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Implementation of a Healthy Lifestyle Program at the Jefferson City Housing Authority in
Jefferson City, Tennessee

A thesis

presented to

the faculty of the Department of Family and Consumer Science

East Tennessee State University

In partial fulfillment

of the requirements for the degree

Masters of Science in Clinical Nutrition

by

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Keywords: Childhood obesity, nutrition program, fruit and vegetable intake, physical activity

ABSTRACT

Implementation of a Healthy Lifestyle Program at the Jefferson City Housing Authority in
Jefferson City, Tennessee

by

Lynsey Carr

Children's energy consumption is outweighing their energy expenditure, increasing the risk for childhood obesity. While pediatric obesity continues to be a problem in America, the data are clear that those of low socioeconomic status are especially at risk for weight gain. The purpose of this study was to evaluate if a healthy lifestyle program could affect participants' diet and physical activity behavior. A program was planned and conducted using the curriculum from the "We Can" program established by the National Heart, Lung, and Blood Institute. Residents of the Jefferson City Housing Authority were asked to participate. No resident attended or completed the healthy lifestyle program. Follow-up focus groups with stakeholders and potential participants showed that lack of motivation was the greatest barrier to participation. Further investigation is needed to determine a more suitable venue to educate at-risk populations regarding the risk associated with pediatric obesity.

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CHAPTER 1
INTRODUCTION

Background

Childhood obesity has been on the rise for years. It is becoming an increasing problem all over the country but especially in the state of Tennessee. Tennessee has the fourth highest pediatric obesity rate in the country (1). Interventions must be attempted to combat this ever-increasing problem. Current recommendations are to achieve an energy balance in overweight children with no health complications and to promote weight loss in children who do have risk factors associated with comorbidities or diseases (2). The American Dietetic Association supports community based programs and environmental interventions as effective avenues to promote healthy eating and increased physical activity in children (3). These recommendations for energy equilibrium and increased energy expenditure are not easily attainable. Multiple factors exist that lead to weight gain in children.

Eating patterns among children are changing (4). Children today are consuming more meals outside of the home, consuming larger portion sizes, choosing high calorie beverages, and consuming snacks more frequently (4). Meals eaten outside the home, especially fast food restaurants, lead to additional caloric intake and reduced fruit and vegetable consumption (4). Larger portion sizes have led to approximately 15% greater energy intake at meals, while increases in soft drink consumption continue to be a factor in a greater caloric intake among children (4). In addition to these changes that have resulted in increased energy intake, frequent snacking among children equates to an extra 20% of caloric intake. High energy intake, compounded by the fact that less than half of children meet the recommended 60 minutes of physical activity a day, has been a contributing factor to childhood obesity (4).

The decrease in physical activity could have occurred due to the sedentary lifestyle adopted by many children. There has been an increase in video game, computer, and DVD usage (5). Television viewing in excess of only 2 hours has been linked with a greater body mass index (BMI) (5). Unfortunately, it is estimated children aged 8 to 18 spend as much as 4 hours a day watching television (6).

A child's home environment can also play a role in childhood obesity (7). Children tend to consume what they have access to and are influenced by their caregiver's actions and eating patterns (8). Children could have a better opportunity to increase fruit and vegetable consumption if these foods are available and accessible to them. It will be advantageous to educate the caregiver regarding nutrient rich food to provide as snacks as well as proper timing and eating patterns recommended for children (8).

Socioeconomic status can also be a determining aspect for weight gain in children and adults alike. The exact association between income level and obesity rates is unclear, but current research shows that those of low socioeconomic status have a tendency towards increased BMIs and comorbidities associated with obesity (9,10). Due to this tendency, nutrition intervention should be attempted to impede the increase in weight gain among this population.

The state of Tennessee has 27% of children who are in poverty or of low socioeconomic status compared with 23% of children who are of low socioeconomic status in the nation (11). In Jefferson County, Tennessee, 17% of the children are living in homes that are below poverty line (12). The school system is evidence of the prevalence of low-income families in that seven of the nine K-8 schools are classified as Title I schools in Jefferson County. A school can receive this classification if 40% or more of the students are of low socioeconomic status.

Statement of Problem

The state of Tennessee has one of the highest rates of childhood obesity in the country (13). Children who are obese or overweight are at risk for developing elevated cholesterol, high blood pressure, elevated triglycerides, and insulin resistance, which can all lead to heart disease, stroke, and diabetes (14).

The purpose of this study was to determine if the implementation of a healthy lifestyle program for adults of low socioeconomic status can influence participants' knowledge, attitudes, and behavior to facilitate increasing opportunities for physical activity and accessibility to fruit and vegetables for consumption among family members.

Significance of Problem

In 2001, obesity was such a problem in America; the surgeon general issued a report to make combating obesity a national priority. Since that time, obesity rates have continued to climb.

As mentioned earlier, the increase of childhood obesity has led to the introduction of diseases that in the past were not normally seen in children. There are currently 24 million children diagnosed with diabetes throughout America. Since 1987, the prevalence of developing diabetes has continued to rise (14).

Studies show that children who are obese have a greater tendency to be obese as adults (2). These children maintain their weight into adulthood as well as encounter the risk factors associated with obesity. Tennessee has an increased population of those diagnosed with diabetes when compared to the nation, while heart disease has become the leading cause of mortality in the state (15,16).

