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Understanding Guardian Perceptions of Whole-Foods Plant-Based Diets as Interventions in Pediatric Medicine

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UNDERSTANDING GUARDIAN PERCEPTIONS OF WHOLE-FOODS PLANT-BASED DIETS AS INTERVENTIONS IN PEDIATRIC MEDICINE

by

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ABSTRACT

The obesity epidemic is widespread in American society, often affecting children who bear its consequences innocently. Due to a lack of nutrition knowledge, children rely on caregivers to meet their nutritional needs and instill healthy habits. This study examines parents' attitudes, knowledge, and behaviors, as well as perceived barriers to adopting a whole-foods plant-based diet (WFPD) for their children. Using a modified survey instrument by Morton et al., this study focused on parents and children regarding dietary choices. Participants were recruited from the waiting area of a pediatric clinic at the Medical College of Georgia between April and May 2023. They completed paper surveys assessing beliefs about whole-foods plant-based diet knowledge and suitability, and identifying barriers to adoption. Among the 48 participants, with children averaging 7.5 years old, 69% were familiar with WFPD health benefits, and 17% had past or current involvement with a whole-foods plant-based diet. Likert scale scores determined confidence intervals for opinions on whole-foods plant-based diet barriers, adoption, and nutritional knowledge. Kendall’s tau-b correlation tests uncovered significant connections between perceived barriers, demographics, and understanding of whole-foods plant-based diets. A Spearman’s rank-order test found no correlation between a parent's assessment of their child's health and whole-foods plant-based diet engagement. Many parents didn't perceive significant hurdles to WFPD adoption and expressed readiness to embrace its benefits for their children, pending guidance from healthcare professionals and assistance with shopping and meal preparation. Openings toward solutions to the childhood obesity epidemic exist if stakeholders would reach out and take advantage of the most impactful methods of educating the public in terms of the benefits and successes of a whole-foods plant-based diet.

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CHAPTER 1: INTRODUCTION

The Obesity Epidemic

The advent of the obesity epidemic in America has had widespread impact, not least in the development of children who are raised within circumstances that may contribute to their own eventual struggle with the chronic health condition. Many elements that contribute to children getting poor diets are out of their immediate control: overall caloric excess without knowledge, the reinforcement of a largely sedentary lifestyle, and systemic inequality among various social strata which prevents good nutrition, among others [1]. Though children may encounter and cope with obesity through no initial fault of their own, it remains true that poor diet has been identified as the uniquely powerful leader in terms of its contribution to overall eventual mortality from any chronic disease. The United States bears the singularly worst data on childhood obesity globally: roughly 40% of children are either overweight or obese in America [1].

While the typical diseases associated with obesity—such as cardiovascular disease, diabetes, and cancer—may not severely affect the resilient bodies of children during the early stages, especially when their diets do not meet standardized or commonly recommended nutritional goals, these conditions are likely to manifest later as their eating habits become more entrenched, leading to potential long-term consequences. Furthermore, the impact of obesity at any age in a modern society that stigmatizes fatness carries its own psychological health issues. The length of time children spend in childhood is their best ally, as a proper dietary intake, reinforced by guardians across the many years of their youths, is in all ways prophylactic to long-term adverse health conditions. At the critical moment when young people are learning

healthy eating habits and the important elements of nutrition, parents can make a huge difference by providing them with a high intake of fruits, vegetables, and other whole foods, each correlated with diminished risk of the aforementioned diseases [1].

Diet Content in America

Only about 12% and 9% of adults in America themselves meet the recommended fruit and vegetable intake of the American Heart Association (AHA) respectively, according to data gathered by the Center for Disease Control and Prevention [2]. It stands to reason, then, that many of the young children of the remaining 88-91% of adults lacking fruit and vegetable content in their diet also experience too few of these important nutritive elements and get their calories from less desirable sources [2]. In fact, the AHA reports 17% of children in America already present with obesity [3]. An analysis of studies has shown the primary risk factors for these children to be a combination of diet, exercise, existing physiology, and psychological health [3]. Though the entire puzzle of childhood obesity has yet to be solved, prevention of the problem is still contingent on correcting dietary issues as one component of the solution. A modern drive to direct the diet of the current generation of children toward whole and nutritious foods, particularly those that are plant-based, is thus, and perhaps always, well-advised.

At-Risk Demographics

The purpose of this project is to shine a spotlight on the perceptions held by parents/guardians regarding the health benefits of whole-foods plant-based diets (hereafter WFPD) at an academic pediatric clinic in Georgia. The sample surveys are obtained from parents who brought their children to the Children's Hospital of Georgia, a not-for-profit teaching

hospital affiliated with the Medical College of Georgia. As these parents/guardians chose an institution dedicated to getting children the care they need regardless of a parent's financial status, the sample of consenting parents obtained in this project is useful, in that it is highly likely to include the social demographics most associated with poor nutrition–those that would choose or may need free health care, in other words. This project, however, attempts to avoid biasing the survey responses by not requesting any direct information on financial wherewithal, as any unintended shame about an ability to provide may affect reported perspectives on the benefits of achieving correct nutrition.

Specific Aims

Aim 1: Determine influences on parent/guardian familiarity/favorability of a WFPD.

The implementation of WFPD for children has a primary obstacle in the opinions of their parents regarding the types of foods found in and accessibility of WFPD. The survey sought to establish a typical baseline for guardians' existing knowledge of and approval toward such a diet. This paper's analysis will compare elements of that data against offered methods of improving that knowledge and perception, in order to help reveal to other stakeholders the best means of educating them on the benefits.

Aim 2: Examine how specific misconceptions regarding a WFPD can be healed.

In parents who do happen to be aware of (and open to) whole-foods plant-based diets, there may be misconceptions regarding the purpose, difficulty, accessibility, and economic feasibility of these diets. The survey collected the most heard misconceptions regarding WFPD, and posed these ideas to the survey respondents, in order to determine which particular errors are

the most prevalent. This paper seeks to analyze information for what errors might go hand in hand with each other, as well as whether particular forms of support might be able to correct those ideas more than others. This paper may help stakeholders make changes to parents' knowledge in a way that makes WFPD a viable, and even desirable, option for most parents.

Aim 3: Identify the most practical barriers to implementing WFPD for children, and what methods might be most acceptable for their mitigation.

While we believe WFPD is eminently accessible and that the benefits outweigh any barriers that may exist, there do appear to be specific functional barriers, whether real or imagined, that are brought to bear when parents make decisions regarding what type of diet to offer their children. The survey designers collaborated on what those functional issues might be, and posed the most salient to the survey respondents, subscribing to the idea that if a thorough list of these barriers can be established, stakeholders will achieve a direct advantage in their planning to help parents and guardians choose WFPD for their children. This paper examines that data for which barriers seem to correlate with each other, as well as which barriers are most and least prevalent with parents who are most and least open to migrating to a WFPD.

Aim 4: Offer stakeholders data on possible external initiation and reinforcement of WFPD.

Together with a list of important barriers, it's important for stakeholders (i.e., health care facilities, physicians, sociologists, nutritionists, and school faculty) to identify points of contact where they can help parents/guardians both actively choose to start and maintain WFPD. Additionally, these stakeholders may end up having direct impacts on children without the need for a parental middleman, e.g. through offering healthier options in school lunches. This study sought to determine whether those points of contact have been useful previously, and what might

correlate with their perception of being impactful. Though physicians may not have historically pointed patients to these WFPDs, they might also initiate nutrition and diet advice if it became obvious their patients both were amenable to and benefited from the information.

Aim 5: Illustrate how demographic differences of experience correlate with perceptions about and barriers to WFPD.

The survey sought to determine how responses differ among specific demographics and how those demographics might correlate with particular perceptions and barriers more than others. To determine these differences of experience, the project retrieved information about age, gender, education level, and ethnicity. This paper primarily hypothesizes that education of parents by important stakeholders is the primary influence and driver of acceptability regarding a whole-foods plant-based diet and posits that more education will correlate with an increased amenability among respondents to seeking the broad benefits and usefulness of a WFPD for their children.

It is the author's hope that a correlation analysis of the gathered responses, through the lens of these aims, will motivate, inform, and sustain a drive by stakeholders in childhood welfare to convince more families to adopt whole-foods plant-based diets that offer children excellent nutrition, as a means to firmly establish one preventative element of what will be a broader, holistic solution to childhood obesity in America.

Dietary Content of WFPD

A whole-foods plant-based diet emphasizes the consumption of naturally grown plant foods, encompassing whole grains, fruits, vegetables, starchy plants, and legumes. Additionally, breads and pastas made from whole grain plants are considered beneficial components of this

diet. Unlike vegan diets, with their strict controls against any meat, poultry, seafood, eggs, or dairy, the WFPD merely recommends avoiding those elements as often as possible [4]. Additionally, while vegan diets may embrace high oil content and highly processed foods, such as refined sweeteners, bleached flours, and white rice, the WFPD recommends specifically avoiding these elements wherever possible as they contribute significantly to the obesity epidemic as nutrition components [4].

