman, Finnegan, Mohadjer, Krenzke, Hogan, 2013; Kutner, Greenberg, Jin, Boyle, Hsu, Dunleavy, 2003). Racial disparities for below basic reading proficiency is wide, evident in 41% Hispanic, 24% Black, 13% Asian or Pacific Islander/Other, and 9% White adults (Kutner et al., 2003; Goodman et al., 2013).

In one California study of limited English proficiency speakers, both Asians and Hispanics were included in an assessment of health literacy. Those with both limited-English proficiency/low health literacy reported the highest prevalence of poor health. Results showed that, "Chinese respondents had the highest prevalence of low health literacy (68.3%), followed by Latinos (45.3%), Koreans (35.6%), Vietnamese (29.7%), and Whites (18.8%)" (Sentell & Braun, 2012). When comparing across race regarding health information seeking behavior, African Americans, Caucasians, and Hispanics relied on printed materials, friends, and family more than email or smart phones and sometimes received information from television and radio. Possibly less ability to navigate through online information limited the propensity to seek information that way (Nicholson, Gardner, Grason, & Powe, 2005). Therefore,

culturally and linguistically appropriate services and health promotion strategies are increasingly important to consider. An efficient approach may be through a family systems effort available through school based health. Therefore, promoting parental health literacy in preschools seems to be a necessary intervention for health literacy, especially pertaining to chronic disease management including obesity.

Income

Head Start predominantly serves a low-income population, (Zygler & Styfco, 2004). Porr, Drummond, & Richter (2006) have stated that that limited health literacy is prevalent among those of lower socioeconomic status. The results are likely confounded with lower educational attainment of parents. In this sample, most Head Start parents had less education than a college degree while the Non-Head Start group had achieved further education with a college degree or higher. Possibly age then is a confounding factor as well, because Head Start serves a younger age group of parents 34 years of age or less and the Non-Head Start group includes parents ages 35 years or more. Therefore, the resulting parental health literacy scores may have been skewed positively for a higher health literacy among Non Head Start Parents versus Head Start Parents. Also, Spanish Speaking parents predominantly attended Head Start programs, and overall their health scores were significantly lower. Health education materials and literacy supports in both Spanish and English may benefit this group.

Poverty is associated with a multitude of issues including food insecurity resulting in malnutrition and obesity. Types of chronic health conditions faced by the

preschool age group include obesity or secondary health complications that result from overweight, such as diabetes and asthma (Must, Hollander, Economos, 2006). During childhood, both parents and children are learning how to attain or maintain children's healthy BMI according to a balance of good nutrition and physical activity. "Body Mass Index (BMI) is a person's weight in kilograms divided by the square of height in meters. A high BMI can be an indicator of high body fatness," (Centers for Disease Control and Prevention, 2015). Children work on further developing good nutrition and their gross and fine motor skills during preschool years (Santrock, 1998). Lack of outdoor play opportunity might make physical activity for disadvantaged populations more difficult. Low-income families, including minority children, are "more likely to live in communities with fewer parks, sports facilities, bike paths, and other places for children to be active and safe" (Lindsay, et al., 2006). Therefore, it is important for school staff to be aware that childhood obesity is a prevalent condition in this young population possibly due to lack of opportunity for physical activity. However, the condition may be preventable as early as preschool years, especially in an early education and care (EEC) setting that usually promotes good nutrition and physical activity. Therefore, it is important to review both nutritional health literacy scores and functional health literacy scores for determining if even a school nutritionist is available for parents to talk with during parent health education sessions offered by Head Start programs and possibly would be of interest among Non Head Start parents as well who typically are assumed not to need parent health education. Non Head

Start going parents had both higher health literacy scores as well as a large population of children that also exhibited childhood overweight and obesity, therefore, a need exists among both school types for parental health literacy supports.

Education

There were more people with higher health literacy among people who completed higher education compared to those who had not completed a high school education. Adult health literacy levels are typically similar to basic adult literacy levels in the United States. The National Assessment of Adult Literacy defines literacy as "using printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential," and similarly the Adult Literacy and Life Skills Survey defines literacy as the knowledge and skills needed by adults, in life and at work, to use information from various texts (e.g., news stories, editorials, manuals, brochures) in various formats (e.g., texts, maps, tables, charts, forms, time tables), (Kutner, Greenberg, Jin, Boyle, Hsu, Dunleavy, 2003; Goodman, Finnegan, Mohadjer, Krenzke, Hogan, 2013). According to the U.S. Department of Education, National Institute on Literacy in 2003, 14% of adults or 32 million people in the United States, could not read or had a below basic reading proficiency. Health Literacy rates were similar: 14% had below basic health literacy levels in 2003, (Kutner et al., 2003; Goodman et al., 2013).

In fact, the National Center for Education Statistics reports show that the illiteracy rate had not changed in approximately 10 years from 1992 to 2003. A more

recent 2013 assessment was conducted with the PIACC: The Program for the International Assessment of Adult Competencies organized by the Organization for Economic Cooperation and Development (OECD). The assessment focuses on evaluation of literacy, reading, problem solving and numeracy in technology rich environments and compares the United States (U.S.) to other countries (Kutner et al., 2003; Goodman et al., 2013). "Average scores on the PIACC literacy scale for adults age 16 to 65 ranged from 250 in Italy to 296 in Japan. The U.S. average score was 270. Compared with the U.S. average score, average scores in 12 countries were higher, in 5 countries they were lower, and in 5 countries they were not significantly different, (Kutner et al., 2003; Goodman et al., 2013). These results are concerning as they impact young children who depend primarily on parents/adult caregivers for obtaining health information and supports, (Santrock, 1998; Lindsay, Sussner, & Gortmaker, 2006). Therefore, adult understanding of health information to manage healthy weight provided at both primary care and preschool settings is important for supporting the welfare of the child. Presently, however, healthy literacy and health seeking behavior varies among adults or parents of young children.

Low literacy is associated with low degree of educational attainment which impacts the type of employment that can be attained by adults. "Workers with limited functional literacy account for a disproportionate share of low-wage, prime-age workers. Even among workers with the same characteristics in terms of education, race, marital status, age, health status, and region of the country, those with low

literacy levels fall substantially behind in the labor market than those with adequate or high literacy levels ” (Lerman & Schmidt, 1999). More recently, the Employment Policies Institute (2017) states that: “Data from the Bureau of Labor Statistics consistently shows that a lack of education is a setback in the job market and strongly correlates with lower median earnings and higher unemployment rates.”

Home Health Literacy Environment, Health Promotion/Health Education Messaging

Sanders, Zacur, Haecker, & Klass (2004) concluded that: “Having more than 10 children's books in the home is a useful, independent indicator of adequate parent health literacy. More research is needed, however, to find a better screening tool for identifying parents with increased health literacy needs.” On the other hand, in another study, those with low health literacy did not rely on books or internet for information. Instead, they relied on health care professionals or faith based resources (Liechty, Saltzman, Musaad, The STRONG Kids Team, 2015). Therefore, understanding if any health information is being received and how effective that approach is, needs further study.

Health literacy is important for effective health promotion. A Mississippi study (Zoellner, You, Connell, Smith-Ray, Allen, Tucker, Davy, Estabrooks, 2011) found that increases in health literacy also lead to higher index of healthy eating and also predicted less consumption of sugar sweetened beverages. The sample was predominantly comprised of African American adults without a college degree. This

suggests that positive health messaging makes an impact even for those who do not have a higher college education. Therefore, it is worthwhile to invest in positive health messaging at earlier education levels or even lower education levels, which is common among low-income families in order to promote health literacy. In one study, messaging for food related lifestyles and behavior is compared with food availability, (Lee, et al., 2015). Therefore, consistent messaging that fits a reachable environmental context is needed in a way that healthful behavior is actually achievable for the population it is intended to influence.

Parent health education materials and subsequent parent-teacher health discussions influence health behavior through awareness, knowledge, attitudes, and beliefs about health information which in turn may mediate children's healthy weight. Decision making from health education materials include cognitive, affective, and behavioral responses (Bull, Holt, Kreuter, Clark, and Scharff, 2001). According to one study, the input of health education materials can result in three output stages for health behavior that are associated with readiness to change behavior, self-efficacy, and perceiving materials as applicable to one's life (Bull, et al., 2001). When processing health education materials, first steps included: "attention, liking, and understanding", mediating steps included "recalling, keeping, and rereading health materials", and later steps: "intention to change behavior and show others," (Bull, et al., 2001). Health information accepted for behavior change from school or wellness visits may possibly be indicated by attending to primary care and shown by a healthy

weight status. This study assumes that primary care or Head Start Programs will provide health education materials and relevant health discussions leading to health literacy scores and perceptions about health care visits or healthy weight status that indicate if the information was understood by the parent. The decision to participate in a healthy behavior may result from these avenues. These efforts may include attending a self-management course for family's weight management.