With the increase in pediatric obesity, there is also an increase in healthcare needs and related costs. Childhood obesity has cost private insurance companies as much as 11 billion dollars and Medicare as much as three billion dollars across the nation (14). It has been estimated that medical costs for obese children can be three times as much when compared to non-obese children (14).

Assumptions

Assumptions of this study include:

- Participants of this study will be motivated to attend the education sessions and be willing to make changes in eating and physical activity behavior.
- The majority of residents of the Jefferson City Housing Authority will be made aware of the nutrition program.

Limitations

Limitations of this study include:

- Generalizability of results to populations outside of residents of low-income housing units.
- Participation of the residents is strictly voluntary.
- The program was presented only at the Jefferson City Housing Authority and no additional facilities in the area.

Hypothesis

After participation in the healthy lifestyle program, participants will increase their knowledge of ways to include additional fruits and vegetables in the family diets and how to provide opportunities for physical activity.

Null Hypothesis

After participation in the healthy lifestyle program, participants will not increase their knowledge of ways to include additional fruits and vegetables in the family diets and how to provide opportunities for physical activity.

CHAPTER 2

REVIEW OF LITERATURE

In this day and age obesity is on the rise. It is not only the adults whose weights are increasing, but also the children (10). Data from National Health and Nutrition Examination Survey (NHANES) show that the prevalence of overweight is increasing in children (17). Overweight for children is being defined according to the Centers for Disease Control and Prevention (CDC) as a child's BMI being at or between the 85th percentile and 95th percentile (18). Obesity is defined as a child's BMI being equal to or greater than the 95th percentile (18). Body mass index is a ratio of weight to height squared (kg/m²) (14). In 1974, children aged 2 to 5 had 5% prevalence for being overweight. In 30 years, that number has almost tripled (17). Intervention must occur to keep this trend from continuing at this rapid pace.

Factors Related to Pediatric Obesity

Fruit and Vegetable Intake

It is estimated that only one fourth of children are meeting the minimum five recommended servings of fruit and vegetable a day (19). Research supports that increased fruit and vegetable intake can lessen weight gain in children (21).

A study was conducted by the pediatrics department of the University of Buffalo to determine if increased intake of fruits and vegetables along with low fat dairy could cause weight loss at a higher rate in children compared to a decrease in intake of high-energy foods (21). Those that participated were children aged 8-12 years and had BMI levels over the 85th percentile. Forty-one families participated in the study and were divided into two groups. The two groups were to follow the "Traffic Light Diet" in which food is categorized as "green", "yellow", or "red"

according to the amount of fat and calories in each food item. Foods with one or less grams of fat are considered “green” foods. Foods with two to five grams are considered “yellow” foods, and those food items with greater than five grams of fat are considered to be “red” foods. Both groups were educated on healthy eating by the “Traffic Light Diet” and were encouraged to get at least 1 hour of exercise 6 days a week. The experimental group was required to increase their fruit and vegetable intake by one serving more than their normal intake until a goal of five servings per day was reached. The control group was to decrease consumption of “red” foods to two servings per day. After 2 years, the group of children that increased fruit and vegetable intake lost more weight and consistently stayed at a lower weight than the group that only decreased high-energy food intake. The study also found that parents’ concerns regarding their child’s weight was lower in the experimental than in the control group.

Physical Activity

There are other factors that influence weight gain in children besides fruit and vegetable intake. It has been found that along with food consumption, physical activity can also have an impact in prevalence of weight gain (22). Children who are overweight have a greater chance of being overweight when they are adults (23). By preventing weight gain in children, the trend of obesity may decrease in the future in the adult population. Some of these factors related to pediatric obesity can be manipulated to establish a negative correlation with weight gain in children.

The amount of physical activity a child receives is important in preventing increases in his or her BMI (22). Unfortunately, physical activity seems to decrease as a child ages (24). It is estimated at age 9 approximately 90% of children meet the recommended 60 minutes of physical

activity most days of the week. By age 15, only 31% of children are meeting those recommendations. This lack of physical activity in adolescents promotes obesity and risk factors associated with obesity (24).

Epstein et al. conducted a study that assessed the effects of television and computer use on a sedentary lifestyle with body mass index (25). Seventy children aged 4 to 7 who had a BMI at or above the 75th percentile participated in the study. A monitor was placed on every television and computer in the home that recorded use of the machine and would block the television or computer from working after a certain time of use was reached. Each child was given a budget of time he or she was allowed to use the television or computer. If a child in the intervention group watched television or used the computer less than the time allotted, the child was awarded money. The children in the control group were given money no matter the time spent using the television or computer. The parents of both groups were encouraged to praise their child if he or she used the television or computer less than the time budgeted. Ideas were given to parents of both groups regarding ways to praise their child and ways to engage in physical activity. Subjects in the study were monitored every 6 months for 2 years according to their usage of television/computer, BMI, energy intake, and physical activity. Epstein et al. found that the intervention group showed more of a decrease in sedentary time, BMI, and energy intakes than the control group. It was also noted that those subjects from the lower socioeconomic families had a greater decrease in BMI from the intervention group (21).

Epstein et al. concluded that a decrease in sedentary behavior related to less television and computer use could lower body mass index and energy intake in young children (21). Parents and caregivers need to be empowered so that they can set limits for television or computer use for their

children. This leadership embodied by the caregivers can in turn impact their children to lower their weight and decrease their risk factor for several diseases.

