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Megann Dastrup
Utah State University

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EVALUATION OF THE LONG TERM EFFECTIVENESS OF THE NUTRITION COMPONENT OF THE FIT KIDS OF ARIZONA PROGRAM

By

Megann Dastrup

A plan B report in partial fulfillment of the
requirements for the degree

of

MASTER OF DIETETICS ADMINISTRATION

in

Nutrition, Dietetics, and Food Sciences

Approved:

Martha Archuleta PhD, RD, CD Major Professor	Janet B. Anderson, MS, RD, CD Committee Member

Marlene Israelsen, MS, RD, CD
Committee Member

UTAH STATE UNIVERSITY
Logan, Utah

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ABSTRACT

EVALUATION OF THE LONG TERM EFFECTIVENESS OF THE NUTRITION COMPONENT OF THE FIT KIDS OF ARIZONA PROGRAM

By

Megann Dastrup, Master of Dietetics Administration

Utah State University 2014

Major Professor: Martha Archuleta PhD, RD, CD
Department: Nutrition, Dietetics and Food Sciences

The Fit Kids of Arizona program was created in 2009 to combat the childhood obesity epidemic in Northern Arizona. Fit Kids has been providing health education to overweight children and their families for the past five years. Research to validate the programs efforts has been lacking. This study aimed to evaluate the long-term effectiveness of the nutrition component of the Fit Kids of Arizona program. The study also aimed to analyze the changes in BMI percentile after program participation and to obtain program satisfaction comments from past participants. Through the research process it was realized that the data collection and storage methods currently used by Fit Kids are inconsistent and do currently not help facilitate research. The research project evolved to include a protocol on what Fit Kids of Arizona can do to collect and store patient data in a manner that facilitates future research and program sustainability.

(71 Pages)

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CHAPTER I

INTRODUCTION

Statement of Problem

Fit Kids of Arizona has been in operation since January 2009 in Flagstaff with a clinic opening up in Cottonwood in August of that year. Over the past five years Fit Kids has tracked the indicators of success in current patients, but Fit Kids has not been able to track the long-term success of past program participants or collect program satisfaction information. This project served to evaluate the nutrition education components are of the program and to determine long lasting effects on patients, how patients BMI percentiles have changed since the patient left the Fit Kids program, and attain general program customer satisfaction information.

Fit Kids has reached a point where other facilities are reaching out to the program for guidance. Published research is needed to validate the past five years of work that Fit Kids has put into the Northern Arizona community. This information will be valuable in obtaining grants and program funding in the future. The Fit Kids advisory board has strongly expressed the need for research regarding the program to solidify the programs place in the community and validate its efforts.

Goal

The goal of this study was to determine the effectiveness of the Fit Kids of Arizona program on increasing healthy nutrition behaviors and improving weight status

in patients that attended the program for at least six months and had not participated in programming for at least one year.

Objectives

1. Collect long-term data regarding nutrition behaviors in patients at least one year post program participation through a mailed survey.
2. Determine the percent of past program participants that have been able to maintain or decrease their BMI percentile after leaving the program at least one year prior.
3. Determine customer satisfaction of past program participants.

LITERATURE REVIEW

Childhood Obesity Epidemic

The prevalence of childhood obesity has been increasing steadily over the past 30 years. Nationwide one in three children and teens are overweight, and 17% of children between the ages of 2-19 years old are obese (1). Though there is research suggesting the incidence of childhood obesity is leveling off, the extent is still staggering (2). This generation is the first generation to have a shorter life expectancy than their parents, for possibly the first time in history (3,4).

Childhood obesity is defined by the Center for Disease Control as children aged 2-19 that have a body mass index (BMI) greater than the 95th percentile for age and

gender. Overweight is defined as having a BMI greater than the 85th percentile but less than 95th percentile for age and gender (5).

The health consequences associated with excess weight are great. Overweight and obese children are at increased risk of chronic diseases such as dyslipidemia, hypertension, insulin resistance, non-alcoholic fatty liver disease, and sleep apnea (6,7). A review of studies performed in Germany and Switzerland between 2001 and 2008 showed that over 50% of overweight children showed metabolic risk factors including high blood pressure, arterial stiffness, fatty liver disease and dyslipidemia (6). These chronic diseases not only affect the children mentally and physically, they have financial consequences as well. An assessment of medical expenditures for children in the United States aged 6-19 years old from 2002-2005 showed that children and adolescents with an elevated BMI were associated with an additional $14.1 billion in healthcare costs annually compared to normal weight children and adolescents. These additional costs were for prescription drugs, outpatient services and emergency room visits (8).

Treatment Standards for Childhood Obesity

The movement to thwart childhood obesity is emerging from many fronts. The Center for Disease Control, Michelle Obama and even Jamie Oliver, the celebrity chef, have a plan to promote health and nutrition for our nations children and stop childhood obesity. In 2005 the American Medical Association, Center for Disease Control, and Health Resource and Service Administration formed an expert committee to revise the previous standards set in 1997 to treat childhood obesity. The 2005 expert committee used evidenced based practice and clinical judgment to form the 2007 expert committee

guidelines. The guidelines present recommendations for the prevention, assessment, and treatment of child and adolescent obesity (7).

To prevent childhood obesity the expert committee recommends that health care practitioners advise patients and their families to live healthy lifestyles regardless of weight status. A thorough assessment of eating and physical activity habits is recommended for all children regardless of weight status at their annual well child visit. Specific recommendations regarding eating, physical activity and sedentary behaviors should be addressed and discussed with the patient and family instead of just providing a handout at the end of the appointment. To increase motivation to change, practitioners are encouraged to serve as counselors and utilize the stages of change theory and motivational interviewing (7).

Assessment methods are outlined by the expert committee for medical, weight related problems, and behavior. Nutrition and physical activity are assessed as a component of behavior. Effective assessment tools provided by the expert committee included WAVE calculator (weight, activity, variety, excess) and REAP (rapid eating assessment for patients) which have been validated for use in a clinical provider setting. These assessment tools were developed by the Nutrition Academic Award as quick screening tools to be used by physicians to assess nutrition and physical activity behaviors in additional to the standard medical exam. The WAVE tool provides a basic framework for lifestyle counseling and health recommendations (9). Other areas recommended by the committee for nutrition assessment include: assessing readiness to change, frequency of eating out at restaurants, consumption of sweetened beverages, portion sizes, fruit juice intake, breakfast and general meal/snack pattern, intake of high

energy density foods and intake or fruits and vegetables (7,10). The expert committee does not recommend use of comprehensive nutrition assessment tools such as a food diary, food frequency questionnaire or 24-hour recall due to these tools being unrealistic for use in a clinical setting (7).

A survey was conducted by the expert committee to determine the extent that childhood obesity programs were using the expert committee guidelines. The survey results showed that nutrition assessments were often performed using food frequency questionnaires, 24-hour recall or 3-day food diaries even though the expert committee did not recommend these methods for the clinical setting. This is likely due to the programs having multidisciplinary teams where a registered dietitian was conducting the nutrition assessment. None of the programs mentioned in the study used the WAVE or REAP tools that are recommended by the expert committee for nutrition assessment. All programs had nutrition assessment questions regarding fruit and vegetable intake, sugary beverage, fast food consumption, eating together as a family, and food insecurity. Though the nutrition assessment tools were not consistent with the expert committee recommendations, the survey showed that most childhood obesity programs were following the expert committee assessment guidelines (10).

The expert committee recommends a four-staged approach for the treatment of childhood obesity. The stages start with basic nutrition education and increase in intensity based on the severity of obesity, previous efforts to modify lifestyle and motivation of the patient and family.

Stage 1: Prevention Plus focuses on promoting basic healthy lifestyle behaviors regarding eating and activity. Nutrition related recommendations include eating the

recommended servings of fruit and vegetables daily, minimizing sugary beverages, cooking at home, eating at the table as a family, eating breakfast daily, allowing the child to self-regulate intake, and involving the entire family in the lifestyle changes (7).

Stage 2: Structured Weight Management builds upon stage 1 recommendations in the form of increased structure and support. Nutrition components become more structured with diet plans, structured meal/snack patterns, monitoring of eating behaviors in the form of logs or diaries, and planned positive reinforcement for completion of goals. A multidisciplinary team starts to take place at this stage as a dietitian is needed for meal planning (7).

Stage 3: Comprehensive Multidisciplinary Intervention includes stage 1 and 2 recommendations, diet and lifestyle recommendations are more structured and support from specialists in childhood obesity treatment begins. The treatment team is typically composed of a nurse practitioner, registered dietitian, exercise specialist and counselor. The intensity of behavior change is increased with weekly visits recommended for 8-12 weeks, progressing to once a month. Components include goal setting, positive reinforcement and rewards, parental participation in program goals and education, and achieving a negative energy balance through diet and exercise. Pediatric weight management programs may be best suited for stage 3 due to physicians offices often being limited by time, space, and staffing (7).

Stage 4: Tertiary Care Interventions are focused on severely obese children and adolescents. This stage is for patients who have already utilized comprehensive multidisciplinary interventions without significant success. These patients must be deemed mature enough to understand the implications of treatment and committed to

making the lifestyle changes necessary to maintain treatment. Treatments include medication, very low calorie diets and weight control surgery. This treatment must be carried out and monitored by a multidisciplinary team of healthcare professionals (7).

It is recommended that if the child is not making improvements at their current stage after 3-6 months, they should be moved up to the next stage. The exception is moving from stage 3 to stage 4 due to stage 4 being focused primarily on surgery or medication (7).

Childhood Obesity Intervention Programs

The expert committee guidelines for the treatment of childhood obesity aided the growth and development of future childhood obesity clinics. Before the guidelines were published in 2005, other entities were already developing treatment programs. The following table summarizes several of these programs, which were used as the groundwork for the expert committee guidelines.

