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Factors Influencing Parental Perception of Child's Weight Status

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Abstract

Purpose: Childhood obesity is one of the most challenging and complex epidemics in today's society. According to the World Health Organization, it is estimated the prevalence of childhood obesity will increase from 7% in 2012 to 11% in 2025. The purpose of the project is to identify factors that may influence parental perception of a child's weight status.

Methods: Parents of children aged 6-12 were surveyed regarding their child's healthy behaviors, demographic information and perception of child's current weight. Parents were also asked to select a body type they felt most accurately represented their child from a sketch which included 7 different body types. Children's height and weight were measured and BMI was calculated. Parents were also asked to give a verbal description such as a little underweight, about the right weight, or overweight.

Results: Thirty-two parents participated the survey. Nineteen out of 27 parents (70%) correctly perceived their children's weight status. Common factors such as income, employment status, providing opportunities for physical activity and healthy eating habits were identified as impacting how a parent perceived their child's weight status. Eighty percent of parents that provided an opportunity for physical activity to their child perceived their child to be about the right weight. Half of the parents that never/almost never provided an opportunity for physical activity perceived their child to be overweight.

Discussion: If health care providers understand the elements affecting parental perception, there is an opportunity for change. Discussing healthy eating habits, limiting amount of screen time spent on electronics or television, and the importance of physical activity may heighten understanding.

Conclusion: As a country with an increasing rate of childhood obesity it is imperative to identify causative factors prompting this epidemic. Although parents play an integral role in managing their child's weight there are many other influences affecting obesity. Future research is needed to gain more insight and create a shared responsibility.

Key words: child obesity, perception of obesity

Childhood obesity is one of the most challenging and complex epidemics in today's society. According to the World Health Organization (WHO) (2014), it is estimated that the prevalence of childhood obesity will increase from 7% in 2012 to 11% in 2025. Since 2013, the number of obese children, under the age of five, is greater than 42 million; 31 million of which live in developing countries (WHO, 2014). The Centers for Disease Control and Prevention (CDC) stated that approximately 12.7 million children and adolescents (aged 2 – 19 years) in the United States are affected by obesity (CDC, 2016). Over the past five decades, childhood obesity rates have increased from 5% to 17% (CDC, 2016).

Childhood obesity can lead to a multitude of health disparities such as cardiovascular disease, diabetes, hypertension, and elevated cholesterol (CDC, 2016). Psychological impairment prevalence for conditions such as low self-esteem and depression makes obesity a sizeable concern that needs to be addressed (CDC, 2016). Sedentary lifestyle, unhealthy dietary habits, and physical inactivity are factors known to contribute to childhood obesity (CDC, 2016). However, there is a lack of research examining parental involvement on these contributing factors (Andrews et al., 2010).

Clinical practice guidelines and expert reviews recommend that parents should take charge in managing their child's weight (Holt et al., 2015). Although parental involvement plays a fundamental role in determining if a child will become obese, parents frequently misperceive their child's weight status (Robinson & Sutin, 2016). Understanding the factors that contribute to parental weight misperception of their child may provide insight when developing childhood obesity prevention programs. Parents are the main source of health education and promotion for

their children, therefore parents need to be educated on how to correctly recognize their child's weight status and how to manage their child's weight by shaping healthy lifestyle.

Clinical Question

What factors influence parental perception of child's weight status? The specific aims of this study are to: (1) measure accurate parental perception of their child's weight status, (2) examine family factors related to parental misperception of their child's weight, and (3) examine the relationship between parental weight misperception and child's healthy behaviors.

Literature Review

Although childhood obesity is preventable, it is on the rise nationally, affecting 12.7 million children and adolescents in the United States (CDC, 2016). Obesity places children at risk for many health disparities such as hypertension, diabetes, and coronary artery disease as well as psychologic issues such as low self-esteem and altered body image (Towns & D'Auria, 2009). Data from the CDC, obtained via the National Health and Nutrition Examination Surveys (NHANES), states that 17% of children, ages 2-19, are labeled obese as of 2011-2014 in the U.S. (CDC, 2016). According to the CDC (2016), the National Center for Health Statistics defines childhood obesity as having a body mass index (BMI) at or above the 95th percentile, based on gender specific growth charts. Overweight children are defined as a BMI at or above the 85th percentile and below the 95th percentile (CDC, 2016). The correct way to calculate BMI for children and teens, aged 2 through 19 years old is by birth date, date of measurement, gender, height, and weight to the nearest ¼ pound. Anthropometry refers to measurements of the human body. Anthropometric data in children examines adequacy of diet, general overall health status, and growth and development (Fryar, Gu, & Ogden, 2012). Growth charts are used as a screening

tool for childhood obesity, however, it is multifactorial and cannot be defined by BMI alone. Further discussion of obesity will be based on child BMI calculated in the study.