Gable, Chang, and Krull conducted a study that found weight gain among children who viewed more television and ate fewer family meals (26). The subjects of this study were participants in the Early Childhood Longitudinal Study-Kindergarten Cohort. The children's weight, television-viewing time, and frequency of family meals were tracked for 3 years. The results place an emphasis on implementing a childhood weight gain prevention program that encourages lifestyle modification and parent involvement. It is evident the caregivers play a crucial role in the nutritional status of their children and should be included in their children's weight gain prevention.

Portion Size

One key factor in explaining the high intake of calories is the increase in portion sizes. In the marketplace, portions have increased up to eight times the standard serving size while portion sizes in restaurants have increased as much as 250% over the years (27,28). These increased portion sizes lead to higher intake of calories, which could increase weight gain in children (20). It was found that participants who were fed the same meal for 2 consecutive days in a 3-week period had increased energy intake when portion sizes of that meal were increased resulting in as much as an additional 812 kilocalories and 530 kilocalories a day intake for men and women, respectively (20).

Sweetened Beverage Consumption

Another factor that leads to weight gain is the increased consumption of sweetened beverages. It has been found that 44% of toddlers as young as 19 months consume a high sugar, low nutrient drink at least once a day (29). The intake of high sugar beverages continues to grow as the child becomes older. A positive correlation exists between consumption of sweetened drinks and weight among children (29).

A study was conducted to determine the relationship between beverage consumption and BMI (30). Over 2,000 African-American and Caucasian girls were given food diaries at ages 9 to 10. The beverage consumption from the food diary was recorded at annual visits until the age of 19. It was found with both races that a positive correlation existed between soda consumption and age. It was also determined that soda consumption among the beverages considered was the greatest predictor for increase in body mass index. Streigel-Moore et al. concluded that public health initiatives need to place a larger emphasis on healthy beverage consumption to impact weight in children and adolescents (30).

Home Environment

Another element that contributes to a child's weight gain is the home environment. A single parent or dual career family has a tendency to eat meals previously prepared or away from home (31). All these meals eaten away from home lead to an increase energy intake for children (4). It has been found that the caregiver greatly impacts his or her child's nutritional status. The child learns many behaviors regarding diet and physical activity from his or her caregiver (2). It is also the caregiver who determines what and how foods are prepared and provides opportunities

and locations for physical activity to take place. The environment in which the caregiver places the child will indicate how the child will develop his or her eating behavior (8).

Risk Factors

With an increase of weight in childhood, morbidities such as diabetes, high blood pressure, and heart conditions are becoming more apparent in those of a young age. Data from the National Heart, Lung, and Blood Institute Growth and Health Study showed that risk factors for cardiovascular disease were found in overweight girls as early as age 9 (32). This was a cohort study that examined over 2,000 African-American and Caucasian girls from the ages of 9 to 10 through the ages of 18 to 19 (32). One of the aims the researchers wanted to determine was the correlation of a child's weight and cardiovascular disease risk factors. The researchers found girls who were overweight according to CDC parameters, had up to a tenfold greater chance of having a risk factor associated with cardiovascular disease; these risk factors included hypertension, elevated LDL levels, and elevated triglycerides. Prevention for weight gain needs to begin before age 9 to prevent these risk factors from forming in young children.

Summary

In summary, there are several factors that can lead to childhood obesity. Increased consumption of sweetened beverages, increased portion sizes, and decreased fruit and vegetable intake can cause children to consume an excessive amount of calories. The influences a child is exposed to can further encourage or hinder eating and physical activity behavior.

Decrease in physical activity and increase in screen time has led to children not expending extra calories consumed. This has ultimately led to an uneven energy balance causing the body to

store excess calories resulting in weight gain. The extra weight stored on the body increases several risk factors that can result in many comorbidities. Because obesity in children tends to continue into adulthood, so do the risk factors for developing various diseases.

CHAPTER 3

DESIGN AND METHODOLOGY

A healthy lifestyle program was conducted 1 day a week for 4 weeks at the Jefferson City Housing Authority in Jefferson City, Tennessee. The program was geared toward educating the participants to increase their consumption of fruit and vegetables as well as increase their physical activity.

Participants

Residents of the Jefferson City Housing Authority in Jefferson County, Tennessee were invited to participate in the study via flyers (See Appendix A) and word of mouth. All residents of the facility earn less than the median income for the county and are of low economic status. Providing education at this facility would reach the most people of low socioeconomic status in one area. Criteria for inclusion in this study were any resident of the Jefferson City Housing Authority over the age of 18. Therefore, persons who were not residents of the Jefferson City Housing Authority and who were under the age of 18 were excluded from participation. Participants were to sign informed consent forms before starting the education sessions. After addressing participation barriers, one participant attended one of the sessions, but none of the residents finished the program.

The Facility

The Jefferson City Housing Authority has 199 apartments that can be occupied. There are currently 364 residents living in the facility with 140 or 38 % of residents under the age of 18. To

qualify for residency at the housing authority, one has to earn at or below a set standard established by the housing authority, which is based on the median income of the county. The median income for Jefferson County is approximately \$38,000. Standards are set according to that income and adjusted according to family size. The maximum amount to qualify for residency is \$26,650 and will be increased for the number of members in a family.

Study Design

The curriculum used for the sessions was taken from the “We Can” program, established by the National Heart, Blood, Lung Institute. The “We Can” (Ways to Enhance Children’s Activity and Nutrition) program is a well-designed program based on sound, evidence-based principles geared toward reducing obesity in children (33). The We Can program has been used in 821 communities in 12 countries around the world and has gained support of 25 national organizations including the Institute of Medicine’s Committee on Prevention of Obesity in Children and Youth (33). The program has been used in multiple settings such as hospitals, universities, park and recreational centers and public health departments.

