



## **Get Healthy Together:**

WIC Staff and Clients Moving Toward Healthier Lifestyles  
Revitalizing Quality Nutrition Services in WIC through a Focus on  
Childhood Overweight Prevention – Fit WIC 2

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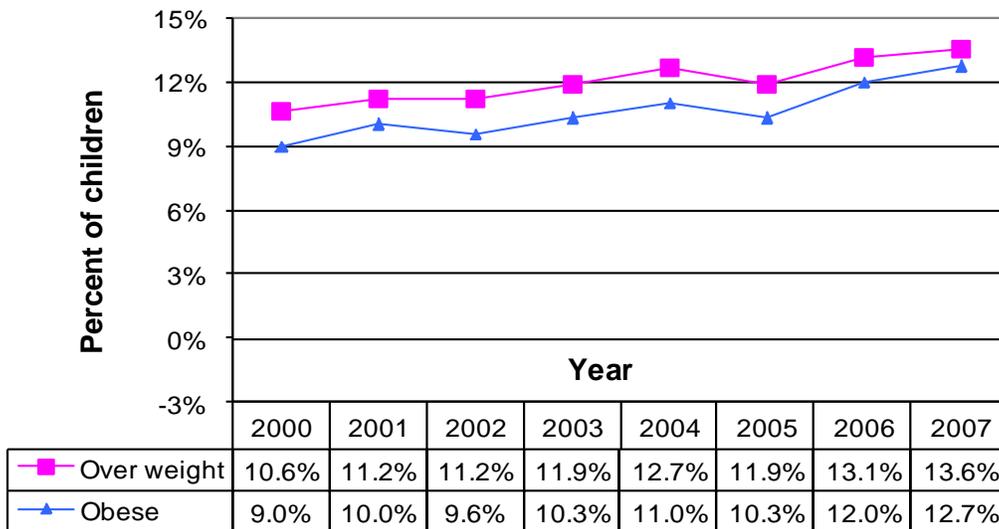
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## INTRODUCTION

In virtually every region and population in the United States (US), obesity rates are increasing.(1) The rapid increase in the prevalence of overweight among young children, in particular, has been deemed a public health priority. Among preschool children aged 2-5, obesity increased from 5.0% to 10.4% between 1976-1980 and 2007-2008.(2) Consistent with national data; in New Mexico, the site of this reported intervention, obesity increased from 7.6% in 1998 to 12% in 2008. (3) Figure 1 details the rise in overweight and obesity among New Mexico WIC children.

□

**Figure 1. Trends in Percent of Children Age 2-5 Years Who Were Overweight or Obese, NM WIC 2000-2007**



One important mechanism for addressing and preventing pediatric overweight is early intervention in populations disproportionately impacted by overweight and obesity. Because the Special Supplemental Nutrition Program for Women, Infants and Children (WIC) touches

thousands of at-risk families, its staff and services are uniquely positioned to help prevent and monitor pediatric overweight.(4)

This paper describes the study design, methods and results from the Get Healthy Together (GHT) intervention. GHT is one of five WIC special project grants supported in 2007 by USDA Food and Nutrition Service as part of the “Fit WIC 2” initiative.(5) Within the theme *Revitalizing Quality Nutrition Services* (6), these special projects focused on mechanisms within WIC to address childhood obesity. The study was undertaken by a partnership of New Mexico WIC, the University of New Mexico and the International Life Sciences Institute Research Foundation (ILSI RF), a non-profit public health research organization. The study evaluated the impact of pediatric obesity counseling self-efficacy and client satisfaction associated with the provision of augmented counseling tools, counseling skills training, and a personal wellness promotion for WIC staff in New Mexico.

The GHT study design builds on insights gained from USDA’s earlier Fit WIC 1 project, funded in five US sites in 1999.(4) In particular, the GHT project focused on several key recommendations cited in the Fit WIC Final Report:

1. Foster the potential of WIC staff members to be role models for healthy behaviors.
2. Provide wellness opportunities at work for WIC staff.
3. Expand and update training for WIC staff related to healthy lifestyles and childhood obesity prevention.
4. Change the focus of participant education from weight to healthy lifestyle.
5. Adopt physical activity as an essential element of nutrition education, and
6. Develop and encourage the use of participant-centered assessment and education procedures.