Parental and Child Perception

The first step in treating childhood obesity is to assess accurate parental recognition of their child's weight status (Eckstein et al., 2006). However, studies have reported that inaccurate parental perception of a child's weight is widespread (Sparrow & Craig, 2013). Parents are unaware of how to appropriately assess and define their child's accurate weight status (Jeffery, Metcalf, Hosking, Mostazir, Voss, & Wilkin, 2014). Parental weight perception is often measured with a verbal description such as very underweight, a little underweight, about the right weight, a little overweight, or very overweight with the parents choosing the best description of their child. Another common tool used to measure weight perception is a visual tool that displays various body types and asks parents to choose the body image that best fits their child's body type. Interestingly, most studies show parents that use a verbal description showed a higher incorrect weight status compared to the visual description. This study will utilize both a visual and verbal description to assess parental perception. It is also important to assess the ability of a child to accurately perceive their own weight status which in turn may play a role in their willingness to achieve a healthy weight (Tarasenko, Rossen, & Schoendorf, 2014). Many studies have shown children often misperceive their own weight status. The Quebec Child and Adolescent Health and Social Survey found that 59.4% of children classified as obese underestimated their weight status (Maximova, McGrath, & Barnett et al., 2008).

Family factors related to parental misperception

Many factors contribute to parental misperception of a child's weight status such as the parent's educational level, child's weight status, and if the parent is overweight or obese.

Eckstein et al. (2006) reported that the ability to recognize the signs of obesity can be greatly affected by the educational level of the parents. Parrino et al. (2015) found that parents' education level, especially a low level of maternal education, was significantly related to inaccurate child's weight perception. Another study by Genovesi et al. (2005) demonstrated that a higher level of education was associated with a more accurate perception of weight status.

Hudson, McGloin, and McConnon (2011) found that over 86% of parents were less likely to correctly perceive their child's weight status if the child was overweight and 59% less likely if their child was obese in comparison to normal weight children. Towns and D'Auria (2009) stated that parents may have an internal struggle with labeling their child as obese. Parents may also incorrectly perceive their child's weight status in fear of being blamed for their child's obesity (Towns and D'Auria, 2009). Parents may also avoid acknowledging accurate weight status to escape responsibility of their own weight status (Towns & D'Auria, 2009). Parrino et al. (2015) found that obese parents are at greater risk of having obese children and less likely to accurately perceive their child's weight status.

Child's healthy behaviors related to childhood obesity

Factors contributing to childhood obesity are physical inactivity, unhealthy dietary habits, and increased screen time (CDC, 2016). Physical activity is necessary for a child to maintain adequate weight for age and prevent future health illnesses related to obesity (CDC, 2016). The CDC (2015) recommends children should do 60 minutes or more of physical activity each day. Physical activities should include aerobic activity, muscle strengthening, and bone strengthening. Establishing routine physical activities such as walking, biking, or outdoor play will carry over into adulthood (CDC, 2016). Offering children various means of exercise and limiting sedentary activities creates a healthier lifestyle. The American Academy of Pediatrics (2015) supports

recommendations such as limiting time spent watching television and playing video games to 2two hours per day. It is important to monitor the amount of physical activity children are involved in daily and encourage physical activity as alternatives to screen time.

Several dynamics were addressed to understand why parents do not provide the recommended time spent on physical activity. Environments where children have the capacity to be physically active such as schools, childcare environments, and family homes play a large role in influencing physical activity. Figueroa and Wiley (2016) found that parents who are physically active and feel comfortable interacting in non-sedentary activities have a stronger probability of engaging their children in similar behaviors. If parents feel uncomfortable with physical activity they are less likely to provide physical activities for their children. Other factors that contribute to a child's physical inactivity include lack of available and safe space (Figueroa & Wiley, 2016). Indoor play may be limited due to space constraints and safety concerns can arise concerning outdoor play if the family resides in a low-income area.