The goals of WFPD are to keep people eating the highest concentration of items that provide the maximum nutritional value in terms of macronutrients, vitamins, and minerals, while avoiding unnecessary calories, chemicals, fats, and sugars that spike insulin or contribute to obesity in general. In the five recognized "Blue Zones" on Earth–regions with the highest percentage of humans living longer than 100 years–the pattern of nutrition shared by the people in these zones is 95% to 100% whole-foods plant-based, specifically focused on beans, whole grains, and root vegetables [4]. A well-balanced WFPB diet is established in the precepts of healthy biochemistry: it provides antioxidants, fiber, and the kinds of phytonutrients only found in plants [4].

Background and Significance of WFPD

Plant-based diets have been shown to be an effective treatment for managing the effects of obesity, particularly Type II Diabetes, by curtailing body weight, limiting cardiovascular risk factors, and improving sensitivity to the insulin hormone [5]. 66% of survey respondents in a 2015 diabetes health care facility surveyed indicated they would be willing to follow a WFPD for 3 weeks, though only 9% currently followed one [5]. The most frequently offered barriers to change for adults, in terms of making diet decisions for themselves, were family eating

preference and general meal planning skills [5]. Surprisingly, 72% of healthcare providers at the same facility reported a good understanding and awareness of WFPD, at least in terms of diabetes management, but exhibited overall low levels of practice [5]. The willingness to try but lack of understanding of whole-foods plant-based diets indicates that an education about these diets may be useful in creating health solutions or preventing long-term problems [5]. This concept of offering education to improve nutritional outcomes transfers to the idea of parents beginning to offer WFPD to their children.

WFPD not only impacts health outcomes regarding diabetes, but also in many other causes of mortality and nutrient deficiency. The makeup of a well-planned WFPD is intended to have all important elements of human nutrition, a primary concern or misconception of parents regarding WFPD, who often conclude on limited knowledge that their children may not get enough protein if meat is not available. A well-designed WFPD, however, will include all amino acids necessary for protein synthesis, and even provides better long-term health results. Naghshi et al. in 2020 showed that intake of plant protein specifically had a significant association with lower risk of any cause of mortality, as well cardiovascular disease mortality [6]. Along the same lines, Esselstyn demonstrated profound reversal of coronary artery disease in a study of 18 patients adhering to WFPD with existing, “significant vascular disease” [7]. During the 8 years prior to the study, they had together sustained 49 cardiac events of moderate to severe prognosis. Following the WFPD treatment and study, across 12 years 17 of the 18 adherents had a stunning zero total events while remaining on the WFPD amid continued evaluations [7]. Nagshi also demonstrated that a mere 3% extra energy from plant protein sources per day was associated with a 5% lower risk of death from all causes [6]. A separate study on the contribution of fruits and vegetables, together and separately, to lower risk of mortality for several causes confirmed

these same associations for heart disease and all-cause mortality, while also adding reduced risk of cancer up to a certain dose (600 g/day of fruits and vegetables) [8]. Results such as these and other repeated trials dramatically support prominent health recommendations to the public that increased fruit and vegetable intake prevents cardiovascular disease, cancer, and other premature mortality [8].

Despite these findings, recent data show that, across all US States, adults still take in too few fruits and vegetables, as a 2015 study shows: 12.2% of adults met fruit consumption recommendations, while 9.3% met those for vegetables [9]. Scoring particularly low were men, young adults, and adults amid poverty circumstances, and the largest variations occurred between women and men for fruit intake (15% vs. 9%) and between highest income category and poverty for vegetable intake (11.4% vs. 7%) [9]. The US Department of Agriculture indicates that eating patterns overall have remained far below their Dietary Guidelines in the United States. Trends revealed in those guidelines show a slim uptick in meeting recommendations in the 10 years prior to 2015, implying that efforts to improve nutrition in Americans, if they have existed, have not had much impact, and furthermore, that much needs to be done [1]. Between 2005 and 2016, the percentage of adults meeting those nutritional recommendations only rose from 56% to 59%, with some rise and fall in the interim, reaching a maximum of 60% in 2011 [1]. The USDA analysis in the Dietary Guidelines also suggests that American chronic health conditions, such as cardiovascular disease and diabetes, are directly related to diet, with an astounding 60% or more of Americans having one or more diet-related chronic health conditions, including obesity as a major component [1]. As most eating habits are developed throughout youth and into young adulthood, childhood nutrition, to include the elements of a whole-foods

plant-based diet, is key in establishing the first line of defense against these chronic conditions reported by the USDA.

Though US adults continue to do poorly in terms of fruit and vegetable intake, the problem is really a human one that spans nations. A study of Canadian adults, also in 2015, demonstrated that Canadians consumed fewer and fewer total servings of fruits and vegetables since 2004 [10]. The Western diet remains unfocused on plant-based nutrition, despite high recommendations by nations to include those elements in a diet. Furthermore, there is likely an argument that these self-reported values by consumers in surveys done by nations face a significant amount of underreporting, or even purposeful misreporting, to shore up guilt about dietary choices. An Australian survey of meat/poultry/fish consumption seeking to determine if and how Australian diets migrated among protein sources revealed that there was a trend toward misreporting actual values of processed meats consumption due to the social and self-judging implications of revealing, even anonymously, the predilection to make less healthful food choices that may cause disease [11]. This may point to a Western cultural trend where consumers are aware that certain dietary choices are a major cause for concern in terms of preventing chronic diseases such as obesity, but still do not meet recommendations for the inclusion of plant-based nutrition in their diets.

How might American society fight the obesity epidemic in children, for the adults they will eventually become, and in what ways might a whole-foods plant-based diet contribute? Governmental agencies decrying the issue are not enough. Stake-holding organizations, such as health care facilities and public education systems, “must fully understand the magnitude and far-reaching effects of excess body weight” and bring young people to hold that same understanding [12]. Perhaps the aspect of modern life most agreed upon as contributing to

obesity in children is the simple idea that the information age has limited the need for most physical activity in everyday life, a rapid shift in bodily demands for an organism that evolved for entirely different needs [12]. With video games and TV entertainment reaching up to 4-5 hours per day in adults, children can be expected to spend vastly more, putting them at greater risk, as the number of hours spent viewing TV is highly correlated with the extent of obesity in viewers. This effect is exacerbated by hunger and satiety hormones which have had their presence impacted by low sleep duration (in favor of television) [12]. Countering these trends in children specifically is an enormous, multifaceted task that takes places in separate arenas, and this demands the attention of multiple stakeholders: public school officials and educators, community leaders who plan activities and the space for them, and even insurance carriers who offer gym memberships locally as a means of preventive health care that reaches their bottom line [12].

Young people rely on what's available to feed themselves, as well as what they've been habitually trained to eat [12]. Thus, the immediate and high availability of high-caloric density foods around them is a critical component of the obesity crisis [12]. Attempts both to shift nutrition intake through school menus and to bring students' attention to excess weight in childhood occasionally meet with limited success, but "the gains are easily lost during extended yearly vacations" [12]. To make matters even more challenging, any work to limit high-caloric density foods at school events has been shown to meet with parental resistance–the very stakeholders from whom the most help is needed [12].

Four primary environments have been identified that exert direct influence on the obesity epidemic: physical, economic, political, and sociocultural. Within these, events or circumstances can be either obesogenic (promoting obesity) or leptogenic (promoting leanness) [13]. The

physical environment for children refers to their immediately available resources, including home food (groceries), restaurants, supermarkets, vending machines, school lunches, worksites, and food provided at community, sports, and arts venues. It also includes the opportunities for choosing physical activity in recreation spaces, modes of transport, sporting grounds, and school activities [13].

The economic environment is indicative of the collective costs involved in selecting both food and physical activity–most determined by market forces out of a child's control. Stakeholder interventions here to limit a trend toward obesogenic choices, relative to pointing children to the benefits of a whole-foods plant-based diet, include pricing policies and subsidies on healthy foods, promotional incentives in schools (to the extent of making healthy foods free), and educating parents more thoroughly on cost-effective health food choices [13], a data component of this current study. Economic interventions facilitating the choice of more leptogenic activity include subsidies for gym membership, or even free memberships at schools with significant investment in facilities, as well as community leaders investing in local areas designed for physical activity (parks, tracks, trails, sporting fields, outdoor gym equipment).

The political environment has both micro- and macro- levels of impact on the trends in obesity in children. Laws and other regulations create nationwide policies, standards, and food industry practices that children must endure without recourse [13]. On the micro level, school nutrition policies, rules for contracting food relationships, and general rules regarding student health all contribute to what options are available to students, including what plant-based food choices might exist [13]. The macro political impact on food availability and better food choices is through farm subsidies, health claims and nutrition information on food labels, and requirements for that information in restaurants and other points of food selection [13]. Political

work also affects the availability of physical activity spaces, modes of transport in cities, and tax policy incentivizing leptogenic choices [13].