The program is geared toward educating the caregiver to provide better food choices and increase physical activity for themselves and their families. Information is given regarding healthy food choices for the family, the importance of and ways to engage in physical activity, and behavioral changes that can impact the nutritional status of children. The behavioral changes that were monitored in this study were changes in fruit and vegetable consumption and frequency of physical activity.

The program was divided into four segments that included how to change the home environment to increase fruit and vegetable consumption, how to maintain energy balance, eating

according to the “Traffic Light Diet” that was mentioned earlier, and ways to increase physical activity and decrease sedentary activities. See lesson plans in Appendix C.

The program was to be presented to participants who are residents in the Jefferson City Housing Authority in Jefferson County, Tennessee. The participants were to meet for four 30-minute sessions and complete a survey before and after the program to determine the impact on participants’ fruit and vegetable consumption and physical activity. The program was geared toward those with children, but all adults wanting to participate in the program were allowed to participate if desired. Participants without children would have been given a survey regarding their eating and exercise habits but would not have been asked about their influence in the family unit. Each participant who completed all four sessions would receive a pedometer, a cookbook, and cooking utensils to be used to promote a healthy lifestyle.

CHAPTER 4

RESULTS AND DISCUSSION

Participants

The director of extracurricular activities at the Jefferson City Housing Authority, assisted in promoting the program throughout the facility. The activities director informed many residents about the program at events and posted flyers a week prior to the start of the program throughout the facility. An article could not be placed in the housing authority's monthly newsletter due to early publishing of the newsletter and time constraints.

Fourteen residents responded to the director that they would attend the nutrition sessions. Out of the 14 residents, one resident attended the first session but did not attend any additional sessions.

Focus Group with Housing Authority Personnel

To address the concern of lack of participation after the first session, a focus group was held with the staff of the housing authority. Possible barriers were discussed to determine underlying factors that could be preventing the residents from participating. It was concluded that time conflicts, childcare, and lack of motivation could have impeded some of the residents from attending the sessions.

Two of the barriers, time conflict and childcare, were addressed. It was thought the residents might not be able to attend the sessions in the mid-afternoon due to the public school schedule. The time of the session was changed to later in the afternoon to allow residents to transport their children from school if needed.

Lack of childcare could be another reason that participation was low. Because the program's criterion for participation was over the age of 18, the focus group determined that some

residents might not have attended because they could not bring their children to the program and had no other form of childcare available. The activities director offered to provide childcare for the residents if they attended the sessions. After the barriers that could immediately be corrected were addressed, the activities director again encouraged participation. No residents attended the remainder of the sessions.

Post Session Focus Group with Housing Authority Residents

Following the completion of the intervention sessions, it was evident that additional insights into the antecedents of nonparticipation were needed. A second focus group session was then held at the housing authority. The focus group was conducted during one of the residents' regularly scheduled activities. Seven residents were present and all residents gave their consent to participate in the focus group. The majority of the residents attending the focus group were over the age of 50. Several issues were covered during the group to determine what steps could be taken to increase participation in nutrition programs held at the housing authority.

All residents were reminded where the flyers had been located to advertise for the program. Three of the residents stated that they did see the flyers posted but did not spend a great deal of time looking at it. The remaining four residents did not notice the flyer posted. All seven residents agreed that the location of the flyer was posted in the usual area of advertisement for the facility. Residents also agreed the newsletter and flyers are the best and most usual way of advertising for events at the facility.

The focus group felt the incentives offered for attending all four sessions, which were a cookbook, pedometer, and cooking utensils, were not enough to get them to attend the sessions.

Different suggestions were given, but it was unanimous that all seven residents would have attended the sessions if 10 dollars had been awarded for those that attended all four sessions.

When popularity of the subject matter of the sessions was discussed, the focus group participants had different views as well. There were different needs consisting of weight loss, lowering lipid levels, and lowering blood sugar levels. Attendees to the focus group were undecided at first if they would like to attend a program geared toward healthy eating and ways to increase physical activity. The residents become quite positive of the program once it was explained to them and wanted to know when the program would begin so they could attend.

During the focus group, some of the participants made comments about other upcoming regularly scheduled events. The participants seemed very interested in attending those events. As mentioned earlier, once the participants had knowledge regarding the nutrition program, they inquired about attending the program. It seems the residents were not interested in deviating from the regularly scheduled events, but once a relationship has been established and the content of the program explained, the residents were very interested in attending.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

Barrier to Participation

The staff of the housing authority was in full agreement that lack of motivation was one of the greatest barriers of participation. The activities director stated that she has always struggled with getting adult residents below the age of 50 to participate in any extracurricular events. The reason for this lack of motivation remained unclear.

The residents who committed to attend the program were unable to be reached for inquiry into why they did not attend the program or into their lack of motivation. The activities director informed the researcher that the people were difficult to contact and many did not have access to telephones. Some residents who had informed the activities director of attending the program had already moved out of the facility.

Conclusion

In conclusion, several barriers were identified that could have led to the nutrition program not being well-attended, but lack of motivation was found to be the underlying cause. Due to the inability to contact the residents who first agreed to attend the program sessions, it was unclear why this barrier was present. Further investigation needs to be conducted to determine the root of the problem and if action could be taken to promote motivation in this population.