Table 1: Childhood Obesity Intervention Programs					
Program name	Program Objectives	Description of Intervention	Study Population	Evaluation methods	Results/Outcomes
Committed to Kids (11)	Help overweight and obese youth achieve a healthier weight through increased physical activity, family involvement in meal choices, and self-esteem.	A 4 level team approach facilitated with weekly 2 hours outpatient sessions. Each session includes medical, psychosocial, nutrition, and exercise assessments and goal setting. The intervention was designed for overweight adolescents and their families. Program duration was 1 year, broken into 4 phases of 12 weeks sessions. The 4 phases increased in depth and expectations quarterly.	93 Adolescents 13-17 years of age participated in the program. 56 participated in evaluations.	BMI and %IBW comparison to baseline.	Subject reduced their BMI by approximately 3 points in 10 weeks and by 4 points in one year. %IBW was reduced from 177 +/- 34 to 156 +/- 23.7 at 10 weeks and 141 +/- 20 at 1 year.
Healthworks! (12)	Improve weight status and promote adherence to a more healthful lifestyle.	Weekly group exercise classes. Nutrition and nurse appointments every other week. Monthly parent education classes Initial phase is 5 months. Then a six-month follow-up.	Children aged 5-19 with a BMI percentile greater than the 95th percentile for age and gender that were referred by their primary care physician to the program.	Based on a retrospective chart review of all program participants that completed the first stage. Participants were also grouped according to age 5-10 or 11-19 years old.	Significant improvement in weight and BMI, blood pressure, total cholesterol, LDL cholesterol, triglycerides, insulin, and aerobic fitness.
Operation Zero (13)	Weight maintenance for growing children and adolescents and increased knowledge regarding lifestyle	Weekly one-hour appointments for two months. Follow up of four appointments at three-month intervals.	At risk of overweight or overweight preadolescent and adolescent patients	135 participants between 2001 and 2003 Retrospective	Changes in BMI or BMI percentile were insignificant at completion of the eight-week program compared

	behaviors about nutrition and physical activity.	Appointments take place in a group setting. Family oriented approach incorporating behavior modification, and self-efficacy of patients and parents in regards to nutrition and physical activity.		analysis of long-term weight maintenance compared to a control group.	to baseline. A 6 month and 1 year follow-up showed insignificant increases in weight and BMI percentile for age compared to the control group.
Fit Kids Atlanta (14)	Help children increase physical activity and increase family knowledge of healthy eating and improve self-esteem.	8 classes, no more information provided	Above average weight children and their parents.	Comparison of test scores of families who completed the course to families that were non-completers.	Those that completed the course scored higher on the exam. They also reported higher levels of self-esteem, healthy eating behaviors, and physical activity levels.
Kids N Fitness (15)	Provide children and families with interactive activity based education. The goal is to improve eating habits and increase the amount of physical activity that children participated in after school.	12-90-minute sessions in an outpatient setting. Each session was composed of 45 minutes of exercise for the child while the parents were receiving education regarding the importance of a healthy lifestyle and a supportive environment and a 45-minute nutrition education with the parents and child. Monthly follow-up sessions were optional.	Children and adolescents <18 years of age and >85thpercentile BMI for age and gender. Referred by physician or school personnel.	For those that attended a minimum of 50% of the program sessions. Compared BMI and weight velocity before program participation to after participation Compared answers to a child's health questionnaire that was filled out by parents pre and post program.	Significant reduction in BMI and weight and BMI velocities. In the child's health questionnaire parents reported their children perceived improvements in health and physical function compared to 1-year prior. Fewer limitations to physical performance and lessened bodily pain or discomfort.

Childhood Obesity Program Attrition Rates

Attrition is a common factor in childhood obesity programs. A survey of stage 3 multidisciplinary treatment programs showed the average attrition rate for initial visits is 28.3% and 32.1% for follow-up visits. It also reported that the attrition rates of programs ranged from 5-69% for the initial visit and 10-75.7% for follow-up visits (16). These results are comparable to weight loss program participation in adults with attrition rates ranging from 17.4% to 94% (18,19). Low participation rates decrease the effectiveness and benefits of program participation. Staff of FOCUS on a Fitter Future, a group based childhood obesity program, reported that the majority of patients did not attend even 50% of program follow-up visits (16). The Kids N Fitness program contrasted program participation with BMI and weight velocity status. They noted that program participation was inversely related to BMI and weight velocity (15).

Common barriers to continued program participation include difficulties with transportation, parent and child missing too much work or school, cost of clinic visits, time commitment, and no perceived benefit of the program by the parent or child (16,17). Other indicators of attrition are age (older, less likely to drop out), low education level, history of weight loss attempts (including parent weight loss attempts), and low self esteem (16-18). Often attrition is thought of as lack of commitment by the patient and parent and not necessarily a problem with the program. While patient commitment does affect program participation, a closer look at the program itself is needed to assess whether it is contributing to attrition.

Programs can increase participation by having a clinic specific scheduler, using reminder phone calls for appointments and involving the entire family in the program (16). Other tools used by programs with high retention rates included periodically mailing out educational materials, providing a program orientation, allowing program participation to be open ended, and allowing patients to return to the program if they have dropped out. Designing clinic hours and programming around participants schedules, providing information regarding transportation options and increasing the frequency of program visits can also increase program participation (16).

Attrition is closely linked to program and patient success. Programs should be designed or modified to increase program participation and patient success using the methods mentioned above and assessing other barriers to program participation. A survey of patients and parents would also aid in determining other barriers to program participation and possible solutions. More research regarding ways to increase engagement and decrease attrition in clinics and programs is warranted (16).

Dietary Assessment Methods

There are several assessment methods used to assess dietary intake and nutrition status. Food diaries, food frequency questionnaires and 24-hour recalls are the most commonly used in the clinical setting. A food diary or daily food record is where a patient records all food and drink intake for a specified period of time, generally three to seven days. These records are often filled out at the time of consumption and therefore can be more reliable. Food diaries are good in that you can attain information regarding

the quantity of food consumed, preparation method, and meal/snack structure. Food diaries are often limited by under and over reporting of portion sizes and consumption, unreliable record keeping, knowledge of portion sizes, and literacy level. Food diaries are often tallied regarding calorie and nutrition intake and averaged over the number of days recorded then compared to dietary guidelines and recommendations (20, 21).

Retrospective data regarding food consumption is often obtained through food frequency questionnaires and 24-hour recalls. The food frequency checklist is a form with a list of foods and a set of options for response that are to be checked off to indicate the frequency of food consumption; for example, daily, weekly, monthly. Questionnaires are organized by common nutrient to make evaluation easier. Food frequency questionnaires are beneficial due to the fact that they can be easily standardized to elicit the same information from everyone. Food frequency questionnaires are limited in that they do not take into account meal patterns; knowledge of portion sizes is necessary as is literacy. If the questionnaires are too lengthy participants may not complete the survey accurately or if too short the survey may not collect enough information to be conclusive. Food frequency questionnaires also rely on participants memory of past food consumption.

A 24-hour recall is a nutrition assessment method that entails an interviewer asking a patient what he/she had to eat or drink over the past 24-hours. 24-hour recalls are easy to administer but are limited by a 24-hour period not being representative of daily intake. Limitations include the interviewers ability to capture information regarding portion sizes, preparation methods, and snacking throughout the day. As well as by the

patients ability to remember what they have eaten for the past 24 hours and by underreporting (20,21). Using both food frequency and 24-hour recall methods combined can increase the accuracy of intake assessment (21).

Though these assessment methods are useful in a research setting, they are not realistic for use in a clinical setting (7). This is due to the time and expertise needed to conduct and assess the results of the assessment. Clinical providers often have limited knowledge regarding nutrition and have limited time to spend with the patient (9). Due to the lack of validated clinical assessment tools, several clinical programs have developed reliable surveys appropriate for the clinical setting. These surveys are designed to quickly determine the eating and physical activity behaviors of children in the home environment. The surveys can also be used as a follow-up assessment tool to monitor progress. Similar components of validated survey methods include a brief food frequency questionnaire and questions regarding food behaviors using a Likert or Likert-type scale (22-27).

Patient Progress Survey Methods

Patient progress is generally tracked while patients are actively participating in a program. Once a patient completes a program, information regarding progress stops. In order to determine the long-term effectiveness of a program follow-up data must be obtained. One strategy for collecting long-term data is through a survey.

There are several ways to conduct a survey; the most effective survey methods for long-term follow-up are phone, mail-in and electronic. Mail-in surveys are best used when you have a group of people who are interested in your program, you have accurate

contact information, you have a large population you want to sample and you want to provide privacy for the participant. Mail-in surveys are inexpensive to execute. Limitations include low response rates, literacy level of the participants and not knowing who is actually responding to the survey (28).

Phone surveys are good when you would like immediate information, your population has a phone, when literacy rates are low, and your survey is short. Phone surveys have good participation rates and those being surveyed can ask for more clarification regarding questions. Phone surveys are limited in that they cost more to administer than mail in surveys, more people are needed to administer the survey, and the population must have a telephone (28). Phone surveys can be limited by language barriers, a translator is beneficial when surveying different cultures.

Electronic surveys are generally provided through email. Computers are therefore necessary for surveys to be effective. Internet survey programs such as Survey Monkey have made the electronic survey process simpler. These software programs often tally the results. Electronic surveys are limited by population's access to a computer and email program. Often low-income families do not have Internet or computer access (28).

Several methods can be utilized to increase survey participation. Postcards can be sent to the survey group two weeks in advance announcing that the survey will be coming in the mail soon. Returned postcards due to an incorrect address can help determine how many participants actually still live in the area and are part of the sample population. A phone call a week before an upcoming survey is mailed out can also serve as a more immediate reminder. Follow-up postcards reminding participants to mail in the survey

can help as well. The typical response rate for surveys is 50%, studies have shown that with good follow-up methods response rates can be raised to 70-80% (28).

If cost were not an option, a phone survey would be the most effective to obtain information due to the higher response rate and capability to clarify answers. Research has shown that written surveys can be effective for the 11 to 15 year old age group if the survey is short, to the point and not ambiguous. It is recommended that several pretests be conducted to eliminate bias and errors in questions (29).

Medical Data Recording Methods

As clinicians we are required to document our interaction with our patients. Documentation is important not only to track patient care, communicate with other medical professionals and reduce errors in treatment (30). It is also important to analyze the effectiveness of a course of treatment, facilitate future research and contribute to national epidemiology studies when applicable (31). The large body of information that is collected on every patient is invaluable when it comes to research. The data collected can be analyzed to find better courses of treatment, validate program effort, help receive financial grants to sustain efforts or even win awards for innovative treatments.

It is not only important to collect data, it is important to make sure that data is collected and recorded accurately. Inaccurate data can be misleading to researchers and can lead to the inability to solve research questions and the inability to prove validity of results.