The sociocultural element of environmental impact on obesity is enormously powerful. The "gender, age, ethnicity, traditions, religion, and subgroup affiliations" of children each exert their own influence as a variable in food choice behavior, and thus amplify the complexity of isolating the predominant forces at hand in an individual's diet [13]. In micro settings, parents, peers, teachers, coaches, other role models (including celebrities whom children don't know personally) can serve as primary examples of how and what to eat, as well as enhancing or limiting an understanding of the impacts of food choices [13]. In macro settings, cultural touchstones through mass media, entertainment, and perhaps most importantly, advertising, have an element of inclusion or exclusion, affecting a sense of belonging or desire to conform that can dramatically affect how children feel about their food choices, their bodies, and their physical activity [13].

Each of these environmental impacts contributes to the overall perception, awareness, and understanding of the specific food plan examined in this study: the whole-foods plant-based diet. An Australian survey indicated an existing high awareness, if not a thorough understanding, of how beneficial a plant-based diet is, especially as such a diet pertains to decreased saturated fat, increased fiber intake, and disease prevention, all of which are vocabulary terms and goals with increasing saturation and familiarity in the cultural lexicon [14]. In this Lea et. al. study of adults, vastly more survey participants agreed that "there were particular benefits [to] eating a plant-based diet" than "perceived any barriers" to starting or continuing that diet–a major takeaway we hope to provide in our study of American parents [14]. This survey also indicates a

trend in ever-decreasing barriers to starting and continuing plant-based diets when compared with their earlier 2003 study (Lea and Worsley, 2003) [14].

When examining what few barriers were mentioned, the most prominence was simple lack of information about the diets themselves [14]. This points to the ability of stakeholders to improve communication in ways that make a difference. If the highest barrier to avoiding obesogenic choices in children might be nutrition education and amplified advertising, it is incumbent on health professionals, school officials, and the food industry to collaborate on the clear solutions to that barrier [14]. Other barriers indicated, and which our study intends to investigate, were related to lack of self-desire or family-desire to change an entrenched diet, as well as limited options in the standard fare available when eating out. These barriers were mentioned more than what might otherwise seem like barriers to selecting a plant-based diet: actual healthiness or the "tastiness" of plant-based notices. Such data reveal the most important obstacles to consider when attempting to shift cultural attitudes toward, awareness of, and consumption of whole-foods plant-based diets, especially as it pertains to diet adoption in children.

Yet while these important obstacles to eating plant-based are known, many remain unknown or, at minimum, unstudied. People may understand that there are health benefits associated with such a diet, but still think those benefits are not so great as to mandate a diet shift [14]. A sustainability study on meat- vs. plant-based diets also indicates that knowledge about how plant-based diets can prevent environmental degradation and work to counter climate change may drive a shift to plant-based diets [15]. Half of the study's respondents demonstrated uncertainty about whether there might be environmental positives that come from a wider societal adoption of plant-based food initiatives and diets [15]. It is possible, therefore, that more

information on environmental impact might remove that uncertainty and be more convincing than knowledge of a diet's long-term health benefits, or at least compound the sum total of benefits in a way that makes people cross that plant-based threshold [15].

In a deteriorating economic environment, we also think that the simple cost of adopting a whole-foods plant-based diet enters the adjudication process for parents deciding what to feed their children. The ability to make cost-effective food selections is a key part of our investigation into barriers. With so much attention given to why people don't understand the diet's health benefits, or aren't aware of them, or don't enjoy the foods themselves, the significant barrier of family economics is likely a primary consideration that gets glossed over. Ergo, what might the perception of costs be, as compared with what they would be? Additionally, what are the trends in whole foods costs? Are they accelerating, and what intervention might be necessary to contain those costs in ways that make a difference to families choosing these diets for themselves and their children? A 2010 study by Drewnowski et al. revealed that carbohydrates, fats, and sugars as a group were correlated with lower final good prices in stores per 100 grams of mass, whereas protein, vitamins, and minerals were correlated with higher prices per 100 grams, after adjustment for energy content [16]. Both a decade ago and currently, subsidies to commodity crops (such as wheat, soybeans, corn), as opposed to vegetables and fruit, have led to increasingly cheap calories in pre-packaged foods, and a public food supply that is energy rich but nutrient poor [16]. Such analysis points to the idea that family concerns about costs are worthwhile when nutrients associated with grains, sugars, and fats are cheaper, while the vitamins and minerals associated with fruits and vegetables are consistently more expensive nationwide [16]. This information will be extremely valuable in any campaigns to drive the move to plant-based diets.

With costs heavy in the mind of families making decisions in the grocery store, and only a limited-impact awareness campaign pointing them to make better food choices, direct feedback from authoritative sources such as attending pediatricians can make the difference in choosing better nutrition for children. A physician is most likely to be the single unbiased voice that can offer interventions to an obesity problem without the stigma of judgment and failure, according to Nair and Hart in their 2018 study [17]. “Structured counseling sessions” by physicians have also been shown in a 2014 systematic literature review to produce significantly greater mean weight losses at 1 to 2 years than “usual care groups” [18]. But the Nair and Hart study also confirmed that too often physicians are not well-versed in nutrition information themselves, and freely offer that assessment of their knowledge [17]. The study also asserts that nutrition education in medical school curricula has long been considered inadequate [17]. 71% of the 121 US medical schools surveyed failed to provide the 25 hours of nutrition education they considered a bare minimum [17]. In this study, only 36% of the respondent medical schools used any Nutrition in Medicine curriculum, and two thirds of the Nair sample of physicians reported little to no nutrition training [17].

Though these family physicians may thus find themselves lacking adequate nutrition knowledge, they are often the most utilized in terms of obesity counseling in areas of high endemic obesity [17]. These family physicians, and indeed pediatricians, represent a remarkable opportunity to improve a key leverage point in the fight against obesity, not least by recommending whole-foods plant-based diets. Improving both physician knowledge and the imparting of that knowledge involves overcoming its own barriers perceived by those physicians: lack of time during patient visits, poor current reimbursement, poor patient compliance with behavioral intervention and recommended diets, poor self-efficacy in physicians, and actual

obesity among those physicians themselves [17]. Nutrition education in medical school, therefore, seems to be the first offensive strategy in attacking the obesity problem from the physician counseling angle, as well-prepared, confident, and healthy physicians ostensibly stand to both make more time for and secure better impacts in helping their patients choose and continue with whole-foods plant-based diets that offer better nutritive quality and long-term health results.

To deliver that education to physicians who are out of medical school, however, there must be different tactics available. Hever et. al. showed that when primary care physician providers discuss nutrition with their patients, they will spend an average of five minutes on the topic, "which may not provide enough time and detail for success" [19]. Physicians rely on training that points them toward pharmacological and procedural interventions instead of the widely reported benefits of a correct diet [19]. A Devries study illustrated that many postgraduate programs which would under reasonable circumstances be expected to require prospective physicians to complete formal nutrition training (including counseling in specific therapy modalities) actually do not have any particular core curriculum requirements focused on nutrition in order to obtain a degree [20]. This, of course, is a main contributor to the concern among primary care physicians who feel desperately inadequate in making diet recommendations to patients, though they are viewed as nutrition experts by those same patients [20]. In a growing child, nutrition plays perhaps an even more extraordinary role in healthy development, so the ability of doctors to make well-informed recommendations and interventions regarding diet can be the difference between long-term health or a chronic disease such as obesity in a child, and therefore their training is critical [21].

A useful dietary intervention, not least coaching on a what may be a brand-new whole-foods plant-based diet, requires effort on the part of both patient and physician: physicians providing excellent and thorough nutrition information and goals, under the weight of authority, and patients following through and staying accountable to those goals and directives [19]. In the case of children as patients, however, accountability must come through parents who have a vested and determined interest in helping their child adopt good habits and achieve the best long-term health. The present study attempts to shed light on the perception not merely of the diet itself, but also what parents anticipate when trying to keep children on track with their nutrition goals, and just how much impact the recommendations of professionals might have. We hope that a contribution to an evidence-based movement away from the typical American diet will help create focused solutions for the obesity epidemic, as well as spur better health outcomes for the children of America.

CHAPTER 2: RESEARCH DESIGN AND METHODS

Design Timeline

The survey materials were created between February and March of 2023. The original study received Institutional Review Board approval in April of 2023 through the Medical College of Georgia at Augusta University. The survey began acquiring participants over April, May, and June of 2023, in two-hour sessions at each sample point, until a statistically useful sample size of 48 was reached. Subsequently, the extended data analysis of this thesis received IRB deferral at the University of Central Florida in October of 2023, and that analysis took place throughout the fall and spring of 2024.

The participants in this study, parents and guardians, were recruited in the waiting area of the pediatric clinic at the Medical College of Georgia in April-June 2023. They were asked to complete a paper survey, which assessed their beliefs regarding the nutritional adequacy of a Whole-Foods Plant-Based Diet (WFPD) for their children and identified potential barriers to its adoption. Surveys were distributed randomly to available parents/guardians in the waiting room merely by who had recently begun waiting and if they were amenable to the task. Occasionally, the parent would be called in to see the pediatrician before they were able to complete the survey, adding a challenging element of tracking down the participant following their health visit.