Other suggestions from the Fit WIC project investigators that were incorporated into the design of the GHT project included the following:

1. The workplace environment can support efforts to improve staff health behavior change.
2. Personal barriers result in staff having a lack of comfort, practice, and confidence in their ability to address pediatric overweight.(7,8)
3. Participation in a wellness program encourages staff to become more enthusiastic supporters of sharing health messages and to feel more comfortable talking with parents about their own efforts thus becoming effective 'salesmen' of the interventions.(9)
4. New knowledge and skills are desired by staff to improve their skill and confidence in addressing health promotion messages with WIC clients.
5. Training, behavior counseling and culturally relevant education materials are needed to build a strong knowledge base and promote self efficacy for discussing weight-related topics.
6. Childhood obesity management would be enhanced if training on child rearing were provided (to educate WIC parents), time for assessment was shifted to counseling, and partnerships were established with primary care physicians and community agencies.

### *Goals and Objectives*

*Goals.* The goals of the *Get Healthy Together* project were two-fold:

1. To increase New Mexico WIC staff self-efficacy regarding management of personal health behaviors associated with nutrition, physical activity and sedentary behaviors, and,

2. To improve WIC staff counseling skills with WIC clients related to pediatric overweight prevention and management.

Ultimately, the combination of these two goals was expected to have an impact on pediatric overweight in New Mexico through increased adoption of health-promoting behaviors by WIC staff and enhanced pediatric overweight counseling skills. It was hypothesized that WIC staff who felt better about their personal wellness and their counseling skills would be more effective when working with parents of overweight children.

*Objectives.* Goal 1 was proposed to be achieved by addressing the staff's self-concept and personal health behaviors. Fit WIC 1 projects in Virginia (8), California (9), Kentucky (10) and the Intertribal Council of Arizona showed that staff personal health habits, self-efficacy, and perceptions of obesity causes and solutions can influence their comfort level for counseling clients on obesity-related issues. The New Mexico WIC study tested these previous findings with a larger, randomized sample followed over a longer, 18 month intervention period.

The specific objectives of the wellness program related to Goal 1 were:

1. At least 75% of the WIC staff will report an improvement in two personally selected health behaviors;
2. At least 50% of WIC staff will achieve an average of 10,000 steps per day and 30% will at least double their daily steps from baseline;
3. At least 75% of WIC staff will report improved self-concept related to physical activity.
4. At least 75% of WIC staff will report improved self-concept related to body satisfaction.

Goal 2 related to findings from staff surveys done as part of Fit WIC 1 projects in California and Vermont. Results from these surveys indicated that a barrier to effective pediatric overweight prevention and management was WIC staff's lack of specific knowledge and skills needed for counseling clients on obesity-related issues. To address Goal 2, New Mexico WIC provided training to staff that included use of a video developed by Fit WIC Kentucky and counseling tools and materials previously tested by ILSI RF. These tools and materials had previously been shown to be effective at improving skills for pediatric overweight behavior management in a time-limited setting. (11-14)

The specific objectives related to Goal 2 were:

1. After viewing and discussion of "Beyond Nutrition Counseling: Reframing the Battle Against Obesity," at least 75% of WIC staff will be able to identify one barrier and one strategy for counseling in regard to childhood obesity prevention and management;
2. After participating in the ILSI RF skills training, there will be a 50% improvement in WIC staff practice patterns as measured by chart documentation of specific counseling practices at the certification visit when a risk code is cited that is linked to obesity; and,
3. After participating in the ILSI RF skills training, there will be a 50% improvement in reported obesity prevention/behavior management counseling self-efficacy by WIC staff.

It was further expected that increased WIC staff confidence and skills in discussing pediatric overweight prevention and behavior management with WIC clients would result in

clients having greater levels of satisfaction with the WIC experience. The objective related to this component was:

1. WIC clients will report a 25% improvement in satisfaction with the way WIC staff members addressed pediatric overweight during a certification visit.