Recommendations

It seems for a nutrition program to be successful at the Jefferson City Housing Authority, the presenter must first establish a relationship with the residents and fully explain the program to the residents. The residents do not welcome change or new activities that are not customary. The residents do attend many events, but they are regularly scheduled activities that occur weekly and monthly.

It seems that the most effective method of advertising for future programs at the Jefferson City Housing Authority is to visit regularly scheduled events and speak to the residents regarding the content of the program. The program has the probability of being more successful if the residents are familiar with the presenter and the content of the program being presented before they attend. A monetary incentive can also be provided to increase resident's participation in programs.

To educate caregivers and children regarding childhood obesity, the Jefferson City Housing Authority is not an effective location. While it is yet unclear how to motivate young adults to attend a nutrition program in which they can learn to provide a healthy environment and to be a healthy influence on their child, more qualitative investigation would help to illuminate the barriers to participation in this population. Further, other locations need to be considered that young adult caregivers and children can be educated concerning the risk of childhood obesity and methods to improve overall health.

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APPENDICES

APPENDIX A

Flyer

Stop the Weight and Look Great

What: A quick program to learn healthy habits and have fun doing it.

When: Fridays from 3:00 to 3:30 starting November 21st– December 19th

Where: Hillview Community Room at the Jefferson City Housing Authority

FREE GIFTS FOR THOSE THAT PARTICIPATE IN ALL FOUR SESSIONS!



APPENDIX B

Participant Letter

Dear Participant,

Thank you for taking the *We Can!* class. Please tell us what you think.

Please fill out this form completely. It takes approximately 5 minutes to complete.

Completing this survey is strictly voluntary.

This is not a test and you will not be graded for right or wrong answers. It is important that we understand your opinions.

Your answers will be kept confidential. They will not be shared with other participants in the class, but will be used for research purposes.

After completing the survey, you will get the opportunity to participate in four 30 minute sessions that will cover material to teach you healthy eating habits and ways to increase physical activity. At the end of the fourth session, you will be asked to complete another survey. Again, completion of the survey is strictly voluntary.

Thank you for your help. If you have any questions, please feel free to talk to your instructor, Lynsey Carr.

APPENDIX C

Survey

Please tell us a little about yourself by answering the next series of questions.

1. Your gender: (check one box)

<input type="checkbox"/>	Female
<input type="checkbox"/>	Male

2. I am _____ years old.

3a. Are you Hispanic/Spanish/Latino?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

3b. Are you.....(check one box)

<input type="checkbox"/>	American Indian or Alaska Native
<input type="checkbox"/>	Asian or Pacific Islander
<input type="checkbox"/>	Black or African American
<input type="checkbox"/>	White
<input type="checkbox"/>	Other. Write in:

4. What is your highest level of education?

<input type="checkbox"/>	Less than High School
<input type="checkbox"/>	High School Graduate
<input type="checkbox"/>	Some college

<input type="checkbox"/>	College Degree
<input type="checkbox"/>	Some Graduate School
<input type="checkbox"/>	Graduate Degree

5a. How many adults, age 18 and above, including yourself are in your family household?

5b. How many children under the age of 18 are in your family household? _____

6. Please indicate whether you think the following statements are true or false by circling T or F after each one.

a. You can maintain a healthy weight just by making sure that food intake (energy in) equals physical activity (energy out) on most days.	T	F
b. One effective way of losing weight is to burn more energy than you take in.	T	F
c. Being more active on one day cannot help balance extra calories consumed on another day.	T	F

7. Please indicate how much you agree with the following statements. (Circle one on each line)

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
a. When eating foods that are high in fat, I try to keep the portions small.	1	2	3	4	5
b. I often monitor the portion size of food served to my family	1	2	3	4	5
c. In my family, we try to make sure that vegetables and fruits are often readily available at home.	1	2	3	4	5
d. Whenever I can, I walk or bike places instead of driving.	1	2	3	4	5
e. I use the stairs instead of the elevator when I can.	1	2	3	4	5

8. Please indicate how much you agree with the following statements. (Circle one on each line)

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
a. I play an important role in determining what my child/children eat	1	2	3	4	5
b. I play an important role in determining how much physical activity my child/children get.	1	2	3	4	5

c. If I eat well, there is a good chance my family will follow my example.	1	2	3	4	5
d. If I am physically active, there is a good chance my family will follow my example.	1	2	3	4	5
e. I often plan physical active outings for my family	1	2	3	4	5
f. I often make sure that healthy snacks are easily available for my family.	1	2	3	4	5
g. In my family, we have set some rules on foods and eating that we try to follow.	1	2	3	4	5

9. Please indicate how much you agree with the following statements. (Circle one on each line)

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
a. I enforce rules on how often my family does the following: watches TV, uses a home computer for recreation, or plays video or electronic games	1	2	3	4	5
b. More often than not, my family and I do not watch TV during meal times.	1	2	3	4	5
c. I watch less than 2 hours of TV each day.	1	2	3	4	5
d. I limit my child's total time spent each day on TV, DVD/video, computer games, and recreational computer use.	1	2	3	4	5

APPENDIX D

Lesson Plans

Session 1

*Hand out participation letter and surveys

* Allow time for participants to complete surveys then collect

Why weight matters?