Survey Elements

To investigate parental attitudes, the study employed Morton et al.'s survey instrument with appropriate modifications, ensuring the instrument's validity and relevance to the current

study. The survey instrument used by Morton and colleagues was adapted with their permission, with slight modifications. The original group administering the survey which produced the data for this thesis received Internal Review Board approval in April of 2023. Since this thesis involved the collection of no new data, the IRB determined that the proposed activity of this thesis was not research that further involved human subjects as defined by DHHS and FDA regulations.

The survey designers aimed to investigate the influence of various factors on parental attitudes toward whole-foods plant-based diets. These factors include age, gender, ethnicity, level of education, child's age, parental perception of child's health, familiarity with elements and benefits of whole-foods plant-based diets, as well as past and present adherence to any commonly practiced styles of such diets.

Regarding barriers, the creators of the survey focused largely on what might hold parents or children back from beginning a WFPD. The investigated barriers included aversion to fruit and vegetables, aversion to change in any form, lack of willpower, impression that specific nutrients may be absent, shopping and cooking questions/issues/hindrances, lack of available time to invest in skills, sense of missing out on other foods or eating opportunities, and the presumed high cost of WFPD.

The creators of the survey also sought practical answers about what might provide the activation energy for specific families to turn to WFPD for a three-week period. Specifically, the survey examined whether certain events or activities might spur parents to pursue WFPD. These included a direct mandate from primary physician to move to WFPD, a direct mandate from a dietician/nutritionist to move to WFPD, attending classes that teaching WFPD nutrition, attending cooking classes for WFPD preparation, performing research alone on WFPD nutrition,

discovering that WFPD works for other friends and family, receiving and adopting a specific meal plan, receiving further information and related evidence. Follow-up questions to this information sought which source in their lives is viewed as the most trustworthy with regard to providing nutrition evidence, assertions, and recommendations.

Ethical Considerations

Regarding consent, participants were given an entire overview of the study, its purpose, and its potential risks/benefits (which were few). After this briefing, participants were asked to sign a one-page consent form, after which they began the survey. To ensure each participant did not feel pressured or required to complete the survey, the survey was not automatically added to the stack of forms provided by the receptionist on check-in, as if it were something necessary for their visit. Each participant willingly offered their opinions, thoughts, and responses toward the completion of the research.

Participation in this study is/was of minimal risk, as all the data is anonymous. Participation will not have any impact on care received at the hospital where parents brought their children. The study database will be maintained on an AU Human Research Box. There is no direct benefit to the study participants here, other than perhaps an encouragement for consideration of the benefits of whole-foods plant-based diets, at the same time fostering an awareness of existing biases against them. However, we do hope that this study will shed light on how perceptions of plant-based diets held by parents/guardians may affect the dietary habits and health of their children. We also hope that it will show us how we can improve nutrition education and counseling in pediatric settings based on misconceptions that parents/guardians may have.

Analysis Methods

Deidentified quantitative data were examined using SPSS, employing several different tests to accommodate comparisons of ordinal and binary data with each other. We employed Spearman's rank-order correlation to define potential associations among questions with ordinal responses and questions with binary responses. The Kendall's tau-b (τ_b) correlation coefficient was used as a nonparametric measure of the strength and direction of association that existed between those questions that had at least an ordinal scale of responses. Demographic information was summarized using frequency and percentage distributions. Likert-scaled responses were analyzed for frequencies, percentages, means, and standard deviations. The analysis of qualitative responses to open-text items involved a thorough thematic coding process utilizing NVivo.

CHAPTER 3: RESULTS

Test Metrics

The potentially impactful factors and questions outlined in the Methods section were grouped into specific categories (demographics, general position, barriers, supporting assistance), with specific quantitative results from the Kendall's tau-b and Spearman's Rank correlation tests performed. Survey questions that most closely matched the intent and interests of this paper (among dozens of possible correlations) were selected for comparison. As this paper takes the position that WFPDs are a primary tool in the fight against childhood obesity, we sought the most impactful interactions of responses that may be of most actionable value to stakeholders, namely pediatricians, nutritionists, school administrators and in-school nutrition managers, physical education and health-based coaches and teachers, as well as of course parents themselves, who have the most direct and dramatic impact. The correlation values (strengths) between the survey responses provided by participants, as well as the p-values of significance for those correlations are directly illustrated in the tables of Appendix A. To account for the several comparisons that demonstrated null results when tested, selections of those are also discussed here, as the potential reasons for no demonstrated significance can still be of value and insight to stakeholders.

Demographic Analysis

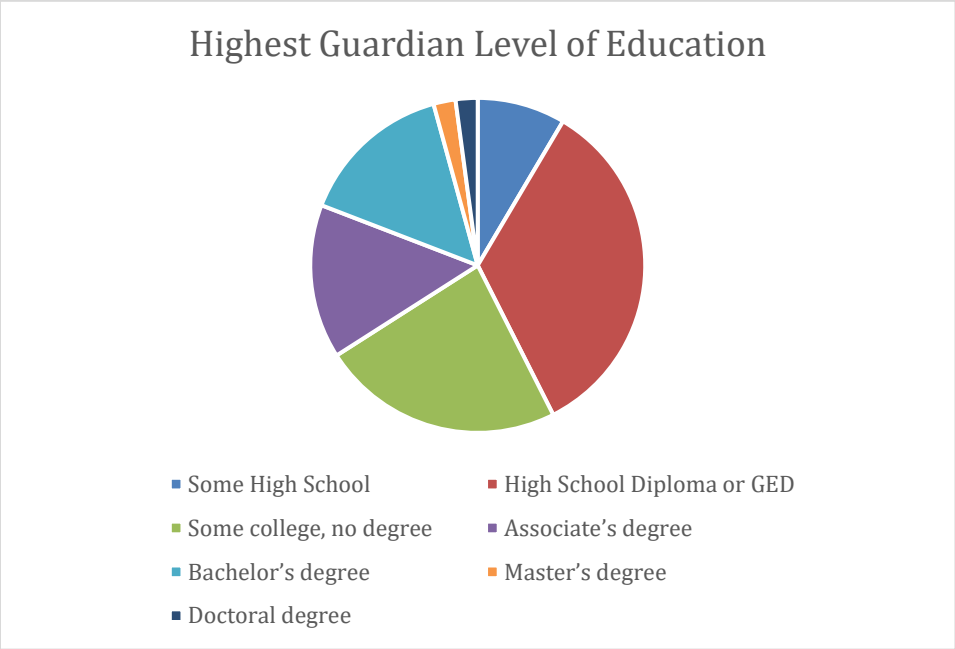

Figure 1: Highest Education Level of Guardian

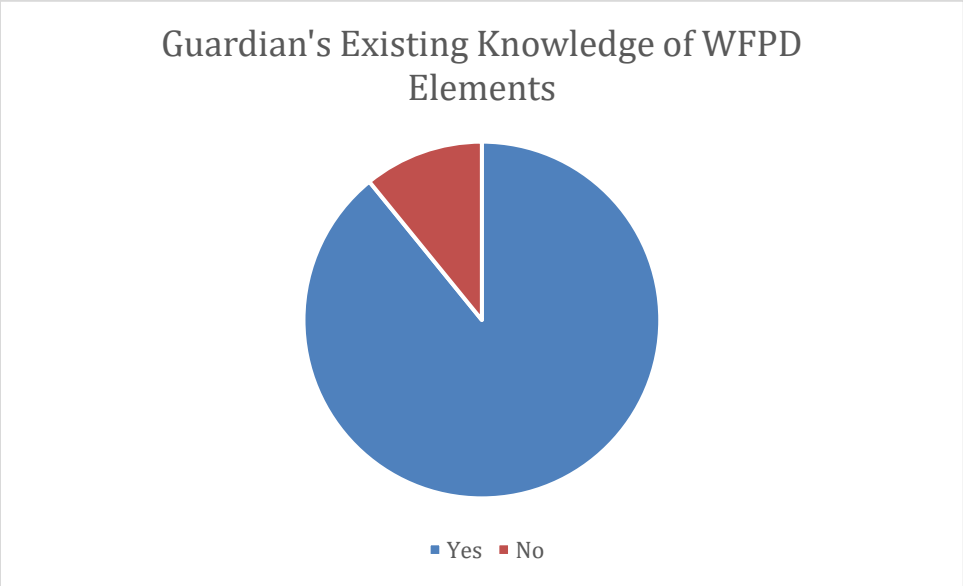

Figure 2: Guardian's Preexisting Knowledge of Whole-Foods Plant-Based Diet Elements