Demographic Disparities

Past research has found that among adults**,** the disparities for below basic reading proficiency are wide, evident in 41% Hispanic, 24% Black, 13% Asian or Pacific Islander/Other, and 9% White adults (Kutner et al., 2003; Goodman et al., 2013). These numbers translate to parental health literacy levels as well. From this study, the result of the regression model was a prediction that when a parent is Hispanic, their nutritional health literacy score will decrease by 1.103 units and that when school type is Head Start, nutritional health literacy score will decrease by 2.51 units. The study, therefore, corroborates that Hispanic parents are at more risk for lower nutritional health literacy when compared with other races. Furthermore, this study offers an additional finding, which is that Head Start going parents, are at more risk for lower nutritional health literacy when compared with Non-Head Start going parents. This finding then implies that specific nutritional health literacy skills training, for low-income parents, especially Hispanic parents is necessary. Also, although language differences may be a barrier for some Hispanic parents, the literacy

assessments for this study were offered in Spanish to most Hispanics and in English to Non-Hispanics, or as requested. Disparities, therefore, may be due to lack of education attainment, or lack of skills training, and lower comprehension of information contributing to lower health literacy rather than any association with language differences. The finding was unexpected because the health literacy surveys were administered in the participant's primary language. Therefore, barriers to education or unfamiliarity with navigating healthcare systems may be present as well as different cultural beliefs about where to seek care. Possibly, the cost of routine health care, or lack of enrollment yet in health insurance may be another reason for why emergency care has sometimes been sought in the past. It is possible that some Hispanic families, however, may experience language barriers in obtaining both basic education, health literacy towards nutrition education, therefore, scores for comprehending medical information may be lower even when information is provided in Spanish. This finding indicates the importance of disseminating culturally and linguistically appropriate health education materials and at a reading level most accessible to the community.

Also, although most parents in this sample had at least a high school education or G.E.D., lower educational attainment and associated health literacy scores was found among Head Start parents compared to Non-Head Start parents. In the total sample, 36% of the entire group, these parents had low nutrition health literacy which was similar to the national rate of at least one-third of U.S. adults having low health

literacy (Hersh et al., 2015). This is a concern because children depend on their parents for care and need for them to be knowledgeable about health information especially as it pertains to child welfare. Educational attainment was not the only area that was associated with health literacy rates. The study found differences by school type, race, and age, in levels of health literacy also and these factors were all associated with child BMI status and health care referrals for pediatric primary care. Possible confounding factors such as age and education may have contributed to lower health literacy scores. For example, Head Start parents were younger than Non-Head Start parents and therefore, there may have been differences in education attainment and information exposure due to timing of educational attainment. In the Head Start group, most who were aged up to 34 years still hadn't achieved a college degree. Regardless of being grouped by age as 1) 18 years to 34 years, or 2) 35 years and older, Head Start parents had lower health literacy scores than Non-Head Start parents. This finding is somewhat expected because of past research describing increased education and experience being associated with increased vocabulary attainment from work and education participation for adults. This study also corroborates that obesity disproportionately affects minorities and it was not surprising that the health literacy of the parent closely is associated with the child's BMI even though the young child is already exposed to other systems of care that complement home life. This finding speaks to the importance and need for a comprehensive approach and collaboration between parents, school professionals, and health care providers.

Home Health Literacy Environment Measured by Number of Health Books at Home

Head Start families had fewer health books at home than Non Head Start families. Families with fewer health books also had lower health literacy scores. Because both parents' and children's vocabulary building is associated with parents having adequate reading materials and spoken language at home or work, it is important to support this effort through health literacy skills promotion from home visits, or health information dissemination through newsletters from the preschool or pediatrician's office. There is less nutrition information being obtained overall by Hispanics and Blacks, including less health books at home. Perhaps more accessible types of health information dissemination would be more effective, such as home visits followed up by text messages to phones. This study also corroborates the effectiveness of having health books at home with the finding that more health books was associated with higher health literacy, lower childhood obesity and fewer health referrals. Therefore, although there were almost equal rates of health seeking behavior between both the lower and higher income groups (Head Start and Non Head start families, respectively), for primary care, perhaps a different type of conversation was taking place between the high income group and the lower income group.

In other words, the findings also show a higher proportion of Non-Head Start parents with more health books, an enabling factor, at home. Families with more health books scored better on the nutritional health literacy assessment compared to

those parents who had fewer health books at home. This finding is relevant because it is in line with past research which correlates less word knowledge with those who have fewer books at home (Zigler & Styfco, 2004).

Preschool Provided Parent Education and Parental Health Literacy

While an equal number of health topics were discussed by providers in both groups, future studies should check to see if there are different levels of health literacy skills for weight management or what other predisposing factors for childhood obesity are occurring for the high income group. Where health literacy research is being incorporated into early education and care, this study researched comparative differences by school type not income level alone. In other words, programmatic differences could make up for income level gaps in health information gathering, especially through policies and staff training for parental health literacy support and increasing referrals to clinical care to complement preschool disseminated health information. One of the scholarly contributions of this study is the finding that Head Start provides health care referrals at about twice the rate of Non-Head Start schools. This finding exceeded expectations for how much programming can make a difference for getting both low-income and higher income clients to the same level of pediatric primary care utilization. Therefore, if nutrition and physical activity information is disseminated at that same rate, perhaps health literacy rates would improve also**.** Parents then, would be better equipped with the vocabulary needed to advocate for themselves and children's health needs and access. In addition, future staff trainings

regarding nutrition health literacy that could support parent education goals could be provided. In line with this effort, information will be generated regarding what characteristics of participants are associated with different levels of health seeking behavior and health literacy. Programming and staff training could be designed from this information in order to increase effective health seeking behavior/ utilization of the system by increasing understanding of basic medical vocabulary or health jargon.

There is significant scope to advocate for data driven technical assistance to early education and care programs/ staff with specific activities including increasing parent education pertaining to health literacy, health seeking behavior, and improved child health status and developmental milestones, so that both parents and teachers can partner in child learning and health as a component of school readiness. Also, possibly developmental screenings would occur, not just once per year, but at least twice to check for overall health status of the child. This check, then, could inform, curricula or Individualized Education Plans or Individualized Family Service Plans (IEP/IFSP) for children who needed additional support. Possibly then, any incidence of childhood obesity, child tooth caries, and socio-emotional concerns could be identified and reduced with health promotion strategies and interventions introduced early on. Possibly allocation for funding resources would be considered to better support higher quality early education and care programs.

Therefore, while we know that health literacy levels may be lower among low-income parents, this study showed that health books at home were associated with

higher health literacy and that health care referrals were more frequent from Head Start schools which is related to supporting increased health seeking behavior. While we know that connecting to a medical home improves child outcomes and reduces unnecessary emergency room visits, especially from programs, like Head Start, that offer this service, we have not yet attempted to utilize early education and care programs as a similar intervention site for health literacy as a mediating factor for health seeking behavior to primary care versus emergency rooms.

Health literacy should be part of basic education and a skill that may be taken for granted by those who are more familiar with language and culture or more educated. People of diverse background may struggle with basic needs which take priority sometimes over pursuing more education. Home supports that allow for people to pursue both education and work may help improve the welfare of those who are low-income and their health may fare better when society coordinates care through existing systems already linked to their children's school. Given that health access and jargon can be complicated for anyone, there should be more cultural sensitivity to those who struggle for accessing basic needs including basic primary care, dental care, and mental health services. Better health for an individual may be associated with better school and work attendance which promotes the overall wellbeing of society. In addition, because health access is important for all individuals, attention to those who need added supports understanding basic health information would reduce societal costs of emergency room overuse or even specialty care. Therefore, given that health

access and education for the underprivileged is a topic area that needed more support, this topic merging both seemed to be a necessary one to explore.

Federal Programs and Policies as a Response to Childhood Obesity and Poverty

Outlined by U.S. Department of Health and Human Services, in 2010, Healthy People 2020 is a ten year workplan for addressing the nation's priorities in health promotion and disease prevention. The workplan acknowledges both malnutrition and obesity as issues that need to be reduced with respect to social determinants of health (Centers for Disease Control and Prevention, 2017). Healthy People 2020 also identifies early childhood as a developmental time when children's growth is mainly in the areas of: "emotional regulation and attachment, language development, and motor skills". (U.S. Department of Health and Human Services, 2014). This is a time that primes children for good nutrition and physical activity (U.S. Department of Health and Human Services, 2014). Parents are significant influences in children's lives (Santrock, 1998). Therefore, fostering both parents' and children's capabilities, from primary care visits or preschool, in these domains through developmental activities (understanding nutritious foods and portion sizes) or guided conversations, or even shared reading of resources, stands to benefit family's ability to obtain, process, and access health information and services. Starting from an early age then prepares children for healthy choices across the lifespan while parents simultaneously set a healthy structure of guidance for their child. Parent education support from preschools is one way to offer family support in these endeavors and is a component

of high quality preschools. Nutrition and physical activity education for parents can take place in either early education center based care, home visits, or other program offices. Federal programs and policies offer complementary support to parent education.

For example, the U.S. federal program, Women Infants and Children (WIC) "is one of the longest running nutrition support programs in the country. It provides nutrition support to low-income pregnant, postpartum and breastfeeding women, infants and children up to age 5 who are at risk for inadequate nutrition" (Trust for America's Health and Robert Wood Johnson Foundation, 2017). Fortunately the United States has seen a decline in obesity among young children age 2-4 from low-income families. The "Centers for Disease Control and Prevention show that 14.5 percent of 2- to 4-year-olds enrolled in WIC (the Special Supplemental Nutrition Program for Women, Infants and Children) were obese in 2014, down from 15.9 percent in 2010," (Trust for America's Health and Robert Wood Johnson Foundation, 2017). Therefore federal programs that support health literacy work well for health promotion of low-income families with lower educational attainment.