- Statistics of obesity in America
 - 65% of Americans are overweight or obese = 61 million adults are obese
 - The percentage of children under the age of 18 has doubled since 1970
 - 16% of children are overweight
- Obesity in America in 1990 compared to 2003
 - In 1990, no state had more than 15% of the population who were obese
 - In 2003, every state had at least 15% of population who were obese and four states had more than 25% of the adult population who were obese
- Why weight gain is difficult for children
 - Overweight children may not be able to keep up with non-overweight children
 - Increase risk for elevated blood sugar, elevated cholesterol levels, high blood pressure
- Children who are overweight have greater chance of being overweight into adulthood
- Question and Answers period

Session 2

What Can be Done to Encourage Healthy Weight in Children?

- Make healthy food choices
- Increase physical activity
- Caregivers can greatly increase a child's actions
- Tips for real life encouraging
 - Caregivers can control how much television, computer, and video games a child watches
 - Make small changes
 - Take a walk after dinner
 - Place a bowl of fruit on the table instead of candy
 - Drink skim milk instead of 2% milk
 - Eat fruit instead of a dessert after a meal
 - Add one more vegetable per day to a meal

What is a Healthy Weight?

- Introduce BMI (Body Mass Index)-measurement based on weight for height
 - BMI = $\frac{\text{weight in pounds} \times 703}{\text{height in inches} \times \text{height in inches}}$
- Pass out BMI charts
 - BMI for children
 - Growth chart (BMI for age)
 - Plot between 85th & 95th percentile=at risk for overweight
 - Plot 95th percentile or over=overweight
 - Adult BMI
 - 18.5-24.9=normal
 - 25-29.9=overweight
 - 30 & over=obese
- Question and Answer period

Session 3

What is Energy Balance?

- Energy (calories) in must equal energy (calories) out
 - The calories you intake from eating must equal the amount of calories that is “burned off” in a day by normal body functions and physical activity to sustain weight
 - More calories must be used or “burned off” by physical activity to result in weight loss.
- In America, more calories are being eaten than are being burned off by normal body function and physical activity
 - This occurs by more sedentary lifestyle
 - Easy access to high calorie foods
 - Increase in portion sizes
- Introduce food models and show what proper portion sizes of food items should be
- Introduce Go, Slow, and Whoa concept
 - We can eat based on the stop light method called “Go”, “Slow”, and “Whoa” foods. Think of a green light meaning go. Foods that are labeled “Go” foods can be eaten frequently. These are foods that are low in calorie and high in nutrients such as fruit and vegetables, skim or 1% milk, fat free cheese, low fat or fat free cottage cheese, egg whites or egg substitute, chicken or turkey without the skin, tuna packed in water, grilled fish, microwave low fat popcorn, low fat frozen yogurt, pretzels, whole grain bread products, unsweetened tea, water, diet soda.
 - “Slow” foods should be eaten with caution. These foods can be eaten sometimes (up to three times a week) and are moderately high in fat and calories. Some examples are 2% milk, white flour, oven baked French fries, vegetables with sauce, Canadian bacon, low fat salad dressing, 100% percent fruit juice, canned fruit in light syrup, ice cream sandwiches, lean ground beef, peanut butter, whole eggs.
 - “Whoa” foods represent a red light. These foods should only be eaten on special occasions. These foods are high in fat and calories. Some examples are french fries, whole milk, doughnuts, fruit in heavy syrup, potato chips, regular sour cream and mayo, various cheeses, hot dogs, pepperoni, sausage, fried chicken, regular soft drinks, sweetened breakfast cereal, chicken nuggets.
- Question and answer period

Session 4

*Pass out survey

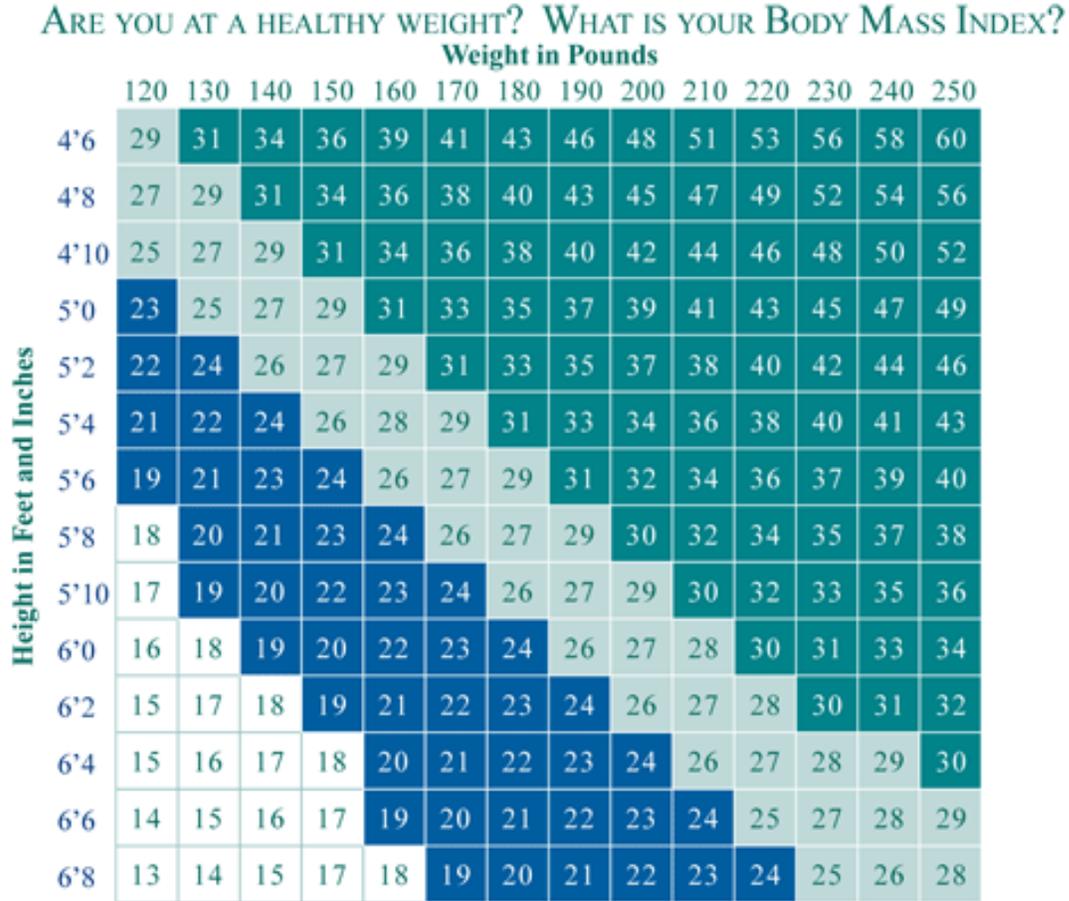
* Allow time for participants to complete and collect