Parents often overestimate the amount of time their child spends being physically active. Etelson et al. (2003) found that parents who inaccurately perceived the amount of time their child participated in physical activities also inaccurately perceive their child's weight status. Additional research is needed to examine the relationship between parental perception of their child's weight and child's physical activity. In addition, parents who inaccurately perceive their child's weight status need to be educated on the lasting effects of a physical inactivity of their children.

Dietary habits are key factors that contribute to obesity including limited access to food resources, low socioeconomic status, and culture related to food (Mama et al., 2013). It is essential for parents to be educated on proper nutrition intake and dietary habits to pass onto their

children. This study will look at several dietary habits through use of the Family Nutrition and Physical Activity screening tool (Ihmels et al., 2009). This tool addresses factors such as frequency of family meals, consumption of soda and/or sweetened beverages, food choices, family eating practices, and physical activity. Lack of access to healthy food is a major limitation to the prevention of obesity. Mama et al. (2013) found that it is not uncommon for rural areas to have grocery stores that do not carry fresh fruits or vegetables. Also, some areas are confined to utilizing convenience stores to purchase groceries. These areas are often described as food deserts and greatly contribute to unhealthy dietary habits. Low economic status also places constraint on healthy food consumption. Nutritious foods such as fruits, vegetables, legumes, and lean meats are commonly more expensive than the unhealthy foods such as chips, processed meats, sugary drinks, pizza and French fries. These unhealthy foods cost less and are easily accessible (Mama et al., 2013). The number of fast food restaurants available is increasing and fast food is more affordable than fresh fruits, vegetables, and lean meats (Mama et al., 2013). In addition, a study by Saunders et al. (2015) reported that fast food restaurants increase their portion sizes far beyond recommended servings. With low costs and larger portions, people continue to choose unhealthy fast food options over more expensive healthy whole foods.

Culture plays a large role in obesity and greatly effects parental perception of accurate weight status. In a study by Caamano et al. (2016), it was found that Mexican women tend to view being overweight and slightly obese as acceptable. The study showed that being overweight or slightly obese was a symbol of good health and children with normal weight were often sent to see a physician for malnutrition. According to Balvanz et al. (2015), African Americans had a higher rate (29.7%) of childhood obesity compared to those of Caucasian (11.5%) and other minorities (23.9%). Caprio et al. (2008) also found that African American men prefer women of

a larger body size and view larger women to be more attractive. In many instances, women are the primary resource of providing children with food. Caprio et al. (2008) stated that women pass on their perceptions and traditions of body image to their children. Understanding variances in dietary habits and influencing factors gives insight into why parents incorrectly perceive their child's weight status and parental perceptions are often miscalculated. It is necessary to educate various cultures on the implications obesity can have and the health disparities that result from poor dietary choices.

Theoretical Framework

Parental perception is affected by many different characteristics. Through education and guidance, we can help parents to accurately perceive the weight status of their child. Andrews, Silk, and Eneli (2010) stated the process of decision making can be broken down utilizing the Theory of Planned Behavior (TPB). Theory of Planned Behavior states the most important predictor of future behavior is based on behavioral intention; whether a person intends to move forward and make a change. It is proven that if a person has strong behavioral intention to carry out a task, more than likely that person will follow through and perform the task. This study analyzes accurate parental perception and what factors contribute to misperception. Once accurate perception is achieved, it then becomes crucial to establish behavioral intent.

According to the TPB, there are three elements that determine behavioral intention: attitudes, subjective norms, and perceived behavioral control. Andrews et al. (2010) found that there is substantial evidence proving that attitude greatly impacts childhood obesity. Evidence demonstrates that parents who show interest in their child's overall health will address weight loss (Andrews et al., 2010). In addition, parents who are worried obesity will result in illness and restrict the ability to perform activities were more likely to initiate change (Andrews et al.,

2010). Normative beliefs refer to ideals of an individual that may be influenced by significant people or entities in their lives such as a spouse or church. People tend to display actions that they believe will be approved by such influences. Other evidence suggests that if healthy food is the norm, a person will be more likely to choose healthy food over unhealthy food (Andrews et al., 2010).

Perceived behavioral control refers to the perception that one has control of their behavior. For example, if a parent and child have a busy schedule and perceive healthy food is unobtainable due to time constraints then they are more likely to eat unhealthy food because of its accessibility. In contrast, if a person feels as though they have control over the type of food available, such as meal prepping, then they were more likely to eat healthy and exhibit self-efficacy, which promotes weight loss (Andrews et al., 2010).