There are also abundant public health messages and policies to promote good health practice including the Healthy Hunger Free Kids Act (Public Law 111-296), (Lee, Hallett, Parker, Kudia, Kao, Modelska, Rifai, O'Connor, 2015). This law includes provisions related to WIC, the Supplemental Nutrition Assistance Program (SNAP), the national school lunch program and breakfast program. While school

meals have set standards for nutrition, what happens at home may be based on parental health knowledge. Therefore, increasing adults' health literacy may impact positive child health outcomes. Assessment of parental health literacy should be incorporated into parent education supports from school and home visits, and then discussion of unfamiliar health jargon should ensue to equip parents to have effective pediatric primary care visits with their child. Discussion should also be complemented with the provision of health information in the form of health books to support increased health vocabulary knowledge.

Other policies influence health behavior practices as well. For example, pricing and taxation is one way consumption of unhealthy items from vending machines and sugary beverages is limited. Some policies promote healthful practice while others are focused on more risk reduction. Over consumption of sugary beverages may lead to chronic health conditions such as overweight and obesity. "Sugar-sweetened beverages are beverages that contain added, naturally derived caloric sweeteners such as sucrose (table sugar), high-fructose corn syrup, or fruit-juice concentrates, all of which have similar metabolic effects," (Brownell, Farley, Willitt, Popkin, Chaloupka, Thomson, Ludwig, 2009). Recent policy efforts therefore have been to tax sugary beverages. This effort stems from the motivation to contribute funds to positive nutritional health messaging to offset negative health impact of overconsumption of sugary beverages (Brownell et al., 2009).

Those who suffer from undernutrition may participate in the Supplemental Nutritional Assistance Program (formerly the Federal Food Stamp Program). Approximately 44.7 million people, including children, (or an estimated 1 in 7 individuals) are enrolled in the $75 billion program which serves households with incomes ≤130% of the federal poverty level (FPL) and <$2000 in countable assets (Leung, Ding, Catalano, Villamor, Rimm, & Willett, 2012). Low-income adults consume fewer high quality nutritional foods and more unhealthy sugary items (Leung et al, 2012). Therefore, it is worth investing in health care referrals to a primary care medical home, as well as offer health literacy supports at a preschool for a family to promote healthy behavior to ensure good health status across the lifespan.

Models that Preschool Interventions Should Consider:

The Precede-Proceed Model, provides guidance for an assessment of predisposing, reinforcing, and enabling characteristics of the population needing health literacy supports, followed by a structure for implementing policies and intervention or health promotion programming as needed. Nutbeam (2008) offers risk and asset models, specifically for health literacy and usually applies to clinical settings. In the risk model, more clinical assessment reviews individual capability to process health information combined with interactions with health care professionals that result in a degree of improved clinical treatment adherence or compliance as a result. In the asset model, an individual's prior capacity for reading fluency, numeracy, and existing knowledge prepares one for receiving community education

which results in: developed knowledge and capability, skills in negotiation and management, and social organization/advocacy. The resulting improved health literacy in turn offers opportunity for changed behavior practices, improved health outcomes, healthy choices and opportunities (Nutbeam, 2008).

The model is relevant in understanding the need to prepare parents for an effective clinic visit when they go in order to benefit child health as best as possible. If the clinical model is applied to a preschool setting, a first step for an intervention venue, such as a preschool, is to do a baseline assessment of health literacy skills at the school. This assessment then informs the type of tailored parent support that is needed to achieve improved self-management capability or improved compliance towards healthful behaviors. For example, a conversation can then be possible about barriers such as lower comprehension or numeracy skills or language gaps that can be addressed with a family engagement coordinator or other family support staff. As income and education level were found to be associated with number of health books at home and associated parental health literacy, further effort may be needed from Head Start schools to bridge the achievement gap by offering materials in the language primarily spoken by the parent. The specific type of media or information dissemination that is most effective needs further research. One possibility is to model health and medical jargon by book or video or face to face – or anything to increase familiarity with both numeracy and health vocabulary thereby increase health literacy and later effective clinic visits. This study presented a first step in identifying the need

for this type of intervention and further corroborates that while developmental screenings and referrals are a hugely important step in getting to primary care, further family supports are needed for health literacy prior to getting to that appointment.

The Need for Developmental Screenings and Health Care Referrals to Pediatric Primary Care

Both the low-income and high income family groups included children who were overweight and obese. However, the predisposing factor of being from a low-income household perhaps represents a greater need for understanding basic nutritional information like how to read a nutrition label. Given that approximately 20% of children in the US live in poverty, and minority groups have higher BMI status among overweight and obese children, interventions such as nutrition and physical activity education among these groups are necessary. Parent education workshops should include increasing skills, however, for both income groups for how to do this (Ogden, Carrol, Kit, & Flegal, 2014). The real difference in identifying weight problems, may be that the higher income groups know how to get to pediatric primary care, but do not receive the same level of school provided parent health education training, perhaps assuming that this information is obtained elsewhere or not needed. This study finds that weight problems still exist in all income groups, and that there is still a need for family health education from the schools for nutritional health literacy training. Those high quality preschool programs that provide developmental screenings may be a first line of intervention for this weight issue, however, the

findings also may imply that lower quality programs are in dire need to also include developmental screenings and referrals for not just weight problems but any delay in reaching typical milestones. Those children attending lower quality preschools may have nurturing licensed care but are missing out potentially on being identified for additional necessary health services.

Getting to a regular primary care medical home is very important for young children. If schools do not provide adequate health information for parents, primary care may make up for this. A higher proportion of White: Hispanic and Non-Hispanic parents reported having received nutrition education from primary care compared to Blacks and Asians. However, lower health literacy was still found among Hispanic and Black parents which was also associated with higher BMI and differences by school type. This finding implies that there may be other precede-proceed factors for why there are health literacy differences by race and school type.

Health Seeking Behavior and Parental Perceptions of Pediatric Health Care Quality

In this study, all parents had a perception of good health care quality of their primary care providers, however, Black parents sought primary care less often than other groups. The reason for disparities in rates of health seeking behavior could be less reliance on professionals instead of peers for health information which may result in less accurate, or less nutrition knowledge and information overall. Depending on past primary care experience, this finding could inform perceptions of health care quality. Possibly due to predisposing, reinforcing, and enabling, cultural barriers,

minority patients are at risk for: " a poorer quality of interpersonal care, (associated with stereotyping, miscommunication and language barriers) from doctors than whites. This occurrence may contribute to the problem they have taking their medication regularly. A breakdown in communication also may result in shorter office visits that are less patient-friendly than those for white patients," (Johns Hopkins Center for Health Equity, 2017).

Past findings about emergency care overuse of Head Start families helped to highlight the fact lower health literacy skills in this group may lead to an unnecessary financial burden in the health care system for preventable common health issues that could also be treated in primary care (Kurth, 2010). This study compared health seeking behavior of Head Start families with Non-Head Start families and found that health care referrals made a big difference in health seeking behavior where health literacy skills were lower for Head Start parents compared to the higher income group who also possessed higher health literacy skills. Twice the rate of health care referrals in the lower health literacy scoring group (also the lower income group) helped this group meet almost the same rate of health seeking behavior as the higher health literacy group (also the higher income group).

Once a first pediatric visit is obtained, regardless of BMI status and health literacy levels, all parents perceived their children's primary care to be of high quality. Therefore, higher levels of health care referrals from Head Start have been needed and are working to bridge the gap in attending to the same level of health seeking behavior

as Non-Head Start families. Additional strategies may still be needed though for increasing health seeking behavior of Black parents especially among Head Start parents. An alternative to going only to primary care or specialty care for weight management is to bring public health messaging to the community via a peer to peer information sharing strategy. Perhaps, however, the school venue which is family centered is the best location for getting nutrition and physical activity information out to the low-income families or even all income families.

Next Steps and Recommendations

Given that the study found demographic differences in levels of health literacy and BMI status by school type, it is important to note what PRECEDE factors are making those differences and intervene at those points, especially for minority families including Hispanic and Black parents. One need may be to supply more health promotional materials to keep at home. A follow up study could determine how best these populations like to receive information if they do not have access to a lot of technology. Perhaps a take home infographic flyer would be helpful.

Health messages also need to have an effective format appropriate to different audiences. Perhaps health messaging encourages healthy eating and exercise, but format, such as radio or internet, or printed materials could make more of a difference depending on ease of access to obtain those types of resources. One study (Campbell, Devellis, Strecher, Ammerman, Devillis, Sandler, 1994) found that computer health messaging was remembered by study participants four months after participation, and

led to significant decrease of fat intake but no effect on fruit and vegetable intake. Remembering information might be considered an important component to learning information and understanding the importance of a health message related to health literacy. Printed materials (books, brochures, posters) and other types of media (television or radio advertisement) may be one avenue to promoting health messages. Health education materials may impact health behavior and response by changing: degree of awareness, knowledge, attitudes, and beliefs with health information.

In weight management, the types of responses that may change from health education materials include cognitive, affective, and behavioral (Bull, Holt, Kreuter, Clark, and Scharff, 2001). In one study, input of health education materials resulted in three described output stages for health behavior that were affiliated with readiness to change behavior, self-efficacy, and perceiving materials as applicable to one's life (Bull, et al., 2001). When processing health education materials, first steps included: "attention, liking, and understanding", mediating steps included "recalling, keeping, and rereading health materials", and later steps: "intention to change behavior and show others," (Bull, et al., 2001).