Is Physical Activity Important?

- Physical activity can:
 - Keep body healthy
 - Burn off calories to lose weight
 - Build muscle
 - Help you sleep better
 - Give you energy
 - Improve endurance
 - Relieve stress
- Recommended Dietary Guidelines for physical activity
 - Adults - 30 minutes of moderate to vigorous activity most days of the week to reduce risk of chronic diseases- 60 minutes a day to prevent gradual weight gain
 - Children- 60 minutes most days of the week
- Tips to increase physical activity
 - Commit to watching no more than 2 hours of television/DVD/computer a day
 - Take a bike ride on Saturdays
 - Exercise during commercials when you do watch television
 - Take the television out of a child's bedroom
- Calories burned during different activities
 - Brisk walking for 30 minutes=170 calories burned
 - Biking for 30 minutes= 205 calories burned
 - Swimming for 30 minutes= 240 burned
 - Jogging for 30 minutes=275 calories burned
- Question and answer period
- Thank everyone for attending the sessions and encourage participants to keep up the good work.
- Pass out incentives to those who have attended all four sessions

APPENDIX E

BMI Chart for Adults



Healthy Weight
 Overweight
 Obese

Note: This chart is for adults (aged 20 years and older).

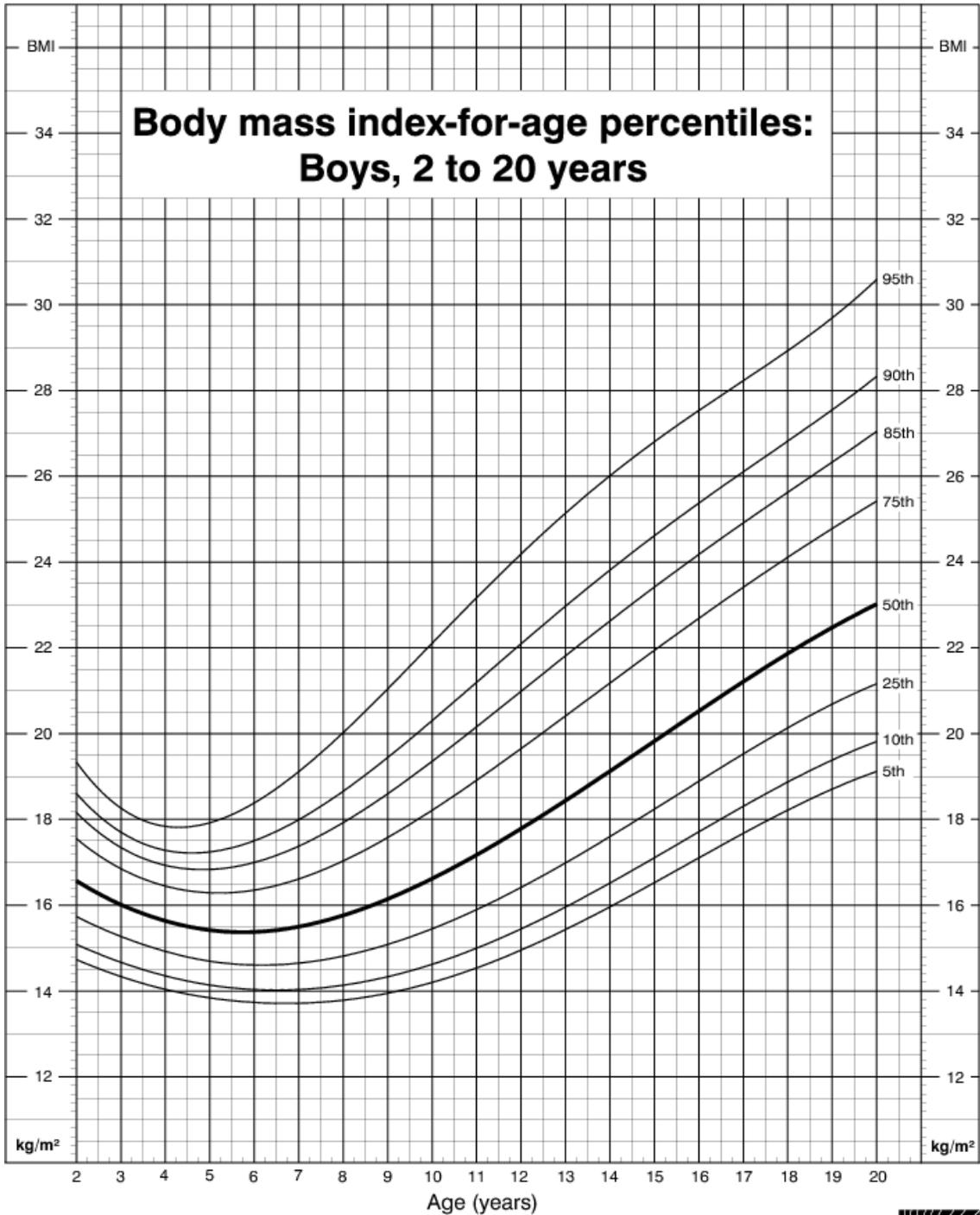
Source: U.S. Surgeon General

(34)

APPENDIX F

BMI Chart for Boys Age 2-20 Years

CDC Growth Charts: United States



Published May 30, 2000.

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).

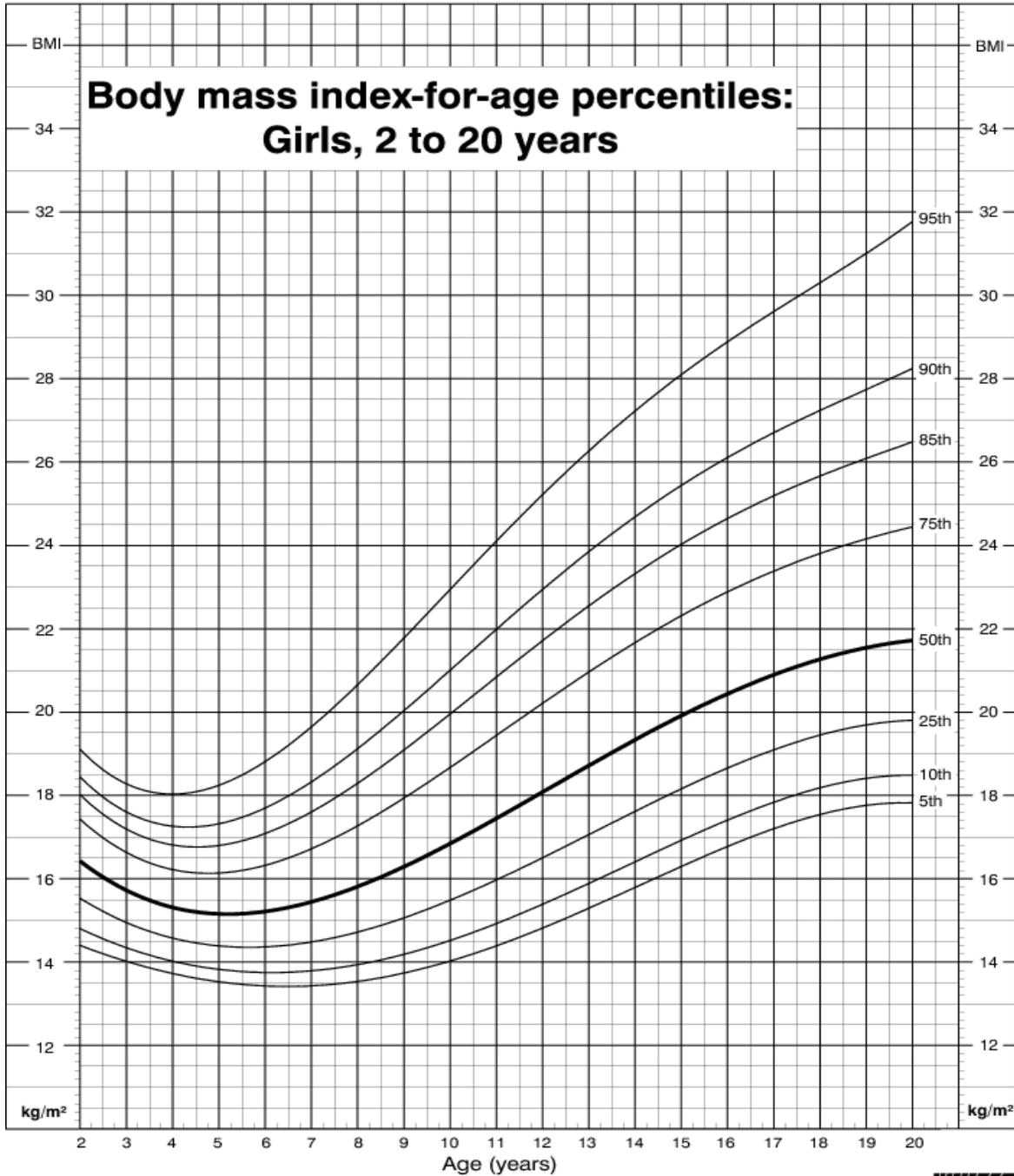


SAFER • HEALTHIER • PEOPLE (35)

APPENDIX G

BMI Chart for Girls Age 2-20 Years

CDC Growth Charts: United States



Published May 30, 2000.
SOURCE: Developed by the National Center for Health Statistics in collaboration with
the National Center for Chronic Disease Prevention and Health Promotion (2000).



VITA

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