Andrews et al. (2010) conducted a study using the TPB as the conceptual model to study the behaviors that limited parents in choosing healthy foods versus unhealthy foods. It was found that the three elements of the TPB, including attitudes, social norms, and perceived behavioral control, significantly predicted behavioral intention, and therefore, were great predictors of parents providing healthy food. The ability to predict behavioral intention constructs the ability to predict if parents will track their child's food intake. Even if parents do successfully track their child's food intake, the difficulty arises when we assume people know what food is considered healthy. Because there are many influences that shape a positive attitude concerning healthy foods, such as relatives or people in the community, it is difficult to determine parental perception of healthy eating. The study did find parent BMI to be a significant predictor of a child's BMI. Since parental BMI is greatly correlated with child's BMI, it is important for parents to model healthy eating habits. With this insight, it is of value to target obesity

interventions on parental involvement examining parental attitude and modeling behaviors on healthy eating. Future research may need to focus on how to create positive attitudes toward healthy eating as well as parental behavior modeling.

Methodology

Study Design

This is a cross-sectional, quantitative study. The aim of this research study is to identify factors that influence parental perception of a child's weight status. Data was collected at a local pediatrician's office where parents of children ages 6-12 were asked to complete a survey questionnaire. Data was stored on a password protected computer maintained by the primary investigator (PI). Data will be stored for up to five years. Participant's names will not be collected and there will be no other personal identifying information gathered. Data will be reported only as aggregate data.

Participants and Setting

This study was conducted from October 2017 through February 2018 in the northwest Florida region. A sample size of 100 was estimated for logistic regression based on a medium effect size of .40, a power of .80, an alpha level of .05. Using a convenience sampling, 32 parents and their children (aged 6 through 12) were recruited at a local pediatrician's office. Inclusion criteria are: must be a parent or caregiver of a school age child (ages 6-12 years old), child must be of school age, and must be English speaking.

Procedures

Prior to recruiting participants, Institutional Review Board approval was granted from Florida State University. The PI received permission from Professional Park Pediatrics to conduct the study in their facility. During the study, the PI asked parents to fill out informed

consent forms and children to fill out assent forms prior to completing both survey questionnaires, including the visual body assessment tool. The staff nurses obtained the height and weight of each child by utilizing a standard stadiometer in the office. The height was measured in inches and the weight in pounds. The children were measured without shoes and were asked to remove any heavy clothing such as sweat shirts or jackets. Parents' weight and height were measured by self-reporting. After the measurement and surveys were completed, each parent received a gift card (\$10) and each child received a small gift.

Instruments/Tools

The survey questionnaire consisted of four sections and took participants approximately 10 minutes to complete. The first section gathered data on demographic factors such as child's date of birth and gender as well as parental weight, height, and relationship to child. The second section gathered data on family background information such as income, marital status, and employment status. Section three consisted of two separate instruments to measure parental weight perception. The first instrument, *Parents' Perceptions of Health Status*, enabled parents to provide a verbal description of their child. The second instrument, *The Gender and Age Range Sketches for Boys and Girls*, was utilized by both children and parents. Children were asked to select the body type they felt best resembled their own body type whereas parents were asked to choose the body type they felt best resembled their child's body type. Section four consisted of a survey utilized to examine a child's healthy behaviors using the *Family Nutrition, and Physical Activity* (FNPA) instrument. This instrument was developed by a research team at Iowa State University and has been proven to have good internal consistency and efficacy for determining risk factors of children becoming overweight (Ihmels, et al., 2009). See Appendix A for Questionnaires.

Data Analysis

Statistical analyses were performed using SPSS version 21.0 statistical software. Descriptive statistics was used to analyze the data. Five participants were excluded from the analyses due to not completing the verbal description of child's weight status. After completion of the survey questionnaire, children's weight and height were used to calculate BMI z-scores. Parents' BMI (kg/m²) were also calculated. Each child's calculated BMI was transformed into age and gender specific BMI z-scores and percentiles using 2000 CDC growth charts (CDC, 2012). The original study design called for a sample size of 100 however only 32 parent/child dyads participated in the study, therefore additional studies should be performed to be able to generalize to the greater population.

Results/Findings

The purpose of this study was to identify factors that influence parental perception of a child's weight status. This study focused on three research aims: (1) measure accurate parental perception of a child's weight status, (2) examine family factors related to parental misperception of their child's weight, and (3) examine the relationship between parental weight misperception and child's healthy behaviors.