Other types of guided interventions might lead to healthier behaviors. For example, in one home visiting program for preschool age children, parent choices influenced their children's fruit and vegetable intake, after modifications leading to a positive fruit and vegetable environment Haire-Joshu, Elliott, Caito, Hessler, Nanney, Hale, Boehmer, Kreuter, and Brownson, 2008). Therefore, structured guidance, like

parent education that is offered by Head Start, may be effective and environmental changes intended to promote health seeking behavior also seem effective. Specifically, the possibility to increase health literacy and positive behavior change effectively among preschool age parent-child dyads may exist. Further inquiry, however, is still needed as to whether or not increases in health literacy promote further health seeking behavior or deter health seeking behavior due to health knowledge gaps being met.

Culturally competent care is a common practice in pediatric settings now, yet in this study, race disparities were found in who received nutrition education. Further study is needed to determine the PRECEDE factors in why nutrition information is supplied more to Whites and Hispanics instead of all people with high BMI status, especially among the Black and Asian populations. Possibly further medical training is still needed to supply advice about nutrition according to ethnic food type varieties.

Functional health literacy was lower amongst minority parents, therefore, further study may be needed to check to see how often a provider checked that their patients of diverse background more often understood treatment recommendations. Public health messaging should promote familiarity with common medical jargon in multiple languages in addition to the health promotion messages.

In other words what enables or influences health seeking behavior or deterrence is important to consider in relation to the intent or willingness to participate in healthy behavior (Fay, 1975). In the Precede-Proceed framework, both personal

agency and environmental structures such as health policies are considered as potential supports in healthful decision making. This study inquired about health information received and sought within the context of other factors such as school type. Head Start, for example, receives federal funding to help bridge the gap in services needed for a low-income population to flourish as well as Non-Head Start students whose programs are supported through their tuition fees. In this way, there may be associations drawn between demographic characteristics and health literacy which in turn may be associated with level of health care referrals and health seeking behavior.

Who defines problems or describes anomalies from behavioral norms within a context then becomes significant in decision making for progress or potential evolving change of behavior in that population. It is worth encouraging health seeking behavior to obtain the information needed so the next step of processing basic health information can occur. Once information is obtained, awareness or knowledge acquisition may now arrive, not only from self-reflection but now by external ideas introduced by another member of the population, (Fay, 1975). For example, a Head Start teacher or primary care physician is either considered an expert or unaware of the cultural context or goals mutually defined by members within that population. An opportunity for dynamic knowledge acquisition and growth occurs once a society defines who has standing and who should participate in decision-making and interpretation of needs for that society.

The expectation that one needs health literacy must be understood in the context of society's ability to take care of those who are poor by promoting their health and healthy choices. Simultaneously, one must understand the barriers to achieving literacy or health literacy. Therefore, in understanding and measuring the degree of health literacy in Head Start families, one must also remember to ask what the goals or priorities of these participating families are beyond what Head Start or society may value for them. Therefore, promotion of literacy and language may be a first step in understanding other types of information. Encouragement by Head Start or EEC staff may lead to more active health information seeking behavior of these low-incomes families at risk for poor health. Because children are dependents on parents and teachers at this stage of life, promoting accurate knowledge acquisition and behavior is important. On the other hand, shared reading presents an opportunity for parents to also learn and sync up with health information directed at their child.

Therefore, as the Head Start program or other EEC programs support the navigation and comprehension of health information, an any potential health promotion interventions, this effort involves a baseline needs assessment of health literacy and health seeking behavior. Evaluation and analysis of behavior should seek to understand from members belonging to the participating Head Start parents and children, in regards to basic health information: "What do you need? What do you need to know in order to achieve this goal? From your perspective, what strengths and resources or obstacles do you face in meeting these goals?" "…Only when both the

observer (Head Start or other EEC teacher or Primary care doctor) and the actor (Parents participating in Head Start or EEC) ultimately come to talk about the actions and beliefs of the actor in the same way is it possible to claim that a correct account has been given," (Fay, 1975). Likewise, for this study, recommendations or feedback given to the program may result from an evaluation for what priority exists amongst this population for maintaining a healthy weight including predisposing, enabling, and reinforcing factors for that goal.

CONCLUSION

Transforming policy and systems that are in sync with cultural values of all members of a population is necessary, not just outdated expectations for assimilation. Bi-directional and dynamic acculturation becomes necessary in an increasingly higher ordered diverse setting. After interpreting a needs assessment, a trained Head Start teacher or social science observer from this theoretical perspective must be open to the rejection of subjective evaluation and recommendations for change in thinking or behavior by members of a population. Health literacy needs would be resolved by incorporating both parents' and teachers' understanding of how to obtain, process, and navigate health information and services. Increases in health literacy empower a family to take care of typical health issues and avoid costly overuse of the emergency room. Health literacy may arguably be objectively necessary, otherwise poor health outcomes and education outcomes could result due to misunderstanding of (health) information regardless of accurate health treatment or doctor recommendations.

Once again, the precede-proceed framework is helpful to place the process of decision making and intention for health behavior in the environmental context of what are predisposing, enabling, and reinforcing factors to achieving improved health status. The original model outlined in this study is also useful as it considers the influence of income related disparities and programmatic supports and needs. Therefore the following recommendations are suggested:

- Increase partnerships to collect and distribute health books and health promotion materials to low-income families regarding nutrition and healthy weight in Spanish and English.

- Increase culturally and linguistically competent parent education support to all parents, especially minority parents about nutrition and how to read a nutritional facts label, at venues including school, home (home visits), and primary care office visits.

- Increase parent education support to all parents, especially minority families including Hispanic and Black families regarding medical jargon and comprehension of typical treatment recommendations through school and home (home visits) including culturally and linguistically appropriate services.

- Continue a high level of health care referrals from both school types, but especially from Head Start programs, in order to get the same level of health seeking behavior as Non Head Start going families. Because the study specifically

found that Black parents seek primary care less often a specific intervention or focus group may broaden understanding as to how these families prefer to receive health information, how it meshes with cultural notions of what is considered healthy, and how best to provide support in line with their beliefs.

Increasing health literacy skills at the appropriate time point in a continuum of care may support both parent and childhood wellness. Past research on health literacy has typically taken place in a clinical research setting for parents of adolescents or children at least 5 years of age or older (Chari, et al., 2014; Institute of Medicine, 2004; Sharif & Blank, 2010. In order to understand who needs support and what level or degree of support, a baseline assessment of health literacy of parents of young children is needed. This study attempts to compare parents of young children affiliated with different preschool settings (Head Start and Non-Head Start schools), representing a range of income groups, to see if there is a need for preschool programming that supports parental health literacy and if there is a difference in health literacy educational needs between lower and higher income groups.

The degree of health literacy attainment is important. Low health literacy can result in poor child health outcomes and different parent attitudes, health seeking behavior (health care or program utilization), lower appropriate food intake or less information seeking behavior. In one study, those with low health literacy did not rely on books or internet for information. Instead, they relied on health care professionals or faith based resources (Liechty, Saltzman, Musaad, The STRONG Kids Team,

2015). Health literacy may be associated with children's weight loss. Information about weight loss strategies are understood to different degrees based on health literacy, (Liechty et al, 2015). A meta-analytic study of parental health literacy and child health outcomes by DeWalt & Hink (2009) found that parents' low health literacy was associated with less knowledge about their child's medical condition and fewer health promoting behaviors related to their child's condition, (Liechty et al., 2015). Parental obesity is also associated with child obesity (Liechty, et al., 2015). Therefore, positive health messaging and health literacy promotion of parents is important because it may impact both adults and children.

Marks (2015) suggests that parents with lower health literacy inaccurately perceive their children's weight problems and that prevention efforts for children's obesity should start in formative years. Therefore, increasing knowledge of preventative care through parental health education may divert families from overuse of emergency rooms back to a regular primary care medical home for young children (Kurth, 2010). The point of intervention for families with young children may be high quality preschool programming that offers parent health education, developmental screenings and referrals to primary or specialty care for routine care and chronic health conditions such as childhood obesity.

Factors that influence Health Literacy and Health Seeking Behavior

Annual visits for primary care along with developmental screenings are necessary for every child. Alternatively, increasing home visiting service options or

peer and community based public health initiatives could be useful. Future studies should evaluate whether preference or structural barriers such as affordability, lack of insurance, or transportation present as why health seeking behavior is lower in these communities.

The level of parental health literacy may influence effectiveness of health seeking behavior for primary care. The resulting impact on children's development is the timing for onset of service delivery for special needs or specialty care, if any are necessary. Therefore, level of health literacy and health seeking behavior may impact the developmental needs of children in terms of early identification of disability or developmental delay (Zajicek-Farber, Lotrecchiano, Long, Farber, 2015). Pediatric primary care locations usually function as a child's medical home. "The concept of the medical home is expected to be operationalized by the provision of health services that are comprehensive, continuous, coordinated, culturally sensitive, compassionate, and, overall, a family-centered health care delivery system. Research shows that when the medical home concept is well implemented, it can reduce hospitalizations for children with asthma, mediate the burdens posed by emotional and behavioral symptoms, family finances, and employment hardships for families of children with special health care needs (CSHCN), (Zajicek-Farber et al., 2015).