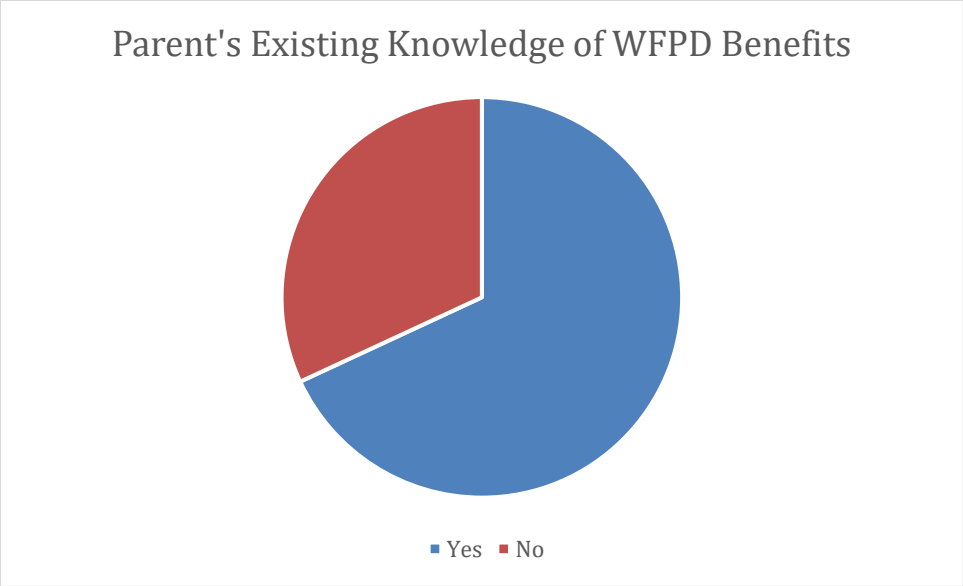

Figure 3: Guardian's Preexisting Knowledge of Whole-Foods Plant-Based Diet Benefits

The majority of our guardian respondents were female, with fewer than 1 in 5 holding an undergraduate degree (Figure 1), a proportion slightly below the national average of 37.7% reported by the US Census Bureau in 2022 [22]. Furthermore, 89% of our surveyed guardians had knowledge of WFPD elements, as indicated in Figure 2, while only 68% were aware of the health benefits of WFPD, as demonstrated in Figure 3. We anticipated that parents with higher education levels might possess greater knowledge about nutrition and health, suggesting a potential correlation between education level and positive responses to questions regarding the implementation of, experience with, or openness to a whole-foods plant-based diet.

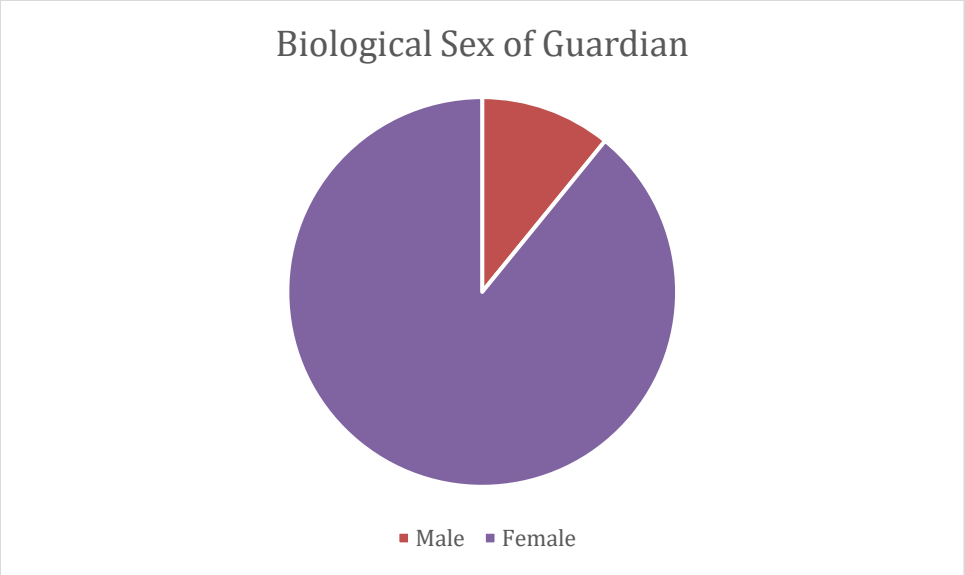

Figure 4: Biological Sex of Guardian

With the disparity in child-care responsibilities leaning toward women in America, most of our data came from mothers or women guardians that had the task of seeking healthcare for their child, as shown in Figure 4. We assumed, also, that whoever might bring a child to a free clinic for health care would also make nutrition choices for that child. A missed opportunity here, therefore, was to examine whether the parent/guardian was the primary decision-maker for determining the diet of their children, or if their spouse/partner was also involved, or both. If respondents are not that interested or involved in making nutrition choices for their child (i.e. their spouse accomplishes that task), their answers regarding the benefits and implementation of WFPD may not contribute impactfully to data that we otherwise hoped would be used to activate and leverage the most interested party in introducing children to WFPD. In other words, these respondents may or may not be the party that is most likely to be motivated to help the child or children in question achieve success with WFPD.

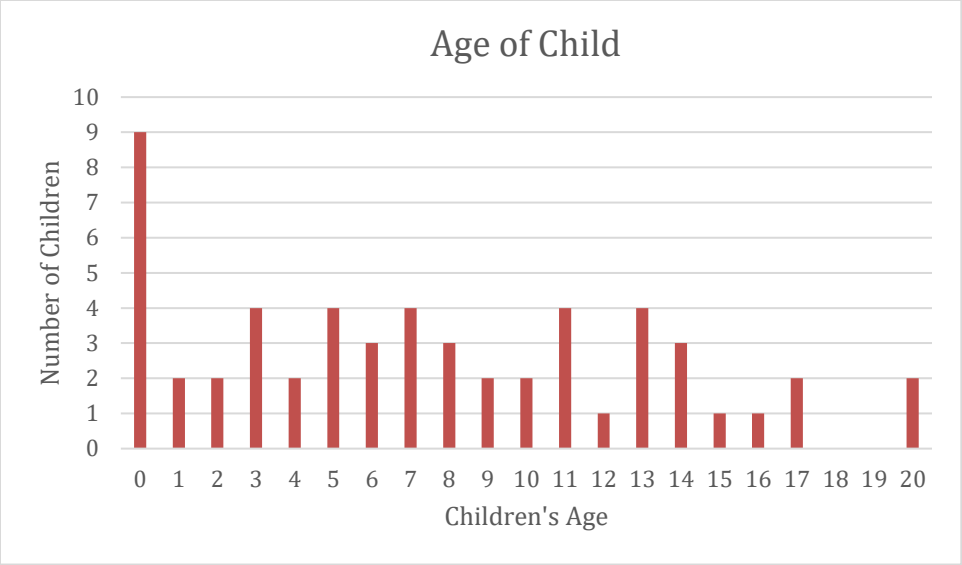

Figure 5: Age of Child

The average age of the children brought for treatment was 7.5, as depicted in Figure 5, placing them solidly within the School-Age childhood development phase, which aligns with the onset of Piaget's concrete operational stage of cognitive development [23]. In this stage, young people can imagine both themselves and other external objects from the perspective of how others might see them [23]. In an era where bullying over body image falls is extreme, young people are more conscious of their bodies at earlier and earlier ages. Helping them achieve positive food habits and an understanding of good nutrition early can establish better bodily health (i.e. a healthy weight and general fitness) that may prevent the body image bullying that, although terrible, still exists among their peers. Children of this age range are also able to engage in Piaget's decentration, a cognitive process in which they are able to integrate several variables of any topic at hand as they make decisions about how to proceed with or adjudicate the situation [23]. This period can be critical for parents, therefore, in helping their children establish and work with the several components of good nutrition for their bodies [23].

Tests Achieving Significant Correlation

The following tests for correlation displayed significance under $\alpha=0.05$. Each test had an adjusted n-value dependent on the number of individuals in the collected survey who responded to the questions at hand in the test. Occasionally, a survey respondent would leave a particular question blank or the remainder of their survey unfinished, and so each test was run as a subgroup analysis of the overall survey.

Education level of guardian with having been told by a doctor or dietitian/nutritionist to follow a healthier diet.

Perhaps the most interesting result among the education tests was that the more educated guardians viewed doctors as having not ever (or not as frequently) told them to follow a healthier diet with their child. In other words, the more educated a respondent was, the less likely they were to claim their doctor admonished them for their child's existing diet (Figure A. 1). This could infer many possible causes: (1) the more educated a parent is, the more offense they might take to a doctor indicating their child is not eating well, (2) doctors view educated parents (if they have education level information) as not needing nutrition advice for their child, or (3) educated parents are indeed feeding their child well with regard to nutrition, and their doctors have confirmed that. On the other end of education, the less educated a parent was, the more doctors were seen as attempting to correct poor diets.

Overall, however, this may mean that educated parents are not getting positive diet information from doctors, whether their child needs it or not. Without an objective comparison of an existing diet to a doctor's response to that diet, we don't know if more educated parents are being left out of the loop on good nutrition, not least in terms of whole-foods plant-based diets.

Education level of guardian with believing whole-foods plant-based diets do not offer enough protein and calcium to children.