The study design was based on 100 participants however only 32 participants completed the survey. Of the 32 participants, 5 did not complete the verbal description of parental perception and were therefore excluded.

Aim 1. *Measure the accuracy of parental perception of a child's weight status.* Of the 32 children and parents, 59% of children were male and 41% were female and 75% of parents were female and 25% were male. Parents' verbal descriptions of their children's weight statuses were compared to the children's BMI. Nineteen out of 27 parents (70%) correctly perceived their

children's weight status. Four of the eight parents who perceived their child's weight status incorrectly indicated their children are about the right weight; however, their BMI values classify them as overweight. Three of the eight parents who perceived their child's weight status incorrectly indicated their children are a little overweight but the children are obese according to CDC standards.

Aim 2. *Examine family factors related to parental misperception of a child's weight status.* Income status proved to be a significant factor influencing parental perception. The data showed that 73% of parents who had a higher income (>\$40,000 per year) correctly perceived their child's weight status when compared to lower income parents (40%). See Table 1 Misperception by Yearly Income in appendix D. Another factor that proved to be significant was parental employment status. It is evident that 69% of parents who were employed full time correctly perceived their child's weight status when compared to those who were employed part time (33%). See Table 2 Misperception by Employment Status In Appendix B.

Aim 3. *Examine the relationship between parental weight misperception and child's healthy behaviors.* The data analysis indicated that 70.37% of parents who perceived their child to be about the right weight stated their children often to always eat fruit and vegetables. In comparison, of parents who perceive their child to be a little overweight only 14.81% reported their child sometimes/often eat fruits and vegetables. See Table 3 Verbal Description by Eats Fruits/Vegetables in Appendix B. The factor identified as being the most significant was providing an opportunity for physical activity. Data analysis revealed that 80% of parents who provided an opportunity for physical activity perceived their child to be about the right weight. Whereas 50% of parents that never/almost never provide opportunity for physical activity perceive their child to be overweight. See Table 4 Opportunity for Physical Activity in Appendix

B. When asked about how often their child drinks soda or sweetened beverages, 22.22% of parents who perceived their child to be about the right weight report never whereas only 3.71% of parents who perceive their child to be a little overweight report never. Interestingly, 44.44% of parents who perceive their child to be just the right weight state their child “sometimes to often” drink soda and sweetened beverages while only 14.81% of parents who perceive their child to be overweight “sometimes to often” drink soda and sweetened beverages. The amount of screen time monitored by parents demonstrated 3.7% of parents who perceived their child to be a little overweight “never to almost never” monitored their screen time compared to 0% of parents who perceive their child to be about the right weight. See Table 5 Screen Time in Appendix B.

Discussion

Many factors influence how parents perceive their child’s weight status. The purpose of this study was to identify what factors play a role in shaping parental perception of obesity and their child’s weight status. Factors such as providing opportunity for physical activity, monitoring the amount of time screen time, and eating habits were among those identified in a current literature. A review of literature demonstrates that parents commonly misperceive their child’s weight status and view their child as healthier than they are. A variety of factors contribute to this, but perhaps most importantly, parents do not want to perceive their child as less than perfect (Jeffery, Metcalf, Hosking, Mostazir, Voss, & Wilkin, 2014). Additionally, cultural and societal factors also play a role in parental and child perception of weight status. If being overweight is more culturally acceptable than often a child’s weight status is perceived as normal when they are actually overweight (Balvanz et al., 2015, Caamano et al., 2016, and Caprio et al., 2008).

Inaccurate parental perception, while perhaps understandable, is detrimental for children as obesity can lead to health concerns such as hypertension, hyperlipidemia, diabetes, and coronary artery disease (CDC, 2016). Beyond the detrimental health effects, obesity can have a poor outcome on a child's psychological health and lead to poor self-esteem as well as create opportunities for bullying (CDC, 2016). In addition to poor eating choices overall lack of physical activity also contributes to the obesity epidemic ravaging the United States. As easy access to screen time is readily available in U.S. household's physical activity is decreasing at an alarming rate with very few children achieving the recommended 60 minutes of exercise daily (Etelson et al., 2003 and Figueroa and Wiley, 2016).

Significance and/or Implications of Results

Health care providers such as nurse practitioners (NP's) are at the forefront of dispensing knowledge about diet and nutrition to parents. NP's are becoming more prevalent in primary care. This allows more frequent interaction with parents and opportunities to clearly communicate one on one. In-office visits provide the opportunity to discuss height and weight, BMI, healthy behaviors, and any other nutritional inquiries the parents may have. NP's are educators and leaders and can implement change with evidence based practices. The desired outcome is to recognize contributing factors that lead to parental misperception to give NP's insight about how to educate parents and put a halt to childhood obesity.