Levels of school initiated health care referrals as a response to detection of childhood obesity may be correlated with family health seeking behavior. However, how adult parental health literacy translates to their children's pediatric health care

remains to be explored. In one study regarding adult asthma patients: "Participants with low health literacy were less likely to be engaged with health information-seeking behavior. Participants with intermediate health literacy were more likely to source arthritis-focused health information from newspapers, television, and within their informal social network. Those with high health literacy sourced information from the internet and specialist health sources and were providers of information within their informal social network," (Ellis, Mullan, Worsley, and Pai, 2012). Therefore, similar health seeking behavior patterns may be exhibited for pediatric health issues but have not yet been thoroughly researched among families with young children.

A greater need for health supports and health education including health literacy may be found among low-income families due to environmental influences. However, while lack of employment opportunity or education supports and overall lower neighborhood socioeconomic status is associated with obesity or related health disparities, individual higher income is protective of children's welfare (Rossen, 2014). Neighborhood assets are just one important component of influence in a family's life towards leading a healthy lifestyle. In addition, literacy and health literacy, which may be associated with educational attainment may predict health seeking behavior. Therefore, the trajectory of one's health may be partly determined by one's ability to seek out health information, process that information and comprehend that health knowledge along with one's behavior choices.

Early education settings, especially those that provide parent education opportunities, have not been thoroughly researched as a potential intervention venue for promoting health literacy of parents of young children between the ages of three to five. However, the possibility of combining conversations about appropriate nutrition and physical activity with the results of developmental screenings is necessary. This could take place during parent education while promoting parental health literacy at school, a home visit, or primary care. Research into disparities, according to school type, in these aspects of wellness (ie. health literacy levels) among parents of young children may be important to understand for early education and care program planning purposes.

Therefore, how parents obtain and understand nutrition or physical activity information relevant to their families is important so as not to result in either undernutrition or overnutrition of a child. In addition, it is important to research what parent education resources are utilized that allow families to live a healthy lifestyle while still coping with low-income and food insecurity, (Monteiro et al., 2004; Tanumihardjo, 2007). For families whose early education and care (EEC) programs do not provide health education, getting to primary care is possibly a first step in accessing guidance for nutrition and physical activity. As a result, number of health care referrals for pediatric primary care or specialty care are essential for ensuring a response to health seeking behavior for pediatric primary care.

Decision Making for Proposed Behavior Change

Trained teachers and home visitors are one avenue where families receive information. Pediatric primary care doctors are another avenue. If promotion of literacy and health literacy as well as achieving developmental screenings and routine child well visits are goals to meet a programmatic health domain, then there are ways to increase that effort along with parent involvement that likely impact children's well-being at home, school, and the doctor's office. For many families, possibly, the routine of going to a child well visit is an unfamiliar one. Parent's motivation or comfort level in health seeking behavior to attend primary care is possibly dependent on resources available at home, school, or primary care. Possibly those families who receive home visiting services will have different health seeking behavior than families who do not receive that level of family support. Parent education in this way may substitute or complement parent education that is center based or clinic based.

It is possible that among a low-income population, health literacy is promoted from information both directed at the parent from center based program staff, home visiting program staff, and clinical staff. For many low-income families, who may speak English as a second language or immigrant families navigating a complex system of health information, there may be some dependence on programs like Head Start to help them receive health information and support. The information received may be from the program itself or through secondary learning they may get from what their child is also receiving information about. Therefore, information aimed at the

child should also be considered to be information that may be received as new learning or reinforced learning for the parent also. For the following questions, additional background is provided that illustrates background about the research inquiry pertaining to health seeking behavior.

Early education and care quality standards may include referrals to routine wellness care, dental visits, and mental health visits along with completion of developmental screenings, and related staff education. Some staff also may participate in health literacy training. These components of staff awareness and education, in addition to the parent's own demographic characteristics of education background and personal agency, may influence higher or lower parent health literacy scores when teachers interact with parents. The combination of these factors then, in turn, may lead to either high or low health seeking behavior that results in access to a primary care visit.

The predisposing/inherent factor of parental younger age, lower income, and less educational attainment in the Head Start group are risk factors for associated childhood obesity. Therefore the precede-proceed framework can be applied to question **"1c"** in that increasing the number of health books at home may be a reinforcing factor to any support through parent education that a family may receive. Parent skills development may also be considered an enabling factor to promoting support for the parent-child dyad. Referrals and pediatric health care sought are also reinforcing factors for health promotion. The Proceed part of the framework could be

applied by a change in policy that applies specific nutrition health literacy programming and training for staff and parents. This study is a first step in establishing a need for such an intervention.

The study corroborates the importance of health literacy in comprehension of health education messages that promote good health behaviors. Further, the study adds knowledge that different levels of school based support may lead to different levels of parent health literacy and health seeking behavior which helps support healthy weight management of young children in early education and care programs. This may be a significant finding for a preschool population and their parents at risk for overweight and obesity. By supporting opportunities to promote health literacy there is the likelihood to offset chronic health problems which could otherwise lead to costly clinical treatment or even avoid the overuse of emergency rooms for those who do not know how to obtain, process, and comprehend basic health information or services. The opportunity for supporting individuals and families early in life with good health practices will likely help maintain a healthy life during later stages of life.

Given that the study found demographic differences in levels of health literacy and BMI status by school type, it is important to note what PRECEDE factors are making those differences and intervene at those points, especially for Hispanic and Black parents.

One need may be to supply more health promotional materials to keep at home. A follow up study could determine how best these populations like to receive

information if they do not have access to a lot of technology. Perhaps a take home infographic flyer would be helpful.

Culturally competent care is a common practice in pediatric settings now, yet in this study, race disparities were found in who received nutrition education. Further study is needed to determine the PRECEDE factors in why nutrition information is supplied more to Whites and Hispanics instead of all people with high BMI status, especially among the Black and Asian populations. Possibly further medical training is still needed to supply advice about nutrition according to ethnic food type varieties.

Functional health literacy was lower amongst minority parents, therefore, further study may be needed to check to see how often a provider checked that their patients of diverse background more often understood treatment recommendations. Public health messaging should promote familiarity with common medical jargon in multiple languages in addition to the health promotion messages.

Because health seeking behavior was lower overall for Black parents, especially among Head Start parents, peer-to-peer public health interventions through their children's school or other community avenues may be more effective to increase health literacy levels.

Lower health literacy is found among lower income, less educated, younger, Head Start parents, therefore, it may be worthwhile to incorporate health literacy skills into the middle school or high school health curriculum to prepare future adults and parents earlier about nutrition and healthy weight management.

Higher levels of health care referrals from Head Start were needed to bridge the gap in attending to the same level of health seeking behavior as Non-Head Start families. Therefore, high levels of referrals to the low-income population are working and should continue but may need to be increased among Black parents.

Therefore, even with mutual decision making communities should be aware that there are both intended and unintended consequences of policy systems as a result of interpretation, set practices, and action including health literacy support training. It is important to verify family health goals to be in line with meeting early education and care standards.

How and why should Head Start programs encourage or enable families to actively increase their health literacy? Literacy and health literacy promotion stands to benefit society's health and welfare both from the perspective of an individual's general wellbeing as well as financial costs to society for caring for who might otherwise depend on state or emergency systems of care. Health promotional recommendations such as appropriate nutrition and physical activity must be in relation to what is possible for a low-income family in a practical way. Therefore, the Precede-Proceed model might identify predisposing, enabling, and reinforcing factors influencing decision making towards healthy behaviors and increases in health literacy that help to meet these objectives. The dissemination of health education materials from the Head Start program then should be evaluated for how they are supporting or promoting the health literacy according to the needs of the low-income families that

participate in their program. Literacy and health literacy goals for Head Start participants should be discussed with families with trained teachers to explain the benefit of being aware of health information and jargon. Health and welfare as a priority with science and social inquiry to foster this effort contributes to both individual and collective progress for responding to low parental health literacy, associated childhood obesity, and health seeking behavior for pediatric primary care utilization.

Children are dependent on adults for meals and therefore, nutrition knowledge of adults is vital to the wellbeing and weight management of the child. An increase in knowledge of appropriate portion sizes and balanced meals needs to occur with consistent health messages that are easy to remember. Consistent health messages included in services in turn could lead to an increase in health literacy which could empower families to seek information with the health vocabulary needed as well as to practice health behaviors in an informed way with family support. Health seeking behavior may then be promoted or reduced by increases in health literacy. Possibly some people may gain the confidence needed to seek more specific health information once they gain knowledge of the health vocabulary needed, while others may not need any further knowledge or supports to comprehend health information.

Therefore, a check of comprehension, retention and practice of health information received by families may need to occur to determine how effective the service delivery of health information has been. Examples of health literacy among

these topics include understanding of portion and serving sizes, calories, saturated fat, and carbohydrates including typical information found on nutrition labels. This study, however, has only reviewed general health literacy and nutrition health literacy in association with health seeking behavior for primary care visits. At least, a check for level of health literacy among this population of parents of young children will be assessed, as a first step in understanding scope for incorporating a specific health lesson through parent education pertaining to health literacy, especially related to nutrition. Some early education and care (EEC) programs, especially those with a home visiting component, include some aspect of this information in parent education opportunities. Perhaps from this study it may become evident where a gap remains in disseminating needed nutrition related health information and knowledge of basic health jargon by measure of how well participants do on the Newest Vital Sign Assessment and the Short Test of Functional Health Literacy for Adults, (See Appendix A). This information then could improve the quality of both EEC related programming for family education support or even primary care visits for parents with preschool age children.