Directly contradicting the author's hypothesis regarding the matter, the more educated a parent was, the less likely they were to think their child could get enough protein from a whole-foods plant-based diet. Parents of higher educational backgrounds exhibited a weakly positive correlation ($\tau = 0.367$, $\tau = .264$) with greater concerns for lack of protein and calcium, respectively, with plant-based diets when asked: "What would HOLD YOUR CHILD BACK from trying a whole-foods plant-based diet for 3 weeks?" ($p = 0.004$, $p = 0.041$) (Figure A. 2). The protein concern, in particular, showed extreme significance, revealing that parents of high education believe there's just not enough protein in a whole-foods plant-based diet–something the overall aim of this study hoped to reveal, in the interest of correcting that viewpoint on a national scale. Interestingly, the concern with protein levels correlated with concern over calcium levels at above 99.9% significance. This seems to indicate that those who had a worry that their child would not achieve good nutrition with any particular nutrient may worry about the availability of many other nutrients in a whole-foods plant-based system.

In a culture surrounding dairy, meats, eggs, and the elements of a standard American diet that have been inculcated over decades of media and increased, easy availability, it seems that, at least for the educated, it's been deeply ingrained that plants are just "vegetables" and can't offer the protein support that meat does. This reveals that one of the most important hurdles to overcome in shifting the American diet is fostering the fresh perspective that the right balance of plant-based foods can do everything that meat and dairy can do in a diet.

Education level of guardian with agreeing to attend a class on whole-foods plant-based nutrition, agreeing to attend a cooking class regarding whole foods recipes, and getting more information on whole-foods plant-based diets.

Parents of higher education backgrounds exhibited weakly positive correlations with amenability to attending a class on whole-foods plant-based nutrition, attending a whole-foods plant-based cooking class, and getting more information or evidence about whole-foods plant-based diet ($\tau = 0.255$, $\tau = 0.282$, $\tau = 0.299$) when asked: "What would HELP YOU try a whole-foods plant-based diet for 3 weeks?" ($p = 0.048$, $p = 0.029$, $p = 0.022$) (Figure A. 3). This infers that parents with higher existing education status are more open to continued learning, and that they might be convinced to begin pursuing a WFPD with their child if they thought they had more knowledge and recipe flexibility with the elements of the diet. In other words, this test suggests that if parents could master the skills and information associated with WFPD, they would be more likely to adopt the diet as a lifestyle choice for themselves and their children. Providing clarity on all of these elements, therefore, is a major avenue towards broader solutions in the American obesity epidemic and its long-term effects on children.

Parent/Guardian's rating of child's health with attempting to ensure their child follows a healthy diet.

A weakly positive correlation existed between a parent's rating of their child's health and their intention for their child to have a healthy diet ($\tau=.374$, $p=.004$) (Figure A. 4). Parents who attempt to have their child eat healthfully likely think their child has good health, and probably think it is because of their own efforts. Ensuring these well-intentioned parents have access to the health benefits of a WFPD may propel more to begin working with those diets, having an understanding of how much it will support their child's long-term health.

Parent/Guardian's rating of child's health with not knowing what to order for their child at a restaurant (when on a WFPD).

When asked what barriers might hold them back from adopting a whole-foods plant-based diet, parents demonstrated a weakly negative correlation between their rating of their child's health with the barrier of experiencing difficulty choosing a menu selection for their child at a restaurant, if trying to adhere to a whole-foods plant-based diet (τ=-.298, p=.028) (Figure A. 5). Generally, parents who view their child's health as higher in quality suggest that they would have low difficulty (ergo, more agency and empowerment) in selecting good meals for their children, while parents with lower ratings of children's health are more likely to think they will have trouble finding an appropriate WFPD selection which their child would also eat.

Overall, this correlation may imply that parents of children with more perceived health challenges have the impression that a significant barrier to WFPD entry is that restaurants either do not have healthy plant-based meals which their children would accept, or do not provide enough information to know whether meals are indeed applicable to WFPD principles. In general, this suggests that part of a solution to improving the diets of children would be for more restaurant businesses, as stakeholders in American nutrition, to make palatable whole-foods plant-based options, and to market them well with clear features in their menus–which will also benefit even the parents who feel they already know what to choose.

Parent/Guardian's rating of child's health with parent agreeing that they themselves would adopt WFPD if their children preferred it.

Interestingly, parents in this test seem to indicate either an aversion to WFPD, or, more broadly, a sense that their child's desires do not have much influence on their own nutrition choices. When parents were asked whether they would themselves adopt a WFPD if their child

wanted to, and only for three weeks, there was an inverse correlation of responses with their rating of their child's health (Figure A. 6). The more a parent thought their child's health was great, the more they would not actually join their child in pursuing the benefits of a WFPD, even if the child requested it. This may mean parents are averse to the idea of implementing WFPD, or it may mean that parents do not need a child to like or request a WFPD for the parent to already know that a WFPD has benefits (i.e. that selection of a parent's diet has little to do with a child's impression of it).

This points to further research with better designed questions which can investigate more deeply this dynamic in the selection of family nutrition. Similarly, this further research could discover whether it is primarily a parent's desire to refrain from pursuing the WFPD for themselves that might keep them from providing the healthier options to their children under normal circumstances, as families often share in the same set of groceries and the meals they provide.

Parent/Guardian's belief that plant-based diets can be restrictive in nature with belief that their family would refuse to adopt or eat a WFPD.

The sentiment that WFPDs are restrictive with regard to the enjoyment of food, or the nutritional elements offered correlated positively and moderately with a parent's belief that their family would simply refuse to eat along the guidelines of a WFPD (Figure A. 7). This illustrates the idea that WFPD generally has strong connotations associated with their contents and outcomes, namely that it is something no one really wants to do. There are apparent constraints that parents view WFPD as having, whether real or imagined, and this colors their view not only of whether they themselves would like a WFPD, but also whether their family would put up a fight to avoid switching to one.

For an involved stakeholder, this means finding a way to counter the strong foundation of aversion to whole foods, whether they seem unpalatable, bland, hard to digest, or some kind of penance for having eaten other things that were enjoyable. Parents may think their children will be immediately resistant to changing their diet to something healthy, because there's nothing interesting to eat or that it will forgo all the foods they do enjoy forever, or even for the time being. Nutritionists, school administrators, and physicians can therefore have an impact by sharing just how positive and enjoyable a WFPD can be.

Parent's belief that WFPD offers benefits that cure or prevent chronic diseases with belief that their child would not get enough protein and calcium.

Illustrating the kind of encouragement or information that will guide parents to adopting a WFPD, the more that a parent is aware of benefits that prevent chronic or later-onset diseases, the less likely they are to view the diet as deficient in major nutrients. With a p-value of .001 or less, parents who indicated they knew, or at least believed, that WFPDs would offer their children strong health benefits in terms of long-term prevention or good overall health had fewer concerns about whether their child would receive the nutrients necessary for that good health, with a moderate negative correlation (Figure A. 8).

This significance reveals that stakeholders must bring the prevention of long-term chronic diseases to bear when attempting to exert influence on permanent changes to diets for children and their parents. When being guided or coached on nutrition, nutritionists, physicians, and school nutrition determiners can capitalize on a parent's desire for prevention of any health problems that would otherwise surface on the horizon for their child–or perhaps, more impactfully, their fear that those diseases might occur should the current diet persist. When parents are brought up to speed on the contents and benefits of a WFPD when used over the

longer term, that knowledge appears to help them lose concern that their child is not getting all the nutrients they might have been getting (or not) on their previous less healthful diet. This is a hopeful element that is in line with the purpose of this research: to find the most impactful ways that parents can be guided to, if not fully adopt, at least bring into use the important elements of a whole-foods plant-based diet for their children.

Parents' belief that getting a fully prepared meal plan would help them adopt WFPD for three weeks with beliefs that attending classes on a WFPD would help adopt for three weeks, seeing others having success with WFPD would help adopt for three weeks, and getting further information and evidence about WFPD would help adopt for three weeks.

This test illustrated primarily that openness to WFPD can manifest through many avenues. Parents who are open to adopting a WFPD, should the evidence be conclusive, seem to just need assistance moving in that direction. The more they felt that help with specific action steps could ensure adherence over three weeks, the more they felt that, additionally, other particular support would be useful, too (Figure A. 9). This apparently reveals, outside of the main barrier questions of the survey, that a primary barrier to engaging with a WFPD is simple confidence in starting and maintaining a diet in the home and getting the experience in managing that diet on an ongoing basis.

Here we see that stakeholders can make more converts in parents that have an open mind simply by taking them through the first few levels of education on the topic. If parents are hand-held, so to speak, through building the actual meals of their new diet, shown the success rate of other families, and presented with the evidence regarding how WFPD changes long-term health results, they are more likely to continue pursuing their WFPD goals through other assisting means, and perhaps more likely to make permanent lifestyle changes (Figure A. 9).

Parent's belief that their child does not want to try new foods with belief that getting further information and evidence about WFPD would help adopt for three weeks.

With moderate correlation at high significance ($p<.001$), the more a parent was sure that their child did not want to try any new foods, the more they also thought that getting more information and evidence about WFPD would help their family maintain a WFPD for three weeks (Figure A. 10). This appears to indicate that, for the children these parents are raising, the barriers of tastiness, enjoyability, or unpalatability of WFPD are most salient in a parent's mind. These barriers might be healed, in the parent's view, if that child (and presumably the entire family) were presented with useful evidence that contrasts all those biases. It's a case of "show me," where latent connotations about WFPD in both parent and child require experiential discovery that WFPD can both be tasty and healthy, in order to correct those concerns.