Limitations and Suggestions for Improvement

Limitations of this project included a small sample size as well as limited time to perform the study which potentially limited patient enrollment in the study. Only 32 parent/child couples participated in the study and demographic data was obtained for all. The average income was greater than \$100,000.00 annually which correlates with more accurate parental perception of

weight status. Potentially performing the study in a lower income practice or at the county health department may significantly change the results of the study.

Suggestions for Future Clinical Research

Further studies would benefit from a larger sample size, longer period for participant enrollment, and include a broad range of parent/child couples. Future research may want to expand upon current recommendations and provide valuable information on how parents from different ethnicities and incomes perceive their child's weight status. This perception will provide insight into the childhood obesity epidemic that is ravaging the United States.

Conclusion

Understanding factors that influence parental perception provides opportunity for health care providers to design interventions targeting childhood obesity reduction. Health care providers need to be able to understand the multiple elements affecting parental perception to create the opportunity for change. Although providers and parents play a key role in managing childhood obesity, outside factors such as big business and government need to be involved to construct change. Factors identified in this study such as healthy eating habits, limiting amount of screen time spent on electronics or television, and the importance of physical activity may be a start for future research.

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Appendix A Questionnaires

Factors Influencing Parental Perception of Child's Weight Status

Instructions

For each question, please select the answer that tells us which words best describe what you do or think. If you have any questions about any of the questions you are trying to answer:

Please contact:
Sabrina Mauldin, BSN, RN
Telephone: 850-590-1677
E-mail: slw4517@my.fsu.edu

Part 1. Questions about your child

Please answer the following questions about your 6 to 12 year old child.

1. Date of birth (Child) (mm/dd/yy) _____ / _____ / _____
2. Gender: Male () Female ()

Part 2. Your child's weight and height

Your child's weight and height will be measured later, so leave blank this part.

1. Height and Weight

- | | |
|---------------------------|-------------------------|
| 1) Height
1 _____ (cm) | Weight
2. _____ (lb) |
| 2) Height
1 _____ (cm) | Weight
2. _____ (lb) |
| 3) Height
1 _____ (cm) | Weight
2. _____ (lb) |

Part 3. Questions about you (the parent or main caregiver)

Please answer the following questions about yourself

1. How much do you weigh? _____ pounds
2. How tall are you? _____ feet _____ inches
3. What month and year were you born? _____ (month)/ _____ (year)
4. What is your gender?
 - 1) Male
 - 2) Female
 - 3) Other (Please specify) _____
5. What is your relationship with the participated child?

- 1) Mother
 - 2) Father
 - 3) Other (Please specify, e.g., grandmother)
-

Family Background

The following questions ask you about your family.

1. Are you the biological parent of children?
 - 1) Yes
 - 2) No

2. What is your present marital status?
 - 1) Married
 - 2) Not married, living with partner
 - 3) Separated
 - 4) Divorced
 - 5) Widowed
 - 6) Never married

3. What is the highest level of schooling that you have completed or the highest degree that you have received?
 - 1) Less than high school
 - 2) High School
 - 3) Associate's degree
 - 4) Bachelor's degree
 - 5) Master's degree
 - 6) Doctoral degree or higher

4. What is your employment status?
 - 1) Employed for wages full-time
 - 2) Employed for wages part-time
 - 3) Self-employed
 - 4) Out of work for less than 1 year
 - 5) Out of work for more than 1 year
 - 6) Homemaker
 - 7) Student
 - 8) Retired

5. In 2016, what was the total income of all members of your household? Please indicate the income earned by all members of your household and from all sources (such as wages, salaries, tips, social security benefits, interest, rent from property, and so on) before taxes.

- 1) Less than \$ 20,000
- 2) \$20,000 to less than \$39,999
- 3) \$40,000 to less than \$74,999
- 4) \$75,000 to less than \$99,999
- 5) \$100,000 or more

6. As best you know, which of the following health conditions do you yourself and your relatives have? (**Select all that apply**)

- 1) Diabetes
- 2) Hypertension
- 3) Overweight/obesity
- 4) Cancer

Please explain briefly

The Family Nutrition & Physical Activity Screening Tool!