Early learning center staff like the Head Start program coordinate care and services by connecting families to a patient centered medical home. When trying to connect families to primary care or specialty care for weight management, feedback from health literacy assessments, developmental screenings, and health care referrals would equip program staff with the awareness of how well a family might be able to

obtain, process, and comprehend medical jargon that parents may encounter during a health care visit. Health literacy is then important for parents to communicate with the school staff about the family's health visit encounter. Additional services could then be coordinated such as an interpreter or social worker or Head Start program staff home visits to answer specific health care questions about treatment instructions received or ailments that need to be expressed. Therefore, the health care visit becomes more successful and perhaps frequency of regular primary care visits and participation in developmental screenings would increase in lieu of dependence on costly emergency room services.

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Appendix A

IRB Approval Letter

UNIVERSITY OF DELAWARE

RESEARCH OFFICE

210 Hullihen Hall
University of Delaware
Newark, Delaware 19716-1551
Ph: 302/831-2136
Fax: 302/831-2828

DATE:	January 5, 2017
TO:	Pialee Roy
FROM:	University of Delaware IRB
STUDY TITLE:	[818190-1] Health Literacy and Health Seeking Behavior of Parents of Young Children in New Castle County Delaware Early Education and Care Programs
SUBMISSION TYPE:	New Project
ACTION:	APPROVED
APPROVAL DATE:	January 5, 2017
EXPIRATION DATE:	January 4, 2018
REVIEW TYPE:	Expedited Review
REVIEW CATEGORY:	Expedited review category # *(7)*

Thank you for your submission of New Project materials for this research study. The University of Delaware IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a study design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the study and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the study via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the signed consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All SERIOUS and UNEXPECTED adverse events must be reported to this office. Please use the appropriate adverse event forms for this procedure. All sponsor reporting requirements should also be followed.

Please report all NON-COMPLIANCE issues or COMPLAINTS regarding this study to this office.

Please note that all research records must be retained for a minimum of three years.

Based on the risks, this project requires Continuing Review by this office on an annual basis. Please use the appropriate renewal forms for this procedure.

If you have any questions, please contact Nicole Farnese-McFarlane at (302) 831-1119 or nicolefm@udel.edu. Please include your study title and reference number in all correspondence with this office.

Informed Consent Document

University of Delaware *UD IRB Approval from 02/21/2017 to 01/04/2018*

INFORMED CONSENT TO PARTICIPATE IN RESEARCH

Title of Project: Health Literacy and Health Seeking Behavior of Parents of Young Children in New Castle County Delaware Early Education and Care Programs

Principal Investigator(s): Pialee Roy, M.A.

You are being invited to participate in a university academic research study. This consent form tells you about the study including its purpose, what you will be asked to do if you decide to take part, and the risks and benefits of being in the study. Please read the information below and ask us any questions you may have before you decide whether or not you agree to participate.

WHAT IS THE PURPOSE OF THIS STUDY?

- The purpose of this study is to learn more about your health literacy (how you obtain and understand health information) and your health seeking behavior (obtaining wellness visits for your child).
- The research will be used as part of a student dissertation for a PhD program of study for University of Delaware's School of Public Policy and Administration.
- You will be one of approximately 400 participants in this study. You are being asked to participate because your child attends a high quality preschool program in New Castle County Delaware and you can complete the survey forms in either English or Spanish.

WHAT WILL YOU BE ASKED TO DO?

As part of this study you will be asked to complete a folder of four parent surveys about:

1) How well you understand a nutrition label
2) How well you understand health care related language, instructions, and information
3) Your opinion about the quality of health care you receive at a doctor's visit for your child
4) Your child's height and weight and about health information you get from your preschool

- You will receive a folder of surveys in your child's storage cubby at the preschool and can complete these at home within 25 to 30 minutes and return them to your child's storage cubby at the preschool when you have finished, ideally within one or two days with gift of books
- The collection of surveys will take place during Winter/Spring of 2016. The researcher may call you for any missing or incomplete survey data within one to three months after you submit your survey responses.

Please list your phone number if you give permission for the researchers to call you with any follow up research questions that we may have or to answer questions you may have about the study:

Your Name: _____ Your Phone number:_____

Page 1 of 4

WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?

Possible risks of participating in this research study include:

- Some of the surveys that you will be asked to fill out as part of the study could increase your level of stress while thinking of the answers. The tests and surveys may ask some questions that may be personal to you such as your child's height and weight and your household salary. Some basic math and reading skills are needed to complete the surveys and you might find this frustrating, but you have the right to refuse to answer any questions without negative consequence.
- In the researcher's opinion, the risks listed above are minimal. Minimal risk means that the level of discomfort in the research are not likely not greater than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests.

WHAT ARE THE POTENTIAL BENEFITS?

- You will not directly benefit from taking part in this research, however, the knowledge gained from this study may contribute to society's understanding of health literacy and health seeking behavior of parents of young children.

HOW WILL CONFIDENTIALITY BE MAINTAINED? WHO MAY KNOW THAT YOU PARTICIPATED IN THIS RESEARCH?

The confidentiality of your records will be protected to the extent permitted by law. Your research records may be viewed by the University of Delaware Institutional Review Board, which is a committee formally designated to approve, monitor, and review biomedical and behavioral research involving humans. De-identified records relating to this research will be kept for future studies after the research study has been completed.

- The researcher will keep information learned about you confidential.
- Confidentiality of records will be maintained. The completed tests and survey will not be available for public use.
- Participants will receive a number on their folder and the number will be affiliated with the number on the survey forms instead individual names on each survey or test.
- Paper data will be kept stored in a locked file cabinet or storage box accessible only to the researcher to ensure security of the data. Data entered into a statistical program will be on a computer that has a user login and password only accessible to the researcher. Data will also be encrypted to offer further security in addition to being password protected.
- The findings of this research may be presented or published. The findings will report results as a group and no individual will be identified.

WILL THERE BE ANY COSTS TO YOU FOR PARTICIPATING IN THIS RESEARCH?

- There are not costs to you, the research subject, associated with participating in the study.

WILL YOU RECEIVE ANY COMPENSATION FOR PARTICIPATION?

- As part of the study and in exchange for completing tests and surveys, you will be given a set of books (a value of $13.50) and a $10 gift card. Therefore the total compensation value is $23.50. There is no other monetary compensation for participation.

DO YOU HAVE TO TAKE PART IN THIS STUDY?

Taking part in this research study is entirely voluntary. You do not have to participate in this research. If you choose to take part, you have the right to stop at any time. If you decide not to participate or if you decide to stop taking part in the research at a later date, there will be no penalty or loss of benefits to which you are otherwise entitled. Your decision to stop participation, or not to participate, will not influence current or future relationships with the University of Delaware or your child's preschool.

If you choose to end research participation, please notify the researcher by phone or in writing. Please see the contact information below. Any data collected up until the end of your research participation time will be included in the research study.

There will be no negative consequences if a research participant decides to withdraw from research and procedures. Please notify the principal investigator in writing of your decision to withdraw from the research study including your name and date.

WHO SHOULD YOU CALL IF YOU HAVE QUESTIONS OR CONCERNS?

- If you have any questions about this study, please contact the Principal Investigator/ Lead Researcher, Pialee Roy, M.A. by Phone: (302) 540-3870 or Email: pialee@udel.edu
- You may also contact the advisor Dan Rich, Ph.D. by phone: (302) 831-6835 or Email: drich@udel.edu
- To reach the Spanish Speaking Research Assistant please contact Diego Fernandez Otegui by phone:(302) 513-6972 or email: dotegui@udel.edu
- If you have any questions or concerns about your rights as a research participant, you may contact the University of Delaware Institutional Review Board at hsrb-research@udel.edu or (302) 831-2137.

The researcher may need to collect height and weight information from either you or your child's school. This information is typically obtained during developmental screenings during the school year.

***Please check the box below to give your permission or not.**

[ ] Yes, I give permission to the researcher to talk with either me: the parent, or the school to gather information about the child's height and weight

[ ] No, I do not give permission to talk with the school to gather information about the child's height and weight.

Your signature on this form means that:

1) you are at least 18 years old;

2) you have read and understand the information given in this form;

3) you have asked any questions you have about the research and the questions have been answered to your satisfaction; and

4) you accept the terms in the form and volunteer to participate in the study. You will be given a copy of this form to keep.

Printed Name of Participant (The Parent)	Signature of Participant	Date
Person Obtaining Consent (PRINTED NAME)	Person Obtaining Consent (SIGNATURE)	Date

Surveys

Short Test of Functional Literacy in Adults
STOFHLA
READING COMPREHENSION

THE READING COMPREHENSION EXERCISE :

"Here are some other medical instructions that you or anybody might see around the hospital. These instructions are in sentences that have some of the words missing. Where a word is missing, a blank line is drawn, and 4 possible words that could go in the blank appear just below it. I want you to figure out which of those 4 words should go in the blank, which word makes the sentence make sense. When you think you know which one it is, circle the letter in front of that word, and go on to the next one. When you finish the page, turn the page and keep going until you finish all the pages."