### *Research Questions*

The goals and objectives were incorporated into nine research questions (RQ) to manage data collection and analysis. The specific research questions addressed by the GHT project are detailed below:

- RQ1. Does participation in a staff wellness program lead to increased physical activity by WIC staff?
- RQ2. Does participation in a staff wellness program lead to individuals' ability to achieve self-selected personal health goals?
- RQ3. Does participation in a staff wellness program result in improved physical and social self-concepts, general health, physical functioning, energy, body satisfaction, and exercise self-efficacy?
- RQ4. Does participation in a staff wellness program result in improved self-reported diet and BMI?
- RQ5. Does participation in skills training result in an improvement in WIC staff's charting documentation of counseling for pediatric overweight prevention?
- RQ6. Does participation in skills training result in an improvement in WIC staff's self-efficacy related to pediatric overweight prevention?
- RQ7. Is participation in a skills training about pediatric overweight valued by WIC staff??

RQ8. Does staff participation in a wellness program or skills training result in an improvement in WIC clients' satisfaction with the way WIC staff addresses pediatric overweight prevention during the certification visit?

RQ9. Does participation in both a staff wellness program and staff skills training result in better outcomes than participating in either component alone?

It should be noted that RQ4 and RQ7 are modified research questions relative to the original GHT proposal. Because anthropometric and physical activity data were collected on WIC staff, the team opted to add this question. With regard to RQ7, due to time constraints for training, it was not possible for GHT to replicate the KY Fit WIC 1 methodology used to evaluate the Beyond Nutrition Counseling video thus it was necessary to change the research question.

## *METHODOLOGY*

### *A. Study Design Overview*

The GHT study involved an 18-month intervention with two distinct components. One addressed the promotion of WIC staff wellness related to physical activity, nutrition and health behaviors. The other component involved the provision of training and tools to WIC staff to facilitate counseling on overweight in the WIC setting. It was hypothesized that these two components, individually and in concert, would increase nutritionist confidence and skills in addressing the weight-related behaviors of clients and their 2 to 5 year old children in the WIC certification and educational contexts.

The wellness program was implemented to improve the physical self-concept and functioning of WIC employees. The skills training was targeted at nutritionists and was

developed to enhance their counseling skills with parents whose children are overweight or obese. Both programs were based on components identified by Fit WIC 1 as important to staff's ability to provide pediatric overweight prevention and behavior management counseling. Moreover, both intervention programs were adapted to the needs of the multi-cultural population served by New Mexico WIC.

### *B. Sample*

All permanent New Mexico WIC clinics were used for this study, excluding two used for pilot testing (n=48). These clinics were stratified by clinic size (small and large) and rural status (rural and urban) then randomly assigned to one of four groups that resulted from the crossing of the following two between-subjects factors: Skill training vs. usual training; and, Wellness program vs. no program. This combination resulted in three groups experiencing an intervention and one group serving as the control. The level of intervention for the four groups was:

1. Staff only participated in a 18 month wellness program
2. Staff only participated in skills training related to pediatric overweight prevention counseling in a time limited environment
3. Staff participated in both an 18 month wellness program and in skills training related to pediatric overweight prevention counseling in a time limited environment
4. A usual care group where staff continued using current training materials and procedures during the course of the study.

Informed consent was secured for all participating WIC staff in accordance with the University of New Mexico's Institutional Review Board requirements for treatment of human

subjects. Due to the longitudinal nature of the project and/or varying collection strategies the sample sizes differed by time period. Descriptive statistics for participants providing pedometer and online data by time point are presented on the following pages in Tables 1 and 2, respectively. Analysis results are reported by whether they are related to the wellness program, skills training or both interventions.