Stakeholders, therefore, must find ways to not only curate WFPDs that appeal to children and their parents, but find useful methods of demonstrating those diets that are the most enjoyable, and easiest to shift into. School administrators should find ways to provide what are considered the most widely enjoyable elements of WFPD in meals, in a bid to expose children to practical experience with healthier, yet still tasty fare. Parents with a primary concern that their children will just not branch out and eat different food must be helped to find ways to elevate the WFPD experience for their child. If they feel that they would need to force their child to eat healthier, and their child would resist each step of the way, parents may not even take the first of those steps, perhaps viewing it as a waste of time.

Null Test Results Offering Insight

Parent/Guardian's rating of child's health with past adoption of whole-foods plant-based diet and current adoption of whole-foods plant-based diet

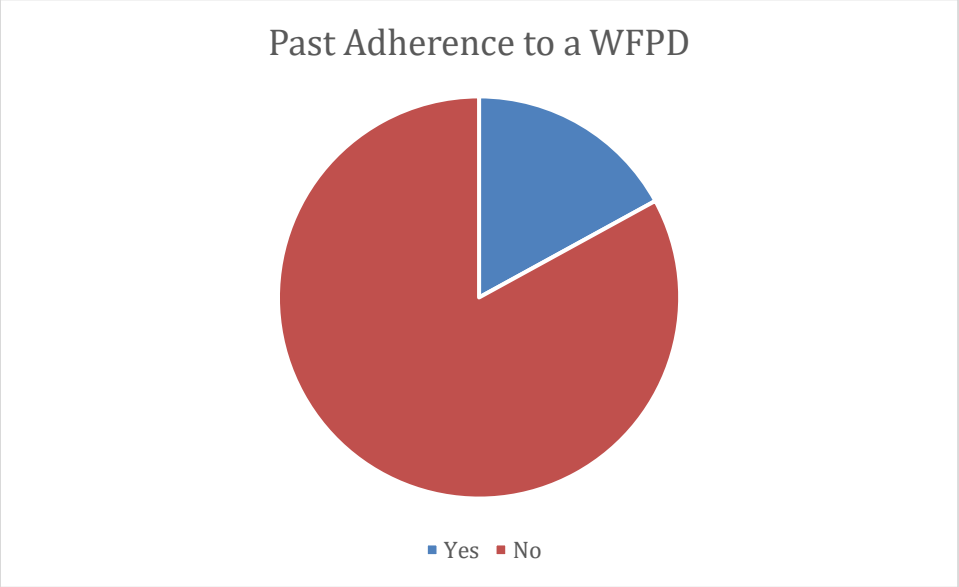

Figure 6: Past Adherence to a Whole-Foods Plant-Based Diet

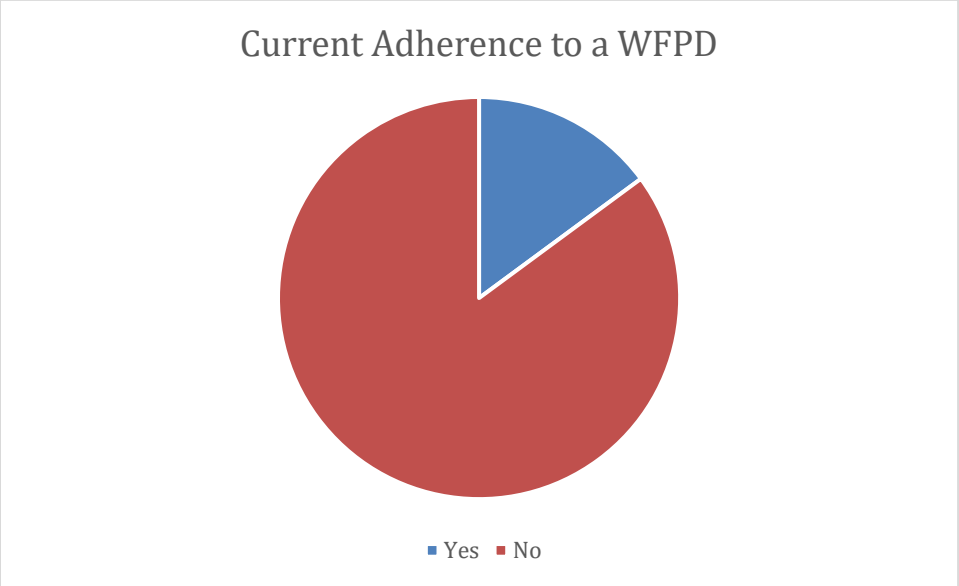

Figure 7: Current Adherence to a Whole-Foods Plant-Based Diet

The utility of parents' ratings of their child's health was limited, as evidenced by a test examining their association with past or current experience with a whole-foods plant-based diet

(WFPD). The Spearman's correlation test was utilized to compare the Likert value of a guardian's health rating for their child with whether or not the guardian had chosen a past WFPD (yes/no) or a current WFPD (yes/no). The p-value (.609), as depicted in Figure A. 11, was virtually identical for both tests. This similarity arose because 46 out of 47 respondents provided precisely identical yes/no responses for the Past and Current questions, as illustrated in Figures 6 and 7, respectively.

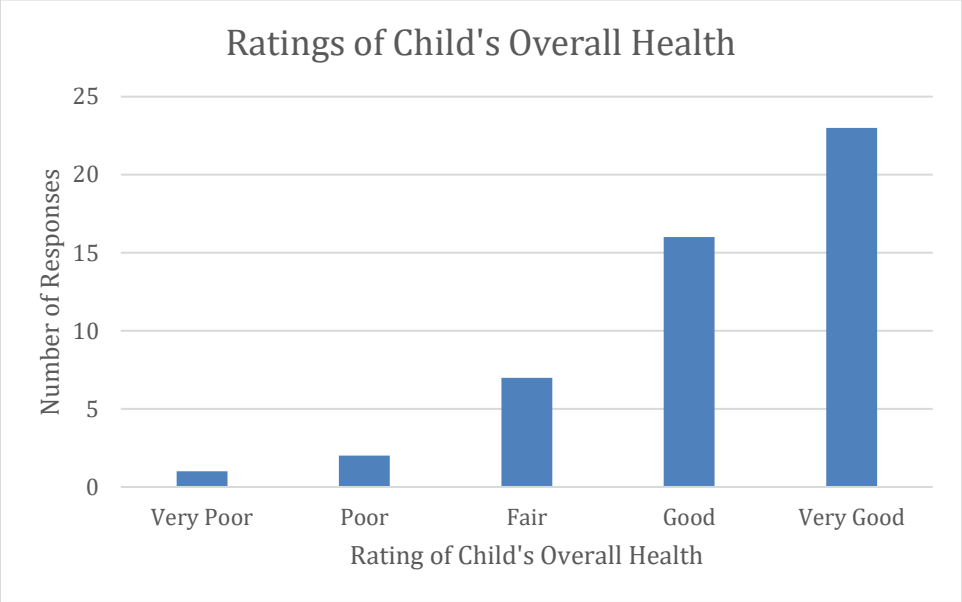

Figure 8: Guardian's Ratings of Child's Overall Health

Though this Spearman's test showed practically no association between appraisal of a child's overall with current or past adherence to WFPD, the descriptive statistics regarding the health rating offer some insight into how these parents as a group treat rating their child's health. As shown in Figure 8, the mean health rating (on a scale of 1-5) provided by parents was 4.23, with a median of 4, and, interestingly, a mode of 5. On this scale, a rating of 1 equated to rating a child's overall health as very poor and a rating of 5 equated to rating a child's overall health as very good. The data set showed strong kurtosis of 1.877 and skewness of -1.323, which indicates

that parents were highly unlikely to rate their kid's health as not great–even as they sought important health care for their child (Figure 8). The overwhelming amount of subjective health ratings that were high likely weakens the ability to find associations, though some were still found when running tests of health rating against other responses. This highlights that parents are inclined to respond positively overwhelmingly when asked about their child's overall health and this is a pertinent non-finding worth discussing.

CHAPTER 4: DISCUSSION

Our primary hypothesis was that parents would respond positively to more education on whole-foods plant-based diets, and this was borne out in tests where some variable directly or inversely correlated with parents being more likely to think more information on WFPD would help them adopt the diet for three weeks. Some of the strongest significance found in the correlation tests was that of the comparison between parents' perception of children's resistance to trying new foods with whether amplified education about WFPDs would contribute to the adoption of one. This is a clear signal that parents think they could get recalcitrant children to eat more healthfully if they themselves were more educated about how to properly introduce, maintain, and support a child through a migration to a WFPD, as well as about the nutritional elements of the diet itself.

Generally, parents were found to simply need important areas of support to migrate their families to a WFPD. In particular, parents who thought having a meal plan designed for them– ostensibly where they would not have to come up with any elements of a WFPD by themselves– would be impactful in trying a WFPD for 30 days also thought every other element of education or support offered (classes on cooking WFPD meals, learning about the successful activities of other families, receiving educational content on WFPD) would contribute to their adoption of a WFPD for their families. It appears, in short, that parents (and primarily mothers, in this case) don't pursue the most healthful options merely because they do not understand them, do not know how to prepare them, and are unsure about wasting their time on something their families will not eat or enjoy.