When methods and tools are created for capturing data often the focus is on collecting and storing the data, not on the usability of the data in the future. Immediate data recording needs are addressed: simplicity, ease of recording and only recording what we deem important. It is often an office assistant entering data, not the practitioners themselves. If the person recording data does not have knowledge and skills in health information, health informatics and basic computer literacy, they may not understand the importance of good record keeping or even how to keep good records (32). For this and other reasons, record keeping is often a low priority when it comes to the entire patient care process (33). A well-designed data collection protocol is important to ensure that data is being recorded accurately and effectively.

Common Tools to Collect Patient Information

Paper charts have been the standard for documentation, making it possible to have all patient information from one facility in one place. Though all patient information is in one place, information stored in paper files can be difficult to analyze. Poor handwriting and manual entry of data can cause transcription and translation errors. This can not only lead to poor patient care, but also decrease the validity of data collected from the charts. Physical charts can also be easily damaged or destroyed (34). A study comparing the effectiveness of paper based and web based data collection and management showed that there is a 15% error rate in data entry and coding with paper based recording systems. This error rate increased costs of data collection due to the initial error, time it takes to check and double check entries for accuracy and to update paper records when necessary.

Analysis of web-based recording did not produce any errors. The researchers linked the lack of errors in this particular study to the built in parameters and assistants that guide web-based data entry (35). It is not reasonable to expect that web based recording will always be error free, but this study showed that errors can be dramatically reduced with web recording.

Spreadsheets are often used to collect large amounts of data on numerous patients at one time in one place (36). Master lists with patient information such as birthday, referring physician, contact info, primary language, etc. can be used similar to a database to extract information about patient population. Spreadsheets containing anthropometrics, biometrics and laboratory data can be used to track patient progress and generate overall progress of patients as a whole (30). Common spreadsheet and database programs include Excel, Numbers, and Access. Excel and Numbers produce flat table structures, whereas Access has the ability to link several spreadsheets together to form a database (36).

The design of a spreadsheet contributes to its effectiveness. A common method to create a good spreadsheet and database and ensure that data is recorded accurately is to build parameters into each field. Designating numeric or alpha only fields, setting ranges for data and appropriate formats for data entry (dates, decimal points), and creating drop down menus can guide the data entry process. Parameters can also be used to assign code values to fields, male vs. female for example. (36)

Electronic medical records (EMR) are the new standard for documentation replacing paper charting. EMR's allow easier access to patient information in a standard

format per facility. EMR's can be designed to not only collect patient information, but also make the information usable and facilitate future research. Changes in anthropometrics and biometrics are calculated automatically. Field parameters are built in, ensuring that the data entered is valid. All patient information is in one place and validated along the way. These EMR's form a database of patient information that can be mined for research. EMR's make the research process easier since there is no need to collect data by hand and then record it again on a computer. Built in query options can produce reports that can be uploaded into analysis programs such as SPSS (37). With the migration towards the EMR from paper documentation now mandated by not only the government, but also the medical society we can expect that EMR & electronic health record (EHR) platforms will become more research friendly (38,39).

Medical Data Collection Protocol Development

When creating data collection tools and protocols it is important to make sure that they are easy to use and accessible. If the recording process is too difficult or complex it is likely to be a frustration and will not be used effectively. Those recording the data may cut corners to bypass difficult or tedious entries, decreasing the accuracy of the data collected. Attention to user needs and challenges is important to protocol development and implementation (40).

If utilizing spreadsheets like Excel, patient identifier information must be consistent on all spreadsheets. Referring to the same patient with different identifiers in each spreadsheet is inefficient and can cause transcription errors. When possible, built in

parameters and drop down menus should be used to ease data recording and ensure validity. Determining what data needs to be collected and how it is best collected is critical for research.

Staff may be resistant to changes in data collection procedures. Often, resistance comes from being unsure that the changes are necessary, unfamiliarity with the software being used, sensing an additional workload, and not understanding the importance of the data collected. Proper training and orientation to the new protocol is key to it being utilized effectively. It is recommended that a program include staff in the protocol development process to ensure that it remains easy to use and effective. Using a trial run can help determine if collection techniques are synthesizing data correctly. Maintain good record keeping with periodic reviews of the data tools and staff in-services to review protocol.

The integrity of data collected is strongly influenced by the accuracy of the data collected, use of appropriate data collections methods and tools, and good instructions on how the data should be collected and recorded. Taking the time to develop a good protocol for data collection is key to ensuring that the data collected is usable not only for the clinic, but for research purposes as well.

CHAPTER II

SURVEY RESULTS AND PROCESS

Background

Childhood obesity has been increasing steadily over the past thirty years. Though there are signs that rates are beginning to stabilize, the prevalence of childhood obesity continues to be significantly higher than it was thirty years ago (1). Studies have shown that overweight children and adolescents are more likely to be obese as adults and that obese adults are likely to raise overweight children, a vicious cycle (41). Obesity is a risk factor for numerous chronic diseases such as heart attack, diabetes, renal failure, and fatty liver disease. These conditions are not limited to overweight adults, but can be seen in overweight children as well (6,7).

Lifestyles of today are dramatically different from the lifestyles lived thirty years ago. Television, computers, video games, and other electronic devices have increased sedentary behaviors (42). Foods of minimal nutritional value that are high in calories are inexpensive and have become more prevalent in the diet (43). Children and adults consume less than the recommended servings of fruits and vegetables daily, if any (44,45). Sugary beverages such as soda, sports drinks, and “juice” drinks have replaced water and milk (44,45). The lifestyles of today have also contributed to increased fast food consumption and less physical activity (42,43).

Fit Kids of Arizona is a health initiative provided by Northern Arizona Healthcare to address the problems associated with excess weight. Fit Kids provides education and

counseling to overweight and obese children that have been referred to the program by their physician. The Fit Kids of Arizona program is modeled after the Optimal Weight for Life program (OWL) in Boston (46). The program format is consistent with the expert committee recommendations published in 2007 (7). Families are encouraged to participate in the program as well, since support is needed to make a lifestyle change. Patients and their parents meet with a nurse practitioner, registered dietitian, exercise physiologist and counselor at each visit, these appointments occur every 2-4 weeks and taper off as progress is made. Education is based on making small lifestyle changes that build upon one another over time until graduation is achieved.

Graduation from the Fit Kids program is achieved after the patient has attended the Fit Kids of Arizona program for at least six months and meets the requirements set by each practitioner for graduation. Often patients will meet the graduation requirements for one practitioner, but are still working on other areas of the program. In this case the patient would only have follow-up appointments with practitioners in the areas that still need improvement. In theory, when a child has been actively participating in the program they should be ready to graduate at six months. Many clinic participants do not graduate. Most kids attend clinic for over six months to a year. Throughout this time period they may be making positive changes, but not enough to warrant graduation. Most clinic participants simply stop coming to visits, even when they are close to achieving graduation.

Fit Kids has been in operation for five years. Throughout this time data has been collected regarding patient progress while participating in the program. Follow-up data

regarding the long-term success of patients and patient satisfaction with the program has not been obtained. Information regarding the long-term success of past patients and program satisfaction is needed to assess the efficacy of the program and decide what revisions, if any, are needed. This information will be used to increase program participation and the success of Fit Kids patients and families.

As practitioners we assume we are having a positive influence on our patients futures, though we may or may not see progress while the child is attending clinic visits. This study was designed to determine the long-term success rate for maintaining nutrition behaviors in patients who attended the Fit Kids program for at least six months, regardless of whether or not graduation was achieved.

This project is important because it will not only help to validate the past four years of work Fit Kids has put into the Northern Arizona community, but it will also provide information regarding the effectiveness of a childhood obesity intervention.

Methods

A quasi-experimental study of Fit Kids patients eating behaviors and BMI percentile changes was conducted. Past Fit Kids patients that met inclusion criteria were mailed a ten-question survey asking about current eating behaviors and program satisfaction. The survey was developed based on the dietitian's graduation requirements. Graduation from the nutrition component of Fit Kids is achieved when the nutrition problem determined at the initial visit is resolved and no other nutrition problems are

found. The following indicators are generally used to determine if the patient is ready to graduate:

- Most days of the week follows the portion plate guidelines with at least 1 meal/day (½ the plate vegetables, ¼ the plate protein and ¼ the plate carbohydrates).
- ≤ 1 sugary beverages/week (Gatorade, soda, juice, chocolate milk, sweetened iced tea, etc.). 1 beverage = 8 oz.
- Drinking at least 3-8 oz. cups of water/day.
- Following a structured meal/snack pattern ≥ 5 days/week (3 meals/day, 1-3 snacks, protein included with meals and most snacks).
- ≤ 1 time/week eating out of the household.

Study Population

The final inclusion criteria for this study included children who participated in the Fit Kids for at least six months, and that were between the ages of 8-14 when they began the program, and started the program six months after inception and have been out of the program for at least one year.

Survey Process

The initial inclusion criterion was for children between the ages of 9-12 upon entry to the Fit Kids program. The initial potential cohort included 74 participants. These children were mailed the first wave of survey packets. The survey packet included a letter

to the parents explaining the purpose of the study, a parent consent and child assent form, the survey, self addressed stamped envelope, and copies of the consent and assent forms for the parents records.

Due to the small amount of patients that fit the initial inclusion criteria, the study was revised to include children between the ages of 8-14. This expansion added an additional 40 children to the potential study list. Survey packets were mailed out once again. After one month two survey packets had been returned. The protocol was amended for a third time to include phone calls to the parents of the children that met the inclusion criteria to encourage participation and update mailing addresses if applicable. After the phone calls were made a third set of surveys were mailed out. Parents were called again two weeks after the third mailing to ensure that they had received the survey packet and see if they had any questions. Efforts to increase response rate were minimally effective.

Survey Response Rate

One hundred and fourteen children met the inclusion criteria and were mailed survey packets. Completed survey packets and were received from nine children and were entered into the final cohort. Three surveys were returned with incomplete consent/assent forms, 20 survey packets were returned due to change of address, and two children opted out of the study by mail. Response rate was 7%. Literature suggests an average response rate of 50% for mail in surveys. The response rate for this study was well below average.

Data Collection

The children that returned completed survey packets were entered into the final research cohort. The medical charts for those in the cohort were reviewed to collect information regarding BMI percentile and applicable eating behaviors at introduction to the Fit Kids program and at their final Fit Kids appointment.

Patients' referring physicians were contacted to gain the most recent height and weight recorded in the patient chart. BMI percentile was calculated using this height and weight.