**Table 1. Self-reported Demographic Characteristics for WIC Employees who Recorded Pedometer Data**

	<b>Baseline Summer 2008 (N = 135)</b>	<b>Winter 2009 (N = 146)</b>	<b>Summer 2009 (N = 130)</b>	<b>Winter 2010 (N = 132)</b>
<b>Race/Ethnicity</b>				
Hispanic	73%	73%	74%	75%
Non-Hispanic White	19%	19%	20%	22%
American Indian	2%	1%	1%	1%
African American	2%	2%	1%	1%
Asian	1%	1%	0%	0%
Other	3%	4%	4%	1%
<b>Sex</b>				
Female	99%	97%	98%	97%
Male	1%	3%	2%	3%
<b>Education</b>				
High school graduate/GED	13%	15%	15%	16%
Some college	27%	25%	25%	20%
Associate's degree	11%	11%	12%	10%
Bachelor's degree	40%	40%	40%	43%
Masters degree	5%	4%	4%	8%
Other	5%	5%	4%	3%
<b>WIC Position</b>				
Clerk	41%	42%	44%	41%
Nutritionist	45%	46%	44%	49%
Other	14%	12%	12%	10%

	<b>Baseline Summer 2008 (N = 135)</b>	<b>Winter 2009 (N = 146)</b>	<b>Summer 2009 (N = 130)</b>	<b>Winter 2010 (N = 132)</b>
Age in years	41.9 (SD =11.6)	41.62 (SD =11.2)	40.75 (SD=11.2)	41.5 (SD=11.4)
Years in current position	6.1 (SD = 6.25)	6.3 (SD =6.31)	6.3 (SD=6.38)	7.5 (SD=6.96)

**Table 2. Self-reported Demographic Characteristics for WIC Employees who Provided On-line Survey Responses for Each Time Point**

	<b>Baseline Summer 2008 (N=161)</b>	<b>Winter 2009 (N=171)</b>	<b>Summer 2009 (N=165)</b>	<b>Winter 2010 (N=157)</b>	<b>Summer 2010 (N=141)</b>
<b>Race/Ethnicity</b>					
Hispanic	71%	72%	72%	73%	74%
Non-Hispanic White	23%	24%	24%	23%	22%
American Indian	3%	1%	1%	1%	1%
African American	1%	1%	1%	1%	1%
Asian	1%	1%	1%	1%	1%
Other	1%	1%	1%	1%	1%
<b>Sex</b>					
Female	97%	98%	98%	97%	97%
Male	3%	2%	2%	3%	3%
<b>Education</b>					
High school graduate/GED	15%	15%	14%	15%	15%
Some college	26%	22%	20%	22%	19%
Associate's degree	11%	11%	10%	11%	13%
Bachelor's degree	40%	41%	43%	41%	40%
Masters degree	5%	6%	6%	8%	8%
Other	3%	5%	7%	3%	5%
<b>WIC Position</b>					
Clerk	43%	46%	50%	48%	45%
Nutritionist	48%	49%	48%	48%	48%
Other	9%	5%	2%	4%	6%

	<b>Baseline Summer 2008 (N=161)</b>	<b>Winter 2009 (N=171)</b>	<b>Summer 2009 (N=165)</b>	<b>Winter 2010 (N=157)</b>	<b>Summer 2010 (N=141)</b>
Age in years	40 (SD=13.5)	41 (SD=11.5)	40.9 (SD=11.8)	41.1 (SD=11.7)	43.4 (SD=10.9)
Years in current position	7 (SD=6.8)	7 (SD=6.6)	6.4 (SD=6.3)	6.6 (SD=6.6)	7.6 (SD=7.3)

### C. Procedures

*Pre-intervention Data Collection.* Data collection prior to intervention included the following: chart abstraction to assess WIC staff documentation practices; online staff survey (described below in Instruments section); staff step count using pedometers; assessment of WIC staff anthropometric measures (height, weight), and focus groups with WIC staff to determine wellness topics of interest and reaction to various tools that might be used in pediatric overweight counseling. The GHT team also met several times with the NM WIC Nutrition Task Team (called Project Region Liaisons in the original GHT proposal) to discuss training content, final tools and implementation plan to ensure a clear understanding of clinic procedures and integration of GHT activities and tools with existing schedules and policies.

*Skills Training and Tools.* Dietary and physical activity counseling skills are an important part of providing effective guidance to parents in the prevention and/or management of pediatric overweight. (7) In order to improve counseling skills, staff in the skills training intervention clinics participated in