With that said, not every parent is themselves open to a WFPD, whether their children would benefit from it or not. A unique attribute that this study revealed was an inverse correlation where the more likely a parent thought their child's health was good or great, the less likely they would be to shift to a WFPD, even if their child wanted to. This suggests that some parents view WFPD as a stop-gap mechanism, not a long-term dietary modification that helps with ongoing health maintenance. If their child is already healthy, why switch to a bland, unpalatable, unenjoyable meal of plants? Again, education can improve all perceptions here regarding the meaning, use, and impact of WFPD, bearing out this paper's hypothesis.

Post-Hoc Discovery and Potential Bias

Because the survey was issued to a random convenience sample, there was no scan to ensure equal representation among demographic categories. As indicated by the overwhelmingly female responders, there may have been an underrepresentation of men in the sample, whether due to women assuming the primary responsibility for children's health care, women being perceived as more approachable or amenable to response by survey providers, or women responding more.

It appears there was also an underrepresentation of college education among the survey participants. As the clinic where participants were gathered was in this case free for patients, there may be a higher percentage of low- or no-income parent/guardians, which may indicate the sample would not achieve much information that correlated with college education, as those with degrees and employment may seek different institutions. As it stands, the only significant relationships shown for education level were with a concern over a whole-foods plant-based diet's inability to offer both enough protein and, separately, enough calcium. This directly

contradicts an element of our hypothesis regarding this correlation, which assumed the higher educated would know more clearly that a WFPD offered enough protein and calcium. The lack of other correlated elements with education infers that better research might have been done by planning to accommodate quota n-values for particular demographics, which, though the length of the survey period might have taken longer, would yield better comparative data.

A further element of distortion that was discovered following the survey was the perhaps obvious incentive or bias that parents generally have regarding the state of their child's health. Overall, parents may be unlikely to reveal, even as they pursue health treatment at a free clinic, that their child may suffer from health-related issues, as it may be somewhat self-incriminating. This may slant any results that would otherwise show how a reported existing diet might impact health. A better metric for comparison might be some private data, such as standard vitals taken in physicals or physician analysis of the child's health.

CHAPTER 5: CONCLUSION

The childhood obesity epidemic will not solve itself. Children do not have the agency or long-term planning skills to acquire the best habits of eating and self-care, and thus need all available stakeholders to contribute to the quality of their diets and to their exposure to the most healthful nutrition concepts. Parents/Guardians are, of course, the primary influence on these habits, understanding, and skill set, but often they are resistant to making overhauls, or even small improvements, to their child's diet, imagining that the barriers to doing so are many and powerful. The understanding of how these barriers come about, what measures might be taken to prevent them or circumvent them, and thereafter how to assist parents in making better food choices for their children through the use of whole-foods plant-based diets are all critical areas of focus for nutritionists, physicians, and school administrators.

This study has shed light on the avenues that are both the most accessible and the most impactful relative to parents' primary concerns about migrating to WFPDs. With this knowledge in hand, the above stakeholders can take charge of their own contributions to making a difference in the childhood obesity epidemic. Whether by assisting parents in creating meal plans, frequently asserting the elements of good nutrition, educating parents about the high quality and enjoyable options available in WFPD, demonstrating the availability of all commonly necessary vitamins, minerals, and macronutrients, or merely providing a system of accountability for changing the diets of obese children, these stakeholders can be confident that their efforts will have impact and meaning. The data and analysis presented in this paper illustrate that parents are more open to making positive shifts if they have support, knowledge, and evidence, and it is incumbent on the stakeholders of children's welfare to build an influence and education

infrastructure that provides those modifying elements in ways that end the epidemic of obesity once and for all.

APPENDIX A: SPSS DATA

Correlations

			Education
Kendall's tau_b	doctortold	Correlation Coefficient	-.288*
		Sig. (2-tailed)	.023
		N	43

*. Correlation is significant at the 0.05 level (2-tailed).

Figure A. 1: Kendall's tau-b test for correlating education level of guardian with having been told by a doctor or dietitian/nutritionist to follow a healthier diet.

Correlations

			Education	Protein
Kendall's tau_b	Protein	Correlation Coefficient	.367**	
		Sig. (2-tailed)	.004	
		N	42	
	Calcium	Correlation Coefficient	.264*	.821**
		Sig. (2-tailed)	.041	<.001
		N	42	42

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Figure A. 2: Kendall's tau-b test for correlating education level of guardian with believing whole-foods plant-based diets do not offer enough protein and calcium to children.

Correlations

			Education	attendclass	attendcooking
Kendall's tau_b	attendclass	Correlation Coefficient	.255*		
		Sig. (2-tailed)	.048		
		N	42		
	attendcooking	Correlation Coefficient	.282*	.834**	
		Sig. (2-tailed)	.029	<.001	
		N	42	42	
	moreinfo	Correlation Coefficient	.299*	.538**	.509**
		Sig. (2-tailed)	.022	<.001	<.001
		N	42	42	42

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Figure A. 3: Kendall's tau-b test for correlating education level of guardian with agreeing to attend a class on whole-foods plant-based nutrition, agreeing to attend a cooking class regarding whole foods recipes, and getting more information on whole-foods plant-based diets.

Correlations

			healthrating
Kendall's tau_b	ensure	Correlation Coefficient	.374**
		Sig. (2-tailed)	.004
		N	48

**. Correlation is significant at the 0.01 level (2-tailed).

Figure A. 4: Kendall's tau-b test for correlating parent/guardian's rating of child's health with attempting to ensure their child follows a healthy diet.

Correlations

			healthrating
Kendall's tau_b	restaurant	Correlation Coefficient	-.298*
		Sig. (2-tailed)	.028
		N	41

*. Correlation is significant at the 0.05 level (2-tailed).

Figure A. 5: Kendall's tau-b test for correlating parent/guardian's rating of child's health with not knowing what to order for their child at a restaurant (when on a WFPD).

Correlations

			healthrating
Kendall's tau_b	ifmychild	Correlation Coefficient	-.331*
		Sig. (2-tailed)	.014
		N	43

*. Correlation is significant at the 0.05 level (2-tailed).

Figure A. 6: Kendall's tau-b test for correlating parent/guardian's rating of child's health with parents/guardians agreeing that they themselves would adopt WFPD if their children preferred it.

Correlations

			Restrictive
Kendall's tau_b	Familywouldnot	Correlation Coefficient	.380**
		Sig. (2-tailed)	.007
		N	38

**. Correlation is significant at the 0.01 level (2-tailed).

Figure A. 7: Kendall's tau-b test for correlating parent/guardian's belief that plant-based diets can be restrictive in nature with belief that their family would refuse to adopt or eat a WFPD.

Correlations

			chronic	protein
Kendall's tau_b	protein	Correlation Coefficient	-.533**	
		Sig. (2-tailed)	<.001	
		N	38	
	calcium	Correlation Coefficient	-.466**	.841**
		Sig. (2-tailed)	.001	<.001
		N	38	38

**. Correlation is significant at the 0.01 level (2-tailed).

Figure A. 8: Kendall's tau-b test for correlating parent/guardian's belief that WFPD offers benefits that cure or prevent chronic diseases with beliefs that their child would not get enough protein and calcium from a WFPD.

Correlations

			nutrition.class	others	meal.plan
Kendall's tau_b	others	Correlation Coefficient	.496**		
		Sig. (2-tailed)	<.001		
		N	40		
	meal.plan	Correlation Coefficient	.563**	.563**	
		Sig. (2-tailed)	<.001	<.001	
		N	40	40	
	more.info	Correlation Coefficient	.555**	.555**	.621**
		Sig. (2-tailed)	<.001	<.001	<.001
		N	40	40	40

**. Correlation is significant at the 0.01 level (2-tailed).

Figure A. 9: Kendall's tau-b test for correlating parent/guardian's belief that getting a fully prepared meal plan would help them adopt WFPD for three weeks with beliefs that attending classes on a WFPD would help adopt for three weeks, beliefs that seeing others having success with WFPD would help adopt for three weeks, and beliefs that getting further information and evidence about WFPD would help adopt for three weeks.

Correlations

			Willpower
Kendall's tau_b	more.info	Correlation Coefficient	.453**
		Sig. (2-tailed)	<.001
		N	42

**. Correlation is significant at the 0.01 level (2-tailed).

Figure A. 10: Kendall's tau-b test for correlating parent/guardian's belief that their child does not want to try new foods with beliefs that getting further information and evidence about WFPD would help adopt for three weeks.

Correlations

			rate	current
Spearman's rho	current	Correlation Coefficient	.077	
		Sig. (2-tailed)	.609	
		N	47	
	past	Correlation Coefficient	.127	.924**
		Sig. (2-tailed)	.395	<.001
		N	47	47

**. Correlation is significant at the 0.01 level (2-tailed).

Figure A. 11: Spearman's rank order test correlating parent/guardian's rating of child's health with past adoption and current adoption of WFPD.

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