PASSAGE A: X-RAY PREPARATION

PASSAGE B: MEDICAID RIGHTS AND RESPONSIBILITIES

PASSAGE A

Your doctor has sent you to have a_____X-ray.

a. stomach
b. diabetes
c. stitches
d. germs

You musthave an_____ stomach when you come for___

a. asthma
b. empty
c. mcest
d. anemia

a. is.
b. am.
c. if.
d. it.

The X-ray will_____from 1 to 3_____to do.

a. take
b. view
c. talk
d. look

a. beds
b. brains
c. hours
d. diets

THE DAY BEFORE THE X-RAY.

For supper have only a_____snack of fruit,_____and jelly,

a. little	a. toes
b. broth	b. throat
c. attack	c. toast
d. nausea	d. thigh

with coffee or tea.

After_____, you must not_____or drink

a. minute,	a. easy
b. midnight,	b. ate
c. during,	c. drank
d. before,	d. eat

anything at_____until after you have_____the X-ray.

a. ill	a. are
b. all	b. has
c. each	c. had
d. any	d. was

THE DAY OF THE X-RAY.

Do not eat _____

a. appointment.
b. walk-in.
c. breakfast.
d. clinic.

Do not _____, even _____

a. drive,	a. heart.
b. drink,	b. breath.
c. dress,	c. water.
d. dose,	d. cancer.

If you have any_____, call the X-ray _____ at 616-4500.

a. answers,	a. Department
b. exercises,	b. Sprain
c. tracts,	c. Pharmacy
d. questions,	d. Toothache

PASSAGE B

I agree to give correct information to_____if I can receive Medicaid.

a. hair
b. salt
c. see
d. ache

I _____ to provide the county information to _____ any

a. agree
b. probe
c. send
d. gain

a. hide
b. risk
c. discharge
d. prove

statements given in this _____ and hereby give permission to

a. emphysema
b. application
c. gallbladder
d. relationship

the_____to get such proof. I _____ that for

a. inflammation
b. religion
c. iron
d. county

a. investigate
b. entertain
c. understand
d. establish

Medicaid I must report any _____ in my circumstances

a. changes
b. hormones
c. antacids
d. charges

STOFHLA • Large Print Version, English 14 point font

within_____(10) days of becoming_____of the change.

a. three
b. one
c. five
d. ten

a. award
b. aware
c. away
d. await

understand _____ if I DO NOT like the _____made on my

a. thus
b. this
c. that
d. than

a. marital
b. occupation
c. adult
d. decision

case, I have the _____ to a fair hearing. I can _____ a

a. bright
b. left
c. wrong
d. right

a. request
b. refuse
c. fai}
d. mend

hearing by writing or _____ the county where I applied.

a. countmg
b. reading
c. calling
d. smelling

Ifyou_____TANF for any family_____, you will have to

a. wash
b. want
c. cover
d. tape

a. member,
b. history,
c. weight,
d. seatbelt,

_____ a different application form. _____, we will use

a. relax
b. break
c. inhale
d. sign

a. Since,
b. Whether,
c. However,
d. Because,

the_____on this form to determine your _____

a. lung
b. date
c. meal
d. pelvic

a. hypoglycemia.
b. eligibility.
c. osteoporosis.
d. schizophrenia.

The Newest Vital Sign
Nutrition Label for 1 Pint of Ice Cream

Nutrition Facts

Serving Size	½ cup
Servings per container	4

Amount per serving

Calories	250	Fat Cal	120

	%DV
Total Fat 13g	20%
Sat Fat 9g	40%
Cholesterol 28mg	12%
Sodium 55mg	2%
Total Carbohydrate 30g	12%
Dietary Fiber 2g	
Sugars 23g	
Protein 4g	8%

*Percentage Daily Values (DV) are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

Ingredients: Cream, Skim Milk, Liquid Sugar, Water, Egg Yolks, Brown Sugar, Milkfat, Peanut Oil, Sugar, Butter, Salt, Carrageenan, Vanilla Extract.

Pfizer Working together for a healthier world™

February 2011

Modified Score Sheet for the Newest Vital Sign Questions and Answers

This information is on the back of a container of a pint of ice cream.

1. If you eat the entire container, how many calories will you eat?

➡ ***Answer:*** _____

2. If you are allowed to eat 60 grams of carbohydrates as a snack, how much ice cream could you have?

➡ ***Answer:*** _____

3. Your doctor advises you to reduce the amount of saturated fat in your diet. You usually have 42 g of saturated fat each day, which includes one serving of ice cream. If you stop eating ice cream, how many grams of saturated fat would you be consuming each day?

➡ ***Answer:*** _____

4. If you usually eat 2,500 calories in a day, what percentage of your daily value of calories will you be eating if you eat one serving?

➡ ***Answer:*** _____

Pretend that you are allergic to the following substances: penicillin, peanuts, latex gloves, and bee stings.

5. Is it safe for you to eat this ice cream?

➡ ***Answer:*** _____

6. If you respond "no" to question, Why not?

➡ ***Answer:*** _____

CAHPS Survey Instructions:

Please answer each question by marking the box to the left of your answer.

You are sometimes told to skip over some questions in this survey… like this:

☒ Yes → **If Yes, go to #1 on page 1**
☐ No

Your Child's Provider

1. At least once in the past year, your child got care from a Pediatrician (the primary doctor that takes care of kids) for a regular Child Wellness Visit or check up.

   Is that right?

   [1]☐ Yes
   [2]☐ No → **If No, go to #47 on page 7**

The questions in this survey will refer to the provider named in Question 1 as "this provider." Please think of that person as you answer the survey.

2. Is this the provider you usually see if your child needs a check-up, has a health problem, or gets sick or hurt?

   [1]☐ Yes
   [2]☐ No

3. How long has your child been going to this provider?

   [1]☐ Less than 6 months
   [2]☐ At least 6 months but less than 1 year
   [3]☐ At least 1 year but less than 3 years
   [4]☐ At least 3 years but less than 5 years
   [5]☐ 5 years or more

Your Child's Care From This Provider in the Last 12 Months

These questions ask about **your child's** health care. Do **not** include care your child got when he or she stayed overnight in a hospital. Do **not** include the times your child went for dental care visits.

4. In the last 12 months, how many times did your child visit this provider for care?

   ☐ None → **If None, go to #47 on page 7**
   ☐ 1 time
   ☐ 2
   ☐ 3
   ☐ 4
   ☐ 5 to 9
   ☐ 10 or more times

5. In the last 12 months, did you phone this provider's office to get an appointment for your child for an illness, injury, or condition that **needed care right away**?

   [1]☐ Yes
   [2]☐ No → **If No, go to #7**

6. In the last 12 months, when you phoned this provider's office to get an appointment for **care your child needed right away**, how often did you get an appointment as soon as your child needed?

   [1]☐ Never
   [2]☐ Sometimes
   [3]☐ Usually
   [4]☐ Always

7. In the last 12 months, did you make any appointments for a **check-up or routine care** for your child with this provider?

   1 ☐ Yes
   2 ☐ No → **If No, go to #9**

8. In the last 12 months, when you made an appointment for a **check-up or routine care** for your child with this provider, how often did you get an appointment as soon as your child needed?

   1 ☐ Never
   2 ☐ Sometimes
   3 ☐ Usually
   4 ☐ Always

9. In the last 12 months, did you phone this provider's office with a medical question about your child during regular office hours?

   1 ☐ Yes
   2 ☐ No → **If No, go to #11**

10. In the last 12 months, when you phoned this provider's office during regular office hours, how often did you get an answer to your medical question that same day?

    1 ☐ Never
    2 ☐ Sometimes
    3 ☐ Usually
    4 ☐ Always

11. In the last 12 months, did you phone this provider's office with a medical question about your child **after** regular office hours?

    1 ☐ Yes
    2 ☐ No → **If No, go to #13**

12. In the last 12 months, when you phoned this provider's office **after** regular office hours, how often did you get an answer to your medical question as soon as you needed?

    1 ☐ Never
    2 ☐ Sometimes
    3 ☐ Usually
    4 ☐ Always

13. Wait time includes time spent in the waiting room and exam room. In the last 12 months, how often did your child see this provider **within 15 minutes** of his or her appointment time?

    1 ☐ Never
    2 ☐ Sometimes
    3 ☐ Usually
    4 ☐ Always

14. In the last 12 months, did you and anyone in this provider's office talk about your child's learning ability?

    1 ☐ Yes
    2 ☐ No

15. In the last 12 months, did you and anyone in this provider's office talk about the kinds of behaviors that are normal for your child at this age?

    1 ☐ Yes
    2 ☐ No

16. In the last 12 months, did you and anyone in this provider's office talk about how your child's body is growing?

    1 ☐ Yes
    2 ☐ No

17. In the last 12 months, did you and anyone in this provider's office talk about your child's moods and emotions?

1 ☐ Yes
2 ☐ No

18. In the last 12 months, did you and anyone in this provider's office talk about things you can do to keep your child from getting injured?

1 ☐ Yes
2 ☐ No

19. In the last 12 months, did anyone in this provider's office give you information about how to keep your child from getting injured?

1 ☐ Yes
2 ☐ No

20. In the last 12 months, did you and anyone in this provider's office talk about how much time your child spends on a computer and in front of a TV?

1 ☐ Yes
2 ☐ No

21. In the last 12 months, did you and anyone in this provider's office talk about how much or what kind of food your child eats?