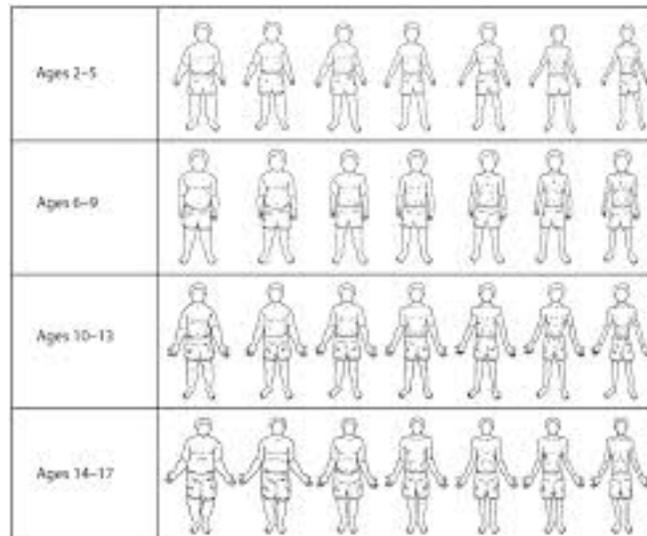
Instructions: For each question, select the answer category that best fits your child or your family. It is important to indicate the most common or typical pattern for your family, and not what you would like to happen.

Family Meals	Never/ Almost Never	Sometimes	Often	Very Often/ Always
1. How often does your child eat breakfast, either at home or at school?	1	2	3	4
2. How often does your child eat at least one meal a day with at least one other family member?	1	2	3	4
Family Eating Practices	Never/ Almost Never	Sometimes	Often	Very Often/ Always
3. How often does your child eat while watching TV? [Includes meals or snacks]	1	2	3	4
4. How often does your family eat “fast food?”	1	2	3	4
Food Choices	Never/ Almost Never	Sometimes	Often	Very Often/ Always
5. How often does your family use packaged “ready--to--eat” foods? [Includes purchased frozen or on--the--shelf entrees, often designed to	1	2	3	4
6. How often does your child eat fruits and vegetables at meals or snacks? [Not including juice]	1	2	3	4
Beverage Choices	Never/ Almost Never	Sometimes	Often	Very Often/ Always
7. How often does your child drink soda pop or sweetened beverages? [Includes regular or diet soda pop, Kool--Aid, Sunny--D, Capri Sun, fruit or vegetable juice, caffeinated energy drinks (Monster/Red Bull), Powerade/Gatorade, etc.]	1	2	3	4
8. How often does your child drink low--fat milk for meals or snacks? [Includes 1% or skim dairy, flavored, soy, almond, etc.]	1	2	3	4
Restriction/Reward	Never/ Almost Never	Sometimes	Often	Very Often/ Always
9. How often does your family monitor the amount of candy, chips, and cookies your child eats?	1	2	3	4

10. How often does your family use candy, ice cream or other foods as a reward for good behavior?	1	2	3	4
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Screen Time	Never/ Almost Never	Sometimes	Often	Very Often/ Always
11. How often does your child have less than 2 hours of “screen time” in a day? [Includes TV, computer, game system, or any mobile device with visual screens]	1	2	3	4
12. How often does your family monitor the amount of “screen time” your child has?	1	2	3	4
Healthy Environment	Never/ Almost Never	Sometimes	Often	Very Often/ Always
13. How often does your child engage in screen time in his/her bedroom?	1	2	3	4
14. How often does your family provide opportunities for physical activity?	1	2	3	4
Family Activity	Never/ Almost Never	Sometimes	Often	Very Often/ Always
15. How often does your family encourage your child to be physically active?	1	2	3	4
16. How often does your child do physical activities with at least one other family member?	1	2	3	4
Child Activity	Never/ Almost Never	Sometimes	Often	Very Often/ Always
17. How often does your child do something physically active when he/she has free time?	1	2	3	4
18. How often does your child participate in organized sports or physical activities with a coach or leader?	1	2	3	4
Family Schedule/Sleep Routine	Never/ Almost Never	Sometimes	Often	Very Often/ Always
19. How often does your child follow a regular routine for your child’s bedtime?	1	2	3	4
20. How often does your child get enough sleep at night?	1	2	3	4

The FNPA tool was developed at Iowa State University by Michelle Ihmels and Greg Welk (gwelk@iastate.edu) in partnership with the American Dietetics Association

Gender and Age Range Sketches for Boys and Girls

Source: (Eckstein, et Al. 2006).