After data collection was complete all patient identifiers were removed from the data collection worksheet and patients were assigned a code. The key to the code was kept separate from the data in an effort to protect patient information and to decrease research bias.

Data Analysis

Survey Information

To determine the change in behavior over time a scoring rubric was developed based on the survey response options. Healthier behaviors are scored higher than less healthy behaviors. The eating behavior responses collected from the initial and final nutrition assessments while the patient was participating in the Fit Kids program did not necessarily match the survey response options. This is due to individual reporting from patients during clinic assessments. In this case points were averaged. See figure 1.

Figure 1: Survey Questions, Response Options, and Scoring Rubric					
Question	1: How many days per week do you use what you learned about the Portion Plate to choose your foods?				
Answer	0	1-2	3-4	5-6	Daily
Score	0	1	2	3	4
	2: How many sugary beverages do you normally drink?				
Answers	0-2 x week	3-4 x week	daily	2-3 a day	4 or more a day
Score	4	3	2	1	0
	3: How many days a week do you eat a healthy breakfast?				
Answer	0	1-2	3-4	5-6	Daily
Score	0	1	2	3	4
	4: How many snacks do you eat a day?				
Answer	I do not eat snacks	1-2	3-4	4 or more a day	
Score	3	2	1	0	
	5: How often do you eat out at restaurants?				
Answer	Never	1 time a month	1 time a week	3-4 x week	Everyday
Score	4	3	2	1	0
	6: How often do you eat fruits and vegetables?				
Answer	0 – 2 times a week	3 – 5 times a week	Daily	2 – 3 times a day	4 – 5 times a day
Score	0	1	2	3	4
	7. How often do you eat second helpings at meals?				
Answer	Rarely/Never	1 time a week	2-3 times a week	Everyday	Every meal
Score	4	3	2	1	0

A high total score indicates healthy eating behavior; low total scores indicate less healthy eating behaviors. Total scores from initial, final and current behaviors were compared to find recidivisms or continued progress. The scores for each question in the initial, final and current categories were averaged to find if certain behaviors declined or improved after leaving the program. A t-Test was conducted to find the statistical significance of changes in eating behaviors.

Current BMI percentile was compared to the initial BMI percentile taken at program entry & final BMI percentile taken at the patients' last Fit Kids appointment. The percentage of change between initial, final and current BMI percentile was calculated. A t-Test was conducted to find the statistical significance of changes BMI percentile changes over time.

Weight satisfaction was compared to BMI percentile to find any connection. Survey responses to weight satisfaction, happiness with the Fit Kids program and areas for change were recorded separately and are not part of the nutrition behavior scoring rubric.

Results

Nutrition Behavior Results

Eighty-five percent of kids showed improvement in eating behaviors during program participation. Two participants had incomplete initial assessment information and were not included in the calculation. Two out of nine children, 22%, continued to show improvement after leaving the program. Seventy-seven point eight percent of children reported an increase in unhealthy eating behaviors after leaving program.

Table 2: Survey Questions and Scores from Initial & Final Assessments and Current Survey Responses

Code #	Initial Portion Sizes from 24 hr recall	Score	Final Portion Plate Use	Score	Current Portion Plate	Score	Initial Sugary Beverage Intake	Score	Final Sugary Beverage Intake	Score	Current Sugary Beverage Intake	Score
1	Normal	4	2-3 x d	4	0	0	1 x wk	4	3 x wk	3	0-2 x wk	4
2	large portions	2	2-3 x wk	1.5	3-4 x wk	2	3 x d	1	1-2 q d	1.5	2-3 x d	1
3	large portions	2	daily	4	q d	4	1 x d	2	2 x wk	4	3-4 x wk	3
4	norm, minimal veg	3	2/3 meals/day	4	5-6 / wk	3	2-3 8 oz./d	1	1 q 2 wk	4	3-4 x wk	3
5	large, mostly CHO	1	1-2 x wk	1	5-6 x wk	3	1-2 x wk	4	0	4	3-4 x wk	3
6	large, minimal veg	1	mostly CHO	1	q d	4	1-2 x d	2	0	4	0-2 x wk	4
7	moderate -large	3	most days	3	3-4 x wk	2	12 oz. / d	2	1-2 x wk	4	0-2 x wk	4
8					0	0			0	4	0-2 x wk	4
9	normal	4	skipping meals		q d	4	1 x wk	4	1 x wk	4	0-2 x wk	4
	Ave Score/Question	2.5		2.64		2.44		2.5		3.61		3.33
Code #	Initial Breakfast Intake	Score	Final Breakfast Intake	Score	Current Breakfast Intake	Score	Initial Snack Intake	Score	Final Snack Intake	Score	Current Snack Intake	Score
1	q d	4	q d	4	q d	4	1 x d	2	1 x d	2	0	3
2	1 x wk	1	1-2 x wk	1	3-4 x wk	2	3-4 x d	1	1-2 x d	2	3-4 x d	1
3	2 x d	1	q d	4	q d	4	1-2 x d	2	1-2 x d	2	1-2 x d	2
4	q d	4	q d	4	5-6 x wk	3	1/d	2	1/d PBJ	2	1-2 x d	2
5	q d	4	q d	4	5-6 x wk	3	2 x d	2	1 x d	2	1-2 x d	2
6	q d	4	q d	4	q d	4	0	3	0	3	none	3
7	4 x wk	2	4 x wk	2	1-2 x wk	1	1 x d	2	1 x d	2	3-4 x d	1
8			q d	4	5-6 x wk	3			1 x d	2	1-2 x d	2
9	q d	4	q d	4	5-6 x wk	3	1-2 x d	2	2 x d	2	1-2 x d	2
	Ave Score/Question	3		3.44		3		2		2.11		2

Table 2 Continued

Code #	Initial Restaurant	Score	Final Restaurant	Score	Current Restaurant	Score	Initial Fruit/Veg	Score	Final Fruit/Veg	Score	Current Fruit/Veg	Score
1	1 x wk	2	<1 x wk	2.5	1 x wk	2	3-5 x d	3.5	5-6 x d	4	0-2 x wk	0
2			1 x wk	2	1 x wk	2			3-5 x d	3.5	q d	2
3	1 q mo.	3	1 q mo.	4	1 x mo.	3	1-2 x d	2	2-3 x d	3	2-3 x d	3
4	2-3 x wk	1.5	1 q 2 wks.	2.5	1 x wk	2	>5	4	>5	4	2-3 x d	3
5	1 x mo.	3	0	4	1 x mo.	3	2-4 x d	3	1-2 x d	2	3-5 x wk	1
6	1-2 x wk	2	2-3 x wk	1.5	never	4	1 x d	2	2 x d	3	4-5 x d	4
7	1-2 x wk	2	1 x wk	2	1 x mo.	3	1 x d	2	4 x d	4	daily	2
8			rarely	4	1 x mo.	3			4-5 x d	4	daily	2
9	1 x mo.	3	<1 x wk	2.5	1 x mo.	3	3 x d	3	3-4 x d	3.4	daily	2
	Ave Score/Question	2.36		2.78		2.78		2.79		3.43		2.11

Code #	Initial Seconds	Score	Final Seconds	Score	Current Seconds	Score	**Initial Total Score**	**Final Total Score**	**Current Total Score**	Notes
1	1-2 x wk	2.5	2 x wk	2	no comment		22	21.5	16	
2			rarely	4	2-3 x wk	2	5	15.5	11	INCP
3	daily	1	rarely	4	2-3 x wk	2	13	25	21	
4	0	4	veg only	3	2-3 x wk	2	19.5	23.5	18	
5	4-5 x wk	0.5	0	4	1 x wk	3	17.5	21	17	
6	2-3 x wk	2	0	4	never	4	16	20.5	26	
7	2-3 x wk	2	sometimes	3	2-3 x wk	2	15	20	14	
8			rarely	4	rarely/never	4	0	22	16	INCP
9	2 x wk	2	<1 x wk	3.5	1 x wk	3	22	19.4	20	
	Ave Score/Question	2		3.5		2.75	14.44	20.93	17.67	

Table 3: Average Scores: Initial & Final Assessments and Current Survey			
Question	Initial	Final	Current
1: How many days per week do you use what you learned about the Portion Plate to choose your foods?	2.5	2.64	2.44
2: How many sugary beverages do you normally drink?	2.5	3.61	3.33
3: How many days a week do you eat a healthy breakfast?	3	3.44	3
4: How many snacks do you eat a day?	2	2.11	2
5: How often do you eat out at restaurants?	2.36	2.78	2.78
6: How often do you eat fruits and vegetables?	2.79	3.43	2.11
7. How often do you eat second helpings at meals?	2	3.5	2.75
Total scores *	17.15 +/- 7.08	21.42 +/- 2.53	18.41 +/- 4.08
*Paired t-tests indicated: 1) means of initial & final nutrition behavior scores produced a p value of .03. 2) means of final & current nutrition behaviors scores produced a p value of .0348 3) means of initial & current nutrition behaviors scores produced a p value of .106.			

Average survey scores at final assessment (21.42) were higher than at the initial assessment (17.15), showing that the patients were making healthy nutrition behavior changes while participating in the program. Comparison of current behaviors (18.41) to final (21.42) shows a decline in healthful nutrition behaviors after leaving the program, but a slight improvement is maintained over initial nutrition behaviors 17.15:18.41 respectively. The three t-tests show that though program participation helped improve healthful nutrition behaviors significantly in the short term, there is no statistical significance of program participation after leaving the program.

BMI Percentile Results

Table 4: BMI percentiles: Initial & Final Assessments and Current from Physician

Code #	Initial Apt	Final Apt	Initial BMI%ile	Final BMI%ile	Current BMI%ile	Change in BMI%ile final to current	Initial to current	Weight Satisfaction
1	1/19/10	11/14/11	98.7	98.1	98.6	1.01	1.00	SD
2	12/22/09	5/3/11	99	98.9	99.1	1.00	1.00	NAD
3	12/21/10	7/24/12	98.2	97.2	93.6	0.96	0.95	SA
4	8/26/09	5/11/11	97	95	84.9	0.89	0.88	A
5	12/15/10	8/1/12	96	94.8	89.3	0.94	0.93	NAD
6	1/3/12	10/9/12	98	94.9	Wt. same as last Apt	n/a	n/a	SA
7	9/24/10	9/18/12	97.7	97.5	96.8	0.99	0.99	A
8	9/22/09	9/1/11	98.8	97.7	n/a	n/a	n/a	NAD
9	12/7/10	3/15/12	97.9	96.6	n/a	n/a	n/a	NAD

One hundred percent of children maintained or decreased their BMI percentile during program participation. Sixty-six percent of children either maintained or decreased their BMI percentile after program participation. Thirty-three percent of children showed an increase in BMI percentile after program participation. Fourteen percent of children showed an increase in BMI percentile from their initial appointment to current program participation. BMI percentile information was incomplete for 3 of the 9 participants and not included in these calculations. No connection between BMI percentile change and survey score was found. There was no connection found between current BMI percentile and weight satisfaction reported on the survey.

Table 5: Comparison of Initial to Final BMI Percentile*		
Initial	Final	
98.7	98.1	
99	98.9	
98.2	97.2	
97	95	
96	94.8	
98	94.9	
97.7	97.5	
98.8	97.7	
97.9	96.6	
97.92222	96.74444	Ave
0.895393	1.430704	Std Dev
* Paired t-test indicated p value of .005		

Comparison of average initial & final BMI percentiles produced an average BMI percentile decrease of 1.177778. Any decline in BMI percentile is considered a success, but children must decrease their BMI percentile below the 95th percentile to no longer be classified as obese.

Program participation can help decrease BMI percentile in patients currently participating in the program at a statistically significant level. A t-Test was not completed to compare follow-up BMI percentile to initial and final BMI percentiles due to the lack of data available.

Responses to favorite thing about Fit Kids included: Weekly walking groups, summer camp, being involved and seeing practitioners that helped along the way, encouragement from others, learning about eating healthy, fun. Only one response was recorded for least favorite thing at Fit Kids: Group interventions, otherwise no, none or nothing was the response.

Discussion

While participating in the Fit Kids program, scores show that all nutrition behaviors improved at least slightly. The only nutrition behavior that remained stable after program participation was the frequency that children ate at restaurants. This could be due to the economy or misinterpretation of what eating out at a restaurant means.

Often patients' families did not think of fast food as eating at a restaurant. The use of the portion plate and fruit and vegetable consumption was lower after program participation than at initial assessment. This could be due to the survey format not having explanations regarding the questions. Eating behavior frequency of sugary beverages, breakfast, snack and seconds all declined after program completion, but remained better than at the initial assessment.

BMI percentiles either stayed the same or decreased for the majority of participants after leaving the program. This could have some bias in that those that responded to the survey could be more confident in their progress after leaving the program, but the weight satisfaction responses showed that only 50% of participants are satisfied with their current weight.

Limitations to survey response include small sample size, low response rate, comprehension of survey questions and response options (literacy, primary language), not knowing exactly who filled out the survey (it is likely that the parents at least assisted in the process), incomplete data from initial and final Fit Kids assessments, as well as surveys that were returned incomplete and incomplete BMI percentile data collected from the patients' physician.

Due to the low response rate of participants' results can only be viewed as exploratory and further research in needed to determine the impact of the Fit Kids program. With that said, there is still value in the study. The trends show that most participants had a hard time continuing healthy nutrition behaviors after leaving the

program. This mildly suggests the need for a follow-up protocol with patients annually or every six months to help them continue to succeed.

The researcher was expecting a higher survey response rate of at least 50% due to the relationship that Fit Kids builds with families while they are participating in programing. This “buy in” to the program was hoped to carry over after the patient had left the program. The low response rate may reflect the idea that though a patient and family can be invested while participating, once they are no longer attending the program the “buy in” is gone.

Though several steps were taken to increase response rate, there are a few more things that could have been done. The inclusion criteria could have been expanded to include children of all ages instead of just the 8-14 age bracket. A postcard introducing the study could have been mailed a week before mailing out the survey packets. Information could have been available in both English and Spanish. The surveys could have been conducted by phone instead of mail and a Spanish interpreter could have been used to address questions. An email or Internet based survey would not have been effective since a large percentage of the sample population do not have computers or Internet access in their homes.

Through the act of compiling the potential participant list and collecting data from the patient charts of those in the final cohort it was realized that the way that Fit Kids collects and maintains data could be improved to better facilitate research in the future. Fit Kids has not been able to produce any data to support the program efforts. Past

attempts at synthesizing changes in BMI percentile and laboratory improvements in patients have been inaccurate.

Fit Kids utilizes several methods for collecting and storing patient information. Each patient has a physical medical chart at Fit Kids. At one clinic this chart contains all of the documentation of a patients visit including practitioner chart notes. At the other clinic the charts are similar except that all documentation from practitioners is sent to medical records to be scanned into the patients electronic medical record (EMR). Often the documentation cannot be found in the patients EMR. The first clinic does not send anything to medical records to be added to the patients EMR. The only information found in the patients EMR is the appointment date and billable services. Neither clinic uses the patients EMR as a way to store data and form a collective medical record of patient's progress. Both clinics use excel spreadsheets to record information on each patient to form a database. Spreadsheets that both clinics use include: a master patient list, appointment cancellation, BMI percentile success and laboratory tracking. Individual practitioners use a blood pressure tracking spreadsheet, body analysis results, laboratory comparison and Rockport walk test results. None of these spreadsheets are linked to one another. Patient identifiers are different for several of the spreadsheets making it complicated to find complete data on any one patient. These spreadsheets are all maintained by different people with varying levels of experience in data collection and data management. Data is frequently entered incorrectly or inconsistently. No one is responsible for checking or double-checking data entry. The spreadsheets do not have

any control methods in place to ensure accurate data recording (examples: numeric only field or a text only field).

Conclusion

The small sample size of nine past patients is not enough to produce robust data that will validate the Fit Kids programs efforts. As stated earlier the data collection methods of Fit Kids is less than desirable making it even more difficult to draw conclusions from the survey data. Though the data collected is small it still provides some insight that Fit Kids should develop a post program protocol for increasing participant success long term. The research process provided some insight into how to complete research at Fit Kids in the future and what changes need to be made to Fit Kids data collection and storage protocols to facilitate future research projects that are meaningful.

CHAPTER III

DEVELOPMENT OF PROTOCOL FOR DATA COLLECTION

Fit Kids currently uses several methods to record and store information regarding patients: physical paper charts, excel spreadsheets and Cerner, an electronic medical record (EMR) system. Upon admission to the program the office coordinator schedules an appointment with the patient in Cerner, which creates the patients EMR. They also enter the patient information into the master patient list spreadsheet and create a paper chart for the patient. When the patient attends their first visit, the office coordinator updates the master patient list accordingly and adds the patient to the appointment cancellation tracking and tracking success spreadsheets. The tracking success spreadsheet calculates the child's BMI percentile changes throughout program participation. The Fit Kids practitioners fill out paper initial and follow-up assessment forms to document the patient encounter. These are either placed into the physical chart or sent to medical records to be scanned into the patients' EMR depending on clinic. At each subsequent visit patient information is updated in all of the excel spreadsheets previously mentioned and in any practitioner spreadsheets that have been created; blood pressure and lab tracking for example. Fit Kids has been collecting patient information in this manner from the beginning. Over the past several years there has been a lot of information collected and stored, but the methods used to collect and store information have not been consistent from practitioner to practitioner, spreadsheet to spreadsheet. Thorough training

on the importance of accurate data collection has been lacking and many practitioners have created shortcuts or simplified processes for entering data that may not be consistent with the original intent of the spreadsheet or database. The lack of protocol has led to inconsistencies in data collection throughout the years and these inconsistencies have made it difficult to find trends in patient success and in developing research studies that could validate the program efforts.

Fit Kids is a grassroots initiative focusing on the childhood obesity epidemic. The program was developed using one model, the Optimum Weight for Life (OWL) clinic. Those involved in the initial set-up of the Fit Kids program had little experience in data collection and research. Their primary focus was to get the program up and running, not on the research that would occur later. Patient charts and spreadsheets were developed to fulfill the specific needs at that time. Practitioners were allowed to create a spreadsheet whenever needed without any guidelines for design or the type of data that should be included on the spreadsheet. As the program expanded into two clinics, the second clinic was allowed to develop their own system for patient charting, design their own master patient list and other spreadsheets that should have been the same for both clinics.

Over the past several years Fit Kids has been trying to find measures or markers within its patient population that validate the programs efforts. Attempts to synthesize simple reports like BMI percentile changes for all active patients or quarterly reports on missed appointments have produced mixed results. After double-checking the calculations, inconsistencies are often found and the results deemed invalid. Many of these miscalculated numbers have maintained funding for the program, but as the number

of child obesity programs continues to grow obtaining funding has become more competitive. Outside researchers have attempted to find positive results from program participation, but have instead found that the data is incomplete and due to the inconsistencies virtually unusable. In order to ensure that the program can remain financially viable a sound data collection protocol needs to be developed that will facilitate valid research in the future. Companies that have approached Fit Kids to franchise the use of the clinic model have backed out due to the lack of research stating that the clinic model is successful.

In order for Fit Kids to consistently collect reliable data a protocol needs to be developed. Spreadsheets and data collection methods should be standardized and designed to reduce input errors. Staff should be trained to use standardized measurements and proper methods for data collection. When possible electronic medical charting should be used instead of spreadsheets to reduce the duplication of efforts and ensure the validity of data recorded.

Figure 2 includes a list of the current spreadsheets in use and the data collected in each. Note that each spreadsheet has a different way of identifying patients. For example a patient can be identified by their last name, first name, last name & first name, last name and first initial, initials, medical record number, birthdate, or simply name. Information can be freely entered into each field without producing an error in the field, BMI and BMI percentile are automatically calculated from the height and weight fields and therefore an exception. This means that data can be entered incorrectly into the incorrect field without anyone realizing.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	Master patient list																
2	Location	Case Mngr	Stat	Status Date	DOB	ID Number	Gender	Last Name	First Name	Parent's Name	Address	City	State	Zip	Home Phone	Cell Phone	E-mail
3																	
4	Appointment Cancellation Data																
5	Appoint. Date	Month	0	Type	Patient	Confirm Date	Confirm Time	Confirm Type	PostCard Sent	Attended		Date Cancelled		Resched. Date	Comments	F/U Call Date	Reason
6																	
7	Tracking success																
8	DOB	First name	Last Initial	Age	Initial weight	Current weight	Difference	Initial BMI	Current BMI	Difference	Initial BMI %	Current BMI %	Difference	# of visits	Date of current visit	Date of initial visit	
9																	
10	Lab tracking																
11	QUARTER	Location	Notes	Patient ID	Date of Birth	Initials	Lab Date	Age at Lab Draw	BUN	Creatinine	BUN/ Creat Ratio	ALT	Total Chol	Triglycerides	HDL Chol	LDL Chol	TSH
12																	
13	Lab comparisions																
14	Location	Patient ID	Date of Birth	Initials	Lab Date	Age at Lab Draw	BUN	Creatinine	BUN/ Creat Ratio	ALT	Total Chol	Triglycerides	HDL Chol	LDL Chol	TSH	Glucose	HgbA1c
15																	
16	BIA assessments																
17	Name	Client # Test 1	Client # Test 2	Date	Next Test	Sex	Age	Weight (kg)			Height (cm)			Waist (cm)			Hip (cm)
18	Test #	Name	Client #	Date	ext Test Dat	Sex	Age	Weight (kg)	Height (cm)	Waist (cm)	Hip (cm)	Body Fat %	Water %	BMR (kcal)	EAR (kcal)	BMI	
19																	
20	Rockport walk test results																
21	Name	Date	Age	Weight	Final HR	Time	METS	VO2 MAX	Rating	Improvement							
22																	
23	Blood Pressure testing																
24	Last Name, First Name	DOB	Gender	Date	SBP	DBP	SBP%	DBP%									
25																	
26																	

Figure 2: Compilation of Current Fit Kids Spreadsheets

Recommendations for Data Collection Protocol

Proposed standardization of spreadsheets includes standardizing patient identifiers and designing spreadsheets with parameters for specific fields that would increase the accuracy of data entered. If data was entered into the wrong field or in the wrong format the field parameters would show an error. Examples of field parameters include drop down menus for sex and yes/no questions; numerical ranges for age at referral, laboratory values, and BMI; date formatting and date ranges for date specific fields as well as formatting specific fields to only accept alpha or numeric characters. Header and column panes are “frozen” so that you are able to see the patient and the category you are typing in at the same time as you scroll through the spreadsheet. Freezing panes decreases the chance of entering information into the wrong field. Figure 3 is a sample spreadsheet

template with standardized patient identifiers and specific field parameters. This figure shows other recommended fields parameters as well.

	A	B	C	D	E	F	G	H	I
1									
2	**Spreadsheet Template**								
3	MRN #	DOB	Last Name	First Name	Age	Sex	Referral Date	Age at referral	
4	Numeric Field	Date field	Alpha Field	Alpha Field	Auto populated	Drop down	Date field	Age range	
5		date range				Male	Date range		
6						Female			
7									
8	**Fields that could have drop down menus**								
9	Location	Case Manager	Status	City	State	Zip	Ethnicity		
10	Quarter	Language	Sex	Rating	Activity Release	Photo Release			
11									
12	**Any field that should have only numbers should be defined as numeric**								
13	**Any field that should only have letters should be defined as alpha**								
14									
15	**Fields that should have a numerical range**								
16	SBp	DBP	SBP%	DBP%	HR	All lab values	Dates	METS	VO2 MAX
17									
18	**Autocalcluated fields with a defined range**								
19	BMI	BMI%ile							
20									

Figure 3: Recommendations for Future Fit Kids Spreadsheet Design

Training regarding the new spreadsheet design and protocol is necessary to ensure that the spreadsheets will be used as intended. It is important for employees to understand that the accuracy of the data entered is just as important as patient care. Staff training for the revised spreadsheets will include:

- Rationale for developing a data collection protocol.
- To increase the validity of data entry.
- Review the standardized spreadsheet layout and features.
- Explain the different parameters within the spreadsheets and the reason for them.

Use of the new spreadsheet design should start immediately. Current spreadsheet data should either be migrated into the new spreadsheets or revised to fit the new

standardization. Spreadsheets maintained by individual practitioners should be evaluated and revised to comply with protocol standards. Past spreadsheets that are no longer in use should be migrated into the new spreadsheets and then deleted. If this is not possible, they should be revised to fit the minimum standardization requirements. A periodic review of spreadsheet use will ensure continued compliance with the protocol.

Fit Kids is part of the Northern Arizona Healthcare umbrella and therefore has the ability use an EMR to document patient encounters. A patient EMR is already created through the process of scheduling a Fit Kids appointment. Utilization of this technology to document patient visits can dramatically improve data collection techniques and accuracy. Migration towards the EMR has been mandated by the Affordable Care Act and strongly supported by the American Medical Association. It is a big task to enter all of the old patient information into the EMR, doing so in phases is recommended. Discharged patient charts should be sent to medical records to be scanned into the applicable patients EMR. Use of an EMR for current patients should start now. When these patients are discharged the remainder of their chart should be sent to medical records to be scanned into the EMR system. Sending their charts to medical records after discharge will help avoid the loss of immediate access to current patient information that often occurs when files are in transit.

EMR databases are designed to be queried; therefore the information that is already recorded in the EMR does not need to be recorded again in a spreadsheet. This will reduce the duplication of efforts and increase the validity of information entered. When future research is needed, a query of fields in the EMR can produce the database

needed to do research. Often this database can be exported from Cerner and imported into statistical analysis programs such as SPSS.

Accurate data recording is an important part of tracking patient treatment and progress, but also for the future of research. It is important that Fit Kids update their data collection methods to facilitate future research possibilities. Fit Kids has access to the tools necessary to update their spreadsheets and begin using the EMR effectively.

Application to Similar Programs

When starting a program of any sort, whether it is in the medical or clinical field, the emphasis is normally on getting off the ground and running, not on the data that should be collected or how it will later be used. This shortsightedness may not show up until the information needs to be used to learn more about the programs success. If data is collected in an inconsistent manner it might be hard to find successes or determine trends. If too little information is collected there may be holes in the research process and the need to backtrack to find the correct information may be necessary.

Well-designed data recording methods make data entry easier, produce valid entries, and reduce the duplication of effort or the need to revise the recorded data later on. When designing a data recording protocol it is important to make sure that all information is collected, and that is collected in the correct manner. Be aware of the process of entering information and think about what techniques or tools could make the job easier and increase accuracy.

When planning a program, keep the end in mind, not just was needed at that moment in time. When funding is necessary a solid database will provide the information needed to apply for grants or validate budgetary needs. The effectiveness of a program may need to be proved to keep it from being discontinued or to apply for a program development award.

The time and money spent revising and updating inaccurate databases and spreadsheets after the fact is better spent in the beginning. Enlisting an information technology (IT) or research professional for the development of data collection and storage techniques is recommended. An experts knowledge regarding the type of information that should be collected as well as the most effective methods for storing data will help ensure that the information is usable, not only to those involved with the program, but for researchers as well.

An inaccurate database should be revised to make the previously collected data usable. Work with a research professional, possibly from a local university, to provide an outside view of the situation and determine how the information is going to be used.

- Determine what information is currently collected and what needs to be collected to ensure a complete database.
- Determine the information needed to synthesize monthly, quarterly, & yearly reports.
- Duplicate data collection methods should be streamlined.
- Determine what tools are already available: spreadsheets, databases, EMR software.

- Determine the use of these tools to increase the quality of data recorded.

Make simple changes to spreadsheets that create uniformity and consistency, this will help ensure that several spreadsheets will work together. Enlist a local researcher to review current methods and determine if information is missing. Areas with incomplete information should be revised. Work with the staff members that currently use the spreadsheets to gain perspective on data entry and ease. Elect a staff member with a good working knowledge of spreadsheets to be in charge of maintaining the spreadsheets and building in parameters that will help ensure accuracy and validity of the data entered.

Electronic health records (EHR) are now required, utilizing this technology can decrease the need for spreadsheets and other databases. Determine access to an EHR software system, ask the facilities IT professional how the EHR can be used to meet program needs. Attend courses on the proper use and the capabilities of the software program. Learn how to extract information from the software program and determine what spreadsheets or other databases the EHR can replace. Most EHR systems have powerful search engines imbedded in the design that can produce robust data when imported into a statistical analysis software program such as SPSS.

After the data collection protocol has been designed, it should be revisited periodically to ensure that it is being used effectively and that it is up to date on current scientific standards. Revisions to the protocol should happen in a timely manner and recorded so that a researcher can find out when the changes took place.

As health professionals we use evidenced based practice to provide the best care for our patients. Research is continuously occurring and advancing best practices. Programs targeting the childhood obesity epidemic continue to grow. The expert committees scientific based standards, released in 2007, have helped facilitate this growth by providing direction for treatment. With the growth in programs targeting obesity, there is more research available on effective methods for treatment than when the standards were created. The information and research that the Fit Kids of Arizona could produce after revising the current data collections methods may help reshape the way we treat childhood obesity today and in the future.

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APPENDIX

INITIAL ASSESSMENT FORM FOR THE FIT KIDS OF ARIZONA PROGRAM

AGE: **GRADE:** **SCHOOL:**

ALLERGIES: **IN ATTENDANCE:**

HABITS

1) Have you made any positive lifestyle changes in the last 2 months?	☐ More fruits and vegetables
	☐ Improved portion control
	☐ Increase in physical activity
	☐ Other:

MEALS/ FOOD INTAKE

2) Who does most of the food shopping for the family?	
3) Who cooks most of the meals in the family?	
4) Do you participate in government funded food programs (ie: food stamps)? ☐ **YES** ☐ **NO**	
5) How often does your child eat out at restaurants of any kind?	☐ Two or more times per day ☐ Once a week ☐ Once a day ☐ About once a month ☐ Several times per week ☐ Less than once a month **Locations:**
6) Does your child usually eat breakfast?	☐ **YES.** How many days per week?
7) Who makes the final decisions on the food choices brought in the house?	☐ **PARENTS** ☐ **CHILD** ☐ **GRANDPARENTS** ☐ **SIBLINGS** ☐ **OTHER**
8) Does your child drink soda?	☐ **YES**. How many per day? ☐ Regular soda: _____ ☐ Diet soda: _____
9) Does your child drink juice or other sugary beverages? 10) Does your child drink water?	☐ **YES**. What kind? How much per day? ☐ **YES**. How much per day?
11) Does your child drink milk?	☐ **YES**. How much per day? ☐ Fat-free or skim milk: _____ ☐ 1% or low-fat milk: _____ ☐ 2% or reduced fat milk: _____ ☐Whole milk: _____

	☐ Soy milk:
12) Types of fruit consumed: Frequency of intake:	13) Types of vegetables consumed: Frequency of intake:
14) Types of snacks: Frequency of snacking:	15) What kinds of cereal does your child eat? How much? How often?
16) How often does your child eat sugary desserts?	17) Does your child share food with friends at school?
18) What kinds of oil do you cook with?	
19) Name 3 foods in your refrigerator: Name 3 foods in your pantry:	
20) Does the family sit down to eat meals together?	
21) Is the TV, computer or video games usually on during meal/snacks times? ☐ **YES** ☐ **NO**	
22) Does your child ever take food to eat in his/her room? ☐ **YES** ☐ **NO**	
23) Does your child ever sneak food or eat food late at night? ☐ **YES** ☐ **NO**	
24) Describe your child's food portions: 25) Does your child ever ask for seconds? ☐ **YES** ☐ **NO** **EXPLAIN**	
26) Describe the speed at which your child eats?	
27) Is your child always hungry? ☐ **YES** ☐ **NO**	
28) Is good behavior rewarded with food? ☐ **YES** ☐ **NO**	

EXPLAIN		
29) Do you think your child ever eats when feeling…		
☐ **BORED**	☐ **SAD**	☐ **STRESSED**
☐ **HAPPY**	☐ **ANGRY**	☐ **OTHER**

24 HOUR RECALL		
30) Morning:	Afternoon:	Evening:

30) Are weekends different from weekdays?	☐ **NO** ☐ **YES**

31) On a scale of 1 to 10 how motivated are you to making healthy changes?	1 2 3 4 5 6 7 8 9 10 not very at all — somewhat
32) How confident are you in your ability to make healthy changes?	1 2 3 4 5 6 7 8 9 10 Not very at all — somewhat
32) Labs: Fasting ☐ **YES** ☐ **NO**	CHOL:____ TRIG:____ HDL:____ LDL:____ VLDL:____ GLUC:____ Hgb AIC:____ Insulin:____ ALT:____ AST:____ TSH: ___ Free T4:_____

TREATMENT/ GOALS

NUTRITION PROBLEM #1		
Nutrition Diagnosis:		
Problem: ☐ Excessive energy intake ☐ Excessive oral intake ☐ Undesirable food choices ☐ Food- and nutrition-related knowledge deficit ☐ Limited adherence to nutrition-related recommendations ☐ Not ready for diet/lifestyle change ☐ Limited food acceptance ☐ Other:_____	**Etiology:** ☐ Food and nutrition related knowledge deficit concerning energy intake ☐ Unwilling or disinterested in reducing energy intake ☐ Lack of food planning, purchasing and preparation skills ☐ Lack of prior exposure to accurate nutrition related information ☐ Loss of appetite awareness ☐ Limited intake of recommended foods ☐ Limited practice of healthful food/drink portions ☐ Other: _____	**Signs/ Symptoms:** ☐ Dietary recall revealing intake of high caloric density or large portions of foods/beverages at meals and or snacks ☐ Frequent, excessive fast food or restaurant intake ☐ Verbalizes inaccurate or incomplete information ☐ No prior knowledge of need for food and nutrition related recommendations ☐ Demonstrates inability to apply food and nutrition related information ☐ Denial of need for food and nutrition related changes ☐ BMI %: ☐Other: _____
Nutrition Prescription:		
Nutrition Intervention: ☐ Brief nutrition education ☐ Comprehensive nutrition education Regarding: ☐ Modification of distribution, type, or amount of food and nutrients within meals or at specified times	Nutrition Counseling Using: Strategies: ☐ Motivational interviewing ☐ Goal setting ☐ Problem solving ☐ Relapse prevention ☐ Rewards/Contingency management ☐ Social Support ☐ Stimulus Control Visuals: ☐ Portion Plate	Handouts Provided: ☐ Breakfast ☐ Fats and Oils ☐ Fruits and Vegetables ☐ Grains ☐ Healthy Drinks ☐ Healthy Shopping ☐ Healthy Snacks ☐ Lunchtime Makeover ☐ Seasoning Chart ☐ Recipes ☐ Portion Plate ☐ Use Your Hand As a Guide ☐ Other:

☐ Other:	☐ Food Models ☐ Other:	_____ _____
Monitoring & Evaluation:		
☐ Previous diet/ nutrition education/ counseling ☐ Oral fluid amounts ☐ Amount of food ☐ Types of food/ meals ☐ Meal/ snack pattern ☐ Glycemic index ☐ Area(s) and level of knowledge	☐ Motivation ☐ Preoccupation with food ☐ Self-efficacy ☐ Ability to recall nutrition goals ☐ Meal duration ☐ Willingness to try new foods ☐ Limited number of accepted foods	☐ Participation in government/ community programs ☐ Procurement, identification of safe food ☐ Social Support ☐ Coordination of other care during nutrition care ☐ Other: _____ _____
Patient-Centered Goals:		

ADDITIONAL COMMENTS:		
SIGNATURE	**TIME SPENT**	**DATE/ TIME**
		SPANISH INTERPRETER ☐

NUTRITION FOLLOW UP

Progress since last appointment:
Needs to improve areas:

TYPICAL INTAKE RECALL/24 HOUR RECALL

Morning:	Afternoon:	Evening:

FRUIT INTAE:_____
VEGETABLE ITAKE:_____
RECENT SODA INTAKE:_____
RECENT JUICE INTAKE:_____
OTHER SUGARY BEVERAGES: _____
RECENT MILK INTAKE:_____
RECENT WATER INTAKE:_____
SNACKS:_____
DESSERT:_____
EATING OUT OF HOME:_____
EATING BREAKFAST:_____
SECONDS: _____
RECENT LAB WORK: DATE:_____ **FASTING:**_____
CHOL:____ TRIG:____ HDL:____ LDL:____ TSH:____ Free T4:____
GLUC:____ Hgb AIC:____ Insulin:____ ALT:____ AST:____
Other:_____

SPANISH INTERPRETER ☐ **IN ATTENDANCE:**
_____

TREATMENT/ GOALS

NUTRITION PROBLEM #:		
Nutrition Intervention: ☐ Brief nutrition education ☐ Comprehensive nutrition education Regarding: ☐ Modification of distribution, type, or amount of food and nutrients within meals or at specified times ☐ Other: _____	Nutrition Counseling using: ☐ Cognitive-behavioral theory ☐ Health belief model ☐ Stages of change Strategies: ☐ Motivational interviewing ☐ Goal setting ☐ Problem solving ☐ Relapse prevention ☐ Rewards/ contingency management ☐ Social Support ☐ Stimulus Control Visuals: ☐ Portion Plate ☐ Food Models ☐ Sugar/Fat Models ☐ Other_____	Handouts Provided: ☐ Breakfast ☐ Fats and Oils ☐ Fruits and Vegetables ☐ Grains ☐ Healthy Drinks ☐ Healthy Shopping ☐ Healthy Snacks ☐ Lunchtime Makeover ☐ Seasoning Chart ☐ Recipes: _____ ☐ Portion Plate ☐ Use Your Hand As a Guide ☐ Other: _____
Monitoring & Evaluation: ☐ Previous diet/ nutrition education/ counseling ☐ Oral fluid amounts ☐ Amount of food ☐ Types of food/ meals ☐ Meal/ snack pattern ☐ Glycemic index ☐ Area(s) and level of knowledge	☐ Motivation ☐ Preoccupation with food ☐ Self-efficacy ☐ Ability to recall nutrition goals ☐ Meal duration ☐ Willingness to try new foods ☐ Limited number of accepted foods	☐ Participation in government/ community programs ☐ Procurement, identification of safe food ☐ Social Support ☐ Anthropometric measure. ☐ Biochemical data ☐ Other care during nutrition care ☐ Other: _____ _____
Patient-Centered Goals:		
Resolved?	☐ **YES**. Date:	☐ **NO**

SIGNATURE	TIME SPENT:	DATE	TIME

NUTRITION PROBLEM #___:

Nutrition Diagnosis:

Problem:	**Etiology:**	**Signs/ Symptoms:**
☐ Excessive energy intake ☐ Excessive oral intake ☐ Undesirable food choices ☐ Food- and nutrition-related knowledge deficit ☐ Limited adherence to nutrition-related recommendations ☐ Not ready for diet/lifestyle change ☐ Limited food acceptance ☐ Other:_____ _____	☐ Food and nutrition related knowledge deficit concerning energy intake ☐ Unwilling or disinterested in reducing energy intake ☐ Lack of food planning, purchasing and preparation skills ☐ Lack of prior exposure to accurate nutrition related information ☐ Loss of appetite awareness ☐ Limited intake of recommended foods ☐ Limited practice of healthful food/drink portions ☐ Other: _____ _____	☐ Dietary recall revealing intake of high caloric density or large portions of foods/beverages at meals and or snacks ☐ Frequent, excessive fast food or restaurant intake ☐ Verbalizes inaccurate or incomplete information ☐ No prior knowledge of need for food and nutrition related recommendations ☐ Demonstrates inability to apply food and nutrition related information ☐ Denial of need for food and nutrition related changes ☐ BMI %: ☐Other: _____ _____

Nutrition Prescription:

Nutrition Intervention:	Nutrition Counseling Using:	Handouts Provided:
☐ Brief nutrition education ☐ Comprehensive nutrition education Regarding: ☐ Modification of distribution, type, or amount of food and nutrients within meals or at specified times ☐ Other: Visuals: ☐ Portion Plate ☐ Food Models ☐ Other:_____	☐ Cognitive-behavioral theory ☐ Health belief model ☐ Stages of change Strategies: ☐ Motivational interviewing ☐ Goal setting ☐ Problem solving ☐ Relapse prevention ☐ Rewards/Contingency management ☐ Social Support ☐ Stimulus Control	☐ Breakfast ☐ Fats and Oils ☐ Fruits and Vegetables ☐ Grains ☐ Healthy Drinks ☐ Healthy Shopping ☐ Healthy Snacks ☐ Lunchtime Makeover ☐ Seasoning Chart ☐ Recipes ☐ Portion Plate ☐ Use Your Hand As a Guide ☐ Other: _____

Monitoring & Evaluation:		
☐ Previous diet/ nutrition education/ counseling ☐ Oral fluid amounts ☐ Amount of food ☐ Types of food/ meals ☐ Meal/ snack pattern ☐ Glycemic index ☐ Area(s) and level of knowledge	☐ Motivation ☐ Preoccupation with food ☐ Self-efficacy ☐ Ability to recall nutrition goals ☐ Meal duration ☐ Willingness to try new foods	☐ Limited number of accepted foods ☐ Participation in government/ community programs ☐ Procurement, identification of safe food ☐ Social Support ☐ Other: _____ _____

Patient-Centered Goals:

Comments:		

SIGNATURE	**DATE**	**TIME**

SIGNATURE :	**TIME SPENT:** MIN	**DATE:**	**TIME:**

SPANISH INTERPRETER ☐ **IN ATTENDANCE:**

_____

Please help us provide better service to our customers. Thank You for your time.

Please circle your answers for the following questions the best that you can. If you need help it is okay to ask an adult.

1. How many days per week do you use what you learned about the Portion Plate to choose your foods?

0	1 - 2	3 - 4	5 - 6	Every Day

2. How many sugary drinks do you normally drink? This includes juice, chocolate milk, sports drinks, soda, juice drinks, sweetened iced tea, etc.

0 - 2 times a week	3 - 4 times a week	Daily	2 - 3 a day	4 or more a day

3. How many days a week do you eat a healthy breakfast?

0	1 - 2	3 – 4	5 - 6	Every Day

4. How many snacks do you eat a day?

I do not eat snacks	1 - 2	3 – 4	4 or more

5. How often do you eat out at restaurants?

Never	1 time a month	1 time a week	3 – 4 times a week	Every day

6. How often do you eat fruits and vegetables?

0 – 2 times a week	3 – 5 times a week	Daily	2 – 3 times a day	4 – 5 times a day

7. How often do you eat second helpings at meals?

Rarely/Never	1 time a week	2 – 3 times a week	Every Day	Every Meal

8. Are you satisfied with your current weight?

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree

9. What was one of your favorite things about the Fit Kids Program? Why? How did it help you?

10. Was there anything about the Fit Kids Program that you didn't like or would like us to change?

PLEASE RETURN THIS COMPLETED SURVEY IN THE SELF-ADDRESSED, STAMPED ENVELOPE PROVIDED.

February 7, 2014

Dear Parent of

Did Fit Kids help your child create healthy eating and lifestyle habits they stuck with? We want to know.

Your child attended Fit Kids when they were between the ages of 8-14 years old. They also attended Fit Kids for at least six months. This is why we want them to participate in this research study.

If you are interested in having your child participate in this study, please complete the following steps:

1. Read and sign the Parent's Consent form.
2. Have your child read and sign the Child's Assent form. (You also have to sign the assent form as a witness.)
3. Have your child fill out the survey. You can help them if they need it.
4. Return both consent forms and the completed survey to Fit Kids in the envelope provided.

All children that return the survey to Fit Kids will be entered into a drawing for a three-month recreation center pass in your area. This pass is worth $60. Two passes will be given out. If your child's name is drawn you will be contacted to collect the pass.

If you have any questions or concerns about this study, you can call Megann Dastrup at 928-282-1113 or email her at meggie52@hotmail.com. You can also call the Fit Kids office at 928-214-3537.

Thank you for helping Fit Kids. We hope the information we collect will help Fit Kids improve its current programs as well as help other children like yours in the future.

Sincerely,

Megann Dastrup,
Registered Dietitian
Fit Kids Intern
Utah State University Graduate Student

Northern Arizona Healthcare

Evaluating the Effectiveness of the Nutrition Component of the Fit Kids of Arizona Program

Parental Consent

We want your child to participate in our research study because your child attended the Fit Kids program for six months when they were between 8-14 years old. This study is being funded by Fit Kids of Arizona. It is sponsored by Northern Arizona Healthcare. Megann Dastrup, graduate student at Utah State University, is responsible for this study. She can be reached at 928-282-1113 or by email at meggie52@hotmail.com. You can also contact the Fit Kids office at 928-214-3537. Martha Archuleta, PhD, Utah State University is co-investigator on this study. She can be reached at 385-646-5576.

Why is Fit Kids doing this research?

Fit Kids wants to know how good its program is at helping children learn long term healthy eating and lifestyle behaviors. Children that started Fit Kids when they were between the ages of 8-14 years old and attended for at least six months can participate.

How does my child participate in this research study?

1) **First**, both you **and** your child must agree that your child will participate.
2) Next, sign this Parental Consent form that you are reading now.
3) Have your child read and sign the Child's Assent form.
   You will sign your Child's Assent form as well.
4) Have your child fill out the survey. You can help your child if he or she needs it.
5) Mail the original, signed forms and the completed survey back to Fit Kids in the self-addressed, stamped envelope provided. We have provided a blank copy for your records, and we will mail a signed copy back to you for your records as well.

When Fit Kids receives your child's survey, we will compare it to information in your child's medical record obtained while attending the Fit Kids program. We will gather data including your child's height, weight, BMI percentile, eating habits while attending the program and length of participation, We will also contact your child's doctor to find out your child's most recent height and weight listed in your child's medical record. All this is part of the research study.

Our study will last for around one year. But, your child will only have to fill out this survey. It should take about 20 minutes. You can help your child, if needed.

Are there risks to being in this study?

There are minimal risks to being in this study. Some people who are not part of this study may see your child's personal information. However, there is only a small chance that this will occur. All the information we collect will be kept at Fit Kids in a

secured location. When the study is over, all the information will be destroyed. There is also a very small risk that your child could become upset if he or she has not followed the program

Will my child benefit from being in this study?
We don't think your child will benefit from joining this study. But, what we learn may help improve the Fit Kids program for children who join in the future. What we learn may also support the growth of Fit Kids to help other children and families decrease the health risks and problems linked to excess weight.
Will this cost me or my child anything? Will I or my child get anything for doing this?
There is no cost to participate in this study. All children that return the survey to the Fit Kids program with the signed consent and assent form will be entered into a drawing for a three-month recreation center pass in your area. If your child's name is drawn, we will contact you to collect your pass. The pass is worth $60.
Who do I contact if I have questions or concerns?
You can call Megann Dastrup at 928-282-1113 or email her at meggie52@hotmail.com. You can also call the Fit Kids office at 928-214-3537.
Does my child have to do this?
No, your child does not have to complete this survey or be in this study. This study is completely voluntary. However, if your child wants to be in this study both you and your child must agree.
If your child does not want to participate, they will not be penalized for not joining this study.
What does my child need to do to be enrolled in the drawing for the free three-month recreation center pass?
Your child has to be in the study in order to be included in the drawing for the three-month recreation center pass. Your child will have to sign the Child's Assent form, complete the survey, and you will have to sign this Parent's Consent form. All these forms along with the survey will have to be returned to the Fit Kids office.
Once enrolled in the study, can my child change his or her mind about being in the study?
If you or your child decides after sending in the survey that your child does not want to participate you can call us and we will remove your child from the study.
Who will know about my child's results?
This study is funded by Fit Kids and is being conducted as part of Megann Dastrup's graduate program at Utah State University. Your child's information will be kept private. No one besides you, your child, the research team, Fit Kids study staff, Northern Arizona Healthcare Institutional Review Board, Office of Human Research Protection should ever have access to your child's personal results.
If you have questions you can contact the Northern Arizona Healthcare Institutional Review Board. This Board protects people like you and your child who participate in research.

Chair, Institutional Review Board – NORTHERN ARIZONA HEALTHCARE
1200 N. Beaver St, Flagstaff, AZ 86001
Telephone: (928) 773-2346 - 8:00 AM to 5:00 PM Monday through Friday.

If you sign this consent it means that you read this consent and you allow your child to join this study. If you do not want your child to be in this study, do not sign this consent.
If you have questions about this study including those that involve injury or your child's rights as a participant, or you want to cancel permission for your child to be in this study at any time, you can contact Megann Dastrup at 928-282-1113.
These next questions ask you if you want your child to participate. Please check the appropriate box and sign below.
I agree to allow my child to participate in this research study.

☐ YES ☐ NO _____ Initials

I have had the opportunity to ask any questions I might have about this study. If I have questions about this study I know who to call for answers.

☐ YES ☐ NO _____ Initials

_____
Child's Name (Please print)

_____
Name of Parent/Guardian (Please print)

_____
Signature of Parent/Guardian Date

By signing this consent, I agree that:

1) I allow my child to participate in this study.
2) My child wants to participate in this study.
3) I kept a blank copy of this consent form for my records.

_____
Signature of Primary Researcher Date

PLEASE RETURN THIS SIGNED CONSENT IN THE SELF-ADDRESSED, STAMPED ENVELOPE PROVIDED.

Northern Arizona Healthcare

Evaluating the Effectiveness of the Nutrition Component of the Fit Kids of Arizona Program

Child's Assent Form

My name is Megann Dastrup. I study good eating habits. I have helped kids like you learn how to eat healthy. Now, I want to learn how good the Fit Kids program is at increasing healthy eating habits in kids like you. This is important to know because we want to help other kids be healthy in the future. If you would like, you can be in my research study.

If you decide you want to be in my study, both you and your parents have to agree. Then you will answer the questions I sent with this letter. When you mail your answers back to me, I will look at your answers and compare them with answers you gave Fit Kids when you first started the Fit Kids program.

I will also contact your doctor to find out how tall you were and how much you weighed at your last doctor's visit. I will enter your name into a drawing for a three-month recreation center pass. Only two names will be drawn for the pass. If your name is drawn, we will contact you to pick up your recreation pass.

Being in my study isn't very risky. The only risk is that someone may find out that you participated in the Fit Kids program or that they may see some of your information.

When I receive your answers in the mail, I will put things I learn about you together with things I learn about other kids. No one will know what answers came from you. When I tell other people about my research, I will not use your name, so no one should know who I am talking about.

Your parents or guardian have to say it's OK for you to be in my study. If you don't want to be in my study, no one will be mad at you. If you want to be in my study now and you change your mind later, that's OK. You can stop any time. My telephone number is 928-282-1113. You can call me if you have questions about the study or if you decide you don't want to be in the study any more.

AGGREEMENT

I want to be in the research study even though I know I don't have to.

_____ Child's Initials

_____
Your (Child's) Name (Please Print)

_____ _____
Your Signature (Child's Signature) Date

_____ _____
Witness Name (Printed) (Parent or Guardian) Date

_____ _____
Witness Signature (Parent or Guardian) Date

_____
Witness Relationship to Child

_____
Signature of Primary Researcher Date