1 ☐ Yes
2 ☐ No

22. In the last 12 months, did you and anyone in this provider's office talk about how much or what kind of exercise your child gets?

1 ☐ Yes
2 ☐ No

23. In the last 12 months, did you and anyone in this provider's office talk about how your child gets along with others?

1 ☐ Yes
2 ☐ No

24. In the last 12 months, did you and anyone in this provider's office talk about whether there are any problems in your household that might affect your child?

1 ☐ Yes
2 ☐ No

Your Child's Care From This Provider During His or Her Most Recent Visit

These questions ask about your child's most recent visit with this provider.

25. How long has it been since your child's most recent visit with this provider?

- [1] ☐ Less than 1 month
- [2] ☐ At least 1 month but less than 3 months
- [3] ☐ At least 3 months but less than 6 months
- [4] ☐ At least 6 months but less than 12 months
- [5] ☐ 12 months or more

26. During your child's most recent visit to this provider, did you stay in the exam room with your child?

- [1] ☐ Yes → **If Yes, go to #28**
- [2] ☐ No

27. Did this provider give you enough information about what was discussed during the visit when you were not there?

- [1] ☐ Yes → **If Yes, go to #31**
- [2] ☐ No → **If No, go to #31**

28. Is your child able to talk with providers about his or her health care?

- [1] ☐ Yes
- [2] ☐ No → **If No go to #31**

29. During your child's most recent visit, did this provider explain things in a way that was easy for **your child** to understand?

- [1] ☐ Yes, definitely
- [2] ☐ Yes, somewhat
- [3] ☐ No

30. During your child's most recent visit, did this provider listen carefully to **your child**?

- [1] ☐ Yes, definitely
- [2] ☐ Yes, somewhat
- [3] ☐ No

31. Did this provider tell you that you needed to do anything to follow up on the care your child got during the visit?

- [1] ☐ Yes
- [2] ☐ No → **If No, go to #33**

32. Did this provider give you enough information about what you needed to do to follow up on your child's care?

- [1] ☐ Yes
- [2] ☐ No

33. Wait time includes time spent in the waiting room and exam room. During your child's most recent visit, did your child see this provider **within 15 minutes** of his or her appointment time?

- [1] ☐ Yes
- [2] ☐ No

34. During your child's most recent visit, did this provider explain things about your child's health in a way that was easy to understand?

1 ☐ Yes, definitely
2 ☐ Yes, somewhat
3 ☐ No

35. During your child's most recent visit, did this provider listen carefully to you?

1 ☐ Yes, definitely
2 ☐ Yes, somewhat
3 ☐ No

36. During your child's most recent visit, did you talk with this provider about any questions or concerns you had about your child's health?

1 ☐ Yes
2 ☐ No → **If No, go to #38**

37. During your child's most recent visit, did this provider give you easy to understand information about these health questions or concerns?

1 ☐ Yes, definitely
2 ☐ Yes, somewhat
3 ☐ No

38. During your child's most recent visit, did this provider seem to know the important information about your child's medical history?

1 ☐ Yes, definitely
2 ☐ Yes, somewhat
3 ☐ No

39. During your child's most recent visit, did this provider show respect for what you had to say?

1 ☐ Yes, definitely
2 ☐ Yes, somewhat
3 ☐ No

40. During your child's most recent visit, did this provider spend enough time with your child?

1 ☐ Yes, definitely
2 ☐ Yes, somewhat
3 ☐ No

41. During your child's most recent visit, did this provider order a blood test, x-ray, or other test for your child?

1 ☐ Yes
2 ☐ No → **If No, go to #43**

42. Did someone from this provider's office follow up to give you those results?

[1] ☐ Yes
[2] ☐ No

43. Using any number from 0 to 10, where 0 is the worst provider possible and 10 is the best provider possible, what number would you use to rate this provider?

☐ 0 Worst provider possible
☐ 1
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7
☐ 8
☐ 9
☐ 10 Best provider possible

44. Would you recommend this provider's office to your family and friends?

[1] ☐ Yes, definitely
[2] ☐ Yes, somewhat
[3] ☐ No

Clerks and Receptionists at This Provider's Office

45. During your child's most recent visit, were clerks and receptionists at this provider's office as helpful as you thought they should be?

[1] ☐ Yes, definitely
[2] ☐ Yes, somewhat
[3] ☐ No

46. During your child's most recent visit, did clerks and receptionists at this provider's office treat you with courtesy and respect?

[1] ☐ Yes, definitely
[2] ☐ Yes, somewhat
[3] ☐ No

About Your Child and You

47. In general, how would you rate your child's overall health?

- 1 ☐ Excellent
- 2 ☐ Very Good
- 3 ☐ Good
- 4 ☐ Fair
- 5 ☐ Poor

48. In general, how would you rate your child's overall **mental or emotional** health?

- 1 ☐ Excellent
- 2 ☐ Very Good
- 3 ☐ Good
- 4 ☐ Fair
- 5 ☐ Poor

49. What is **your child's** age?

- ☐ Less than 1 year old

_____ YEARS OLD *(write in)*

50. Is your child male or female?

- 1 ☐ Male
- 2 ☐ Female

51. Is your child of Hispanic or Latino origin or descent?

- 1 ☐ Yes, Hispanic or Latino
- 2 ☐ No, not Hispanic or Latino

52. What is your child's race? Mark one or more.

- 1 ☐ White
- 2 ☐ Black or African American
- 3 ☐ Asian
- 4 ☐ Native Hawaiian or Other Pacific Islander
- 5 ☐ American Indian or Alaska Native
- 6 ☐ Other

53. What is your age?

- 1 ☐ Under 18
- 2 ☐ 18 to 24
- 3 ☐ 25 to 34
- 4 ☐ 35 to 44
- 5 ☐ 45 to 54
- 6 ☐ 55 to 64
- 7 ☐ 65 to 74
- 8 ☐ 75 or older

54. Are you male or female?

- 1 ☐ Male
- 2 ☐ Female

55. What is the highest grade or level of school that you have completed?

- 1 ☐ 8th grade or less
- 2 ☐ Some high school, but did not graduate
- 3 ☐ High school graduate or GED
- 4 ☐ Some college or 2-year degree
- 5 ☐ 4-year college graduate
- 6 ☐ More than 4-year college degree

56. How are you related to the child?

- [1] ☐ Mother or father
- [2] ☐ Grandparent
- [3] ☐ Aunt or uncle
- [4] ☐ Older brother or sister
- [5] ☐ Other relative
- [6] ☐ Legal guardian
- [7] ☐ Someone else

Please print: _____

_____

57. Did someone help you complete this survey?

- [1] ☐ Yes
- [2] ☐ No → **Thank you. Please return the completed survey in the folder.**

58. How did that person help you? Mark one or more

- [1] ☐ Read the questions to me
- [2] ☐ Wrote down the answers I gave
- [3] ☐ Answered the questions for me
- [4] ☐ Translated the questions into my language
- [5] ☐ Helped in some other way

Please print: _____

_____

_____

Thank you.

Please return the completed survey in the folder.

Parent Survey

Introduction:
We would like to learn how to support parent education and health literacy.

Directions: Please fill in the blank, circle or check an answer option to indicate your responses.
Your responses will be kept confidential and any information that you provide will not be linked to your name.

Your Child's Age, Height & Weight Information

1. Your (older) preschool child's birthdate (MM/DD/YY) _____

   Height _____(feet/inches) Weight _____(pounds)
   [ ] Don't know [ ] Prefer not to say/Refuse

2. Another (younger) preschool child's birthdate (MM/DD/YY) _____

   Height _____(feet/inches) Weight _____(pounds)
   [ ] Don't know [ ] Prefer not to say/Refuse

3. How many health books do you have at home? (*Please check one answer.*)
   [ ] 0
   [ ] 1
   [ ] 2
   [ ] 3 or more
   [ ] Don't know
   [ ] Prefer not to say/ Refuse

4. From your preschool, in the past 12 months, did you receive a health referral or information to visit your child's: (*Please check all that apply.*)
   [ ] primary care doctor (other than emergency room visit)?
   [ ] dentist
   [ ] mental health counselor
   [ ] No
   [ ] Don't know
   [ ] Prefer not to say/ Refuse

5. From your preschool, in the past 12 months did you receive parent education or health information for your child's nutrition and/ or physical activity? (*Please check one answer.*)
   [ ] Yes
   [ ] No
   [ ] Don't know
   [ ] Prefer not to say/ Refuse

6. Please check the salary box that best describes your **household income** level. (*Please check one answer.*)

[ ] < 10,999	[ ] 70,000 – 79,999	[ ] 140,000 – 149,999
[ ] 11,000 – 19,999	[ ] 80,000 – 89,999	[ ] 150,000 – 159,999
[ ] 20,000 – 29,999	[ ] 90,000 – 99,999	[ ] 160,000 – 169,999
[ ] 30,000 – 39,999	[ ] 100,000 – 110,999	[ ] 170,000 – 179,999
[ ] 40,000 – 49,999	[ ] 111,000 – 119,999	[ ] >179,999
[ ] 50,000 – 59,999	[ ] 120,000 – 129,999	[ ] Don't know
[ ] 60,000 – 69,999	[ ] 130,000 – 139,999	[ ] Prefer not to say/Refuse

7. How many adults live in your home including yourself (older than 18 years): _____

8. How many children live in your home (less than 18 years of age): _____