Parents' Perceptions of Health Status

Do you perceive your child as:

1. Very underweight
2. A little underweight
3. About the right weight
4. A little overweight
5. Very overweight

Appendix B

Table 1. Analysis of Misperception by Yearly Income

Yearly Income by Misperception

Count Total % Col % Row %	Incorrect perception	Correct perception	Total
Less than \$20,000	0 0.00 0.00 0.00	1 3.70 5.56 100.00	1 3.70
\$20,000 to less than \$39,999	3 11.11 33.33 75.00	1 3.70 5.56 25.00	4 14.81
\$40,000 to less than \$74,999	1 3.70 11.11 14.29	6 22.22 33.33 85.71	7 25.93
\$75,000 to less than \$99,999	0 0.00 0.00 0.00	3 11.11 16.67 100.00	3 11.11
\$100,000 or more	5 18.52 55.56 41.67	7 25.93 38.89 58.33	12 44.44
Total	9 33.33	18 66.67	27

Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	7.831	0.0980
Pearson	6.643	0.1560

Table 2. Analysis of Misperception by Employment Status

Employment Status by Misperception

Count Total % Col % Row %	Incorrect perception	Correct perception	Total
Employed for wages full-time	4 14.81 44.44 30.77	9 33.33 50.00 69.23	13 48.15
Employed for wages part-time	2 7.41 22.22 66.67	1 3.70 5.56 33.33	3 11.11
Self-employed	1	3	4

	3.70 11.11 25.00	11.11 16.67 75.00	14.81
Homemaker	0 0.00 0.00 0.00	1 3.70 5.56 100.00	1 3.70
Student	1 3.70 11.11 33.33	2 7.41 11.11 66.67	3 11.11
Retired	1 3.70 11.11 33.33	2 7.41 11.11 66.67	3 11.11
Total	9 33.33	18 66.67	27

Tests

N	DF	-LogLike	RSquare (U)
27	5	1.1837714	0.0689

Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	2.368	0.7963
Pearson	2.163	0.8261

Table 3. Analysis of Verbal Description by Eats Fruits/Vegetables

Count Total % Col % Row %	A little under weight	About the right weight	A little overwei ght	Total
Never/ almost never	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 3.70 20.00 100.00	1 3.70
sometimes	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 3.70 20.00 100.00	1 3.70
often	0 0.00 0.00 0.00	9 33.33 47.37 75.00	3 11.11 60.00 25.00	12 44.44
Very often/ always	3 11.11 100.00 23.08	10 37.04 52.63 76.92	0 0.00 0.00 0.00	13 48.15
Total	3 11.11	19 70.37	5 18.52	27

Test	ChiSquare	Prob>ChiSq
Pearson	14.604	0.0236*

Table 4. Analysis of Verbal Description by Opportunity for physical activity

Count Total % Col % Row %	A little under weight	About the right weight	A little overwei ght	Total
never/ almost never	0 0.00 0.00 0.00	1 3.70 5.26 50.00	1 3.70 20.00 50.00	2 7.41
sometimes	0 0.00 0.00 0.00	4 14.81 21.05 66.67	2 7.41 40.00 33.33	6 22.22
often	0 0.00 0.00 0.00	8 29.63 42.11 80.00	2 7.41 40.00 20.00	10 37.04
very often/ always	3 11.11 100.00 33.33	6 22.22 31.58 66.67	0 0.00 0.00 0.00	9 33.33
Total	3 11.11	19 70.37	5 18.52	27

Test	ChiSquare	Prob>ChiSq
Pearson	9.739	0.1361

Table 5. Analysis of Verbal Description by Monitor Amount of Screen Time

Count Total % Col % Row %	A little under weight	About the right weight	A little overwei ght	Total
never/ almost never	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 3.70 20.00 100.00	1 3.70
sometimes	1 3.70 33.33 11.11	7 25.93 36.84 77.78	1 3.70 20.00 11.11	9 33.33
often	0 0.00 0.00 0.00	4 14.81 21.05 66.67	2 7.41 40.00 33.33	6 22.22
very often/ always	2 7.41	8 29.63	1 3.70	11 40.74

	66.67 18.18	42.11 72.73	20.00 9.09	
Total	3 11.11	19 70.37	5 18.52	27

Test	ChiSquare	Prob>ChiSq
Pearson	7.158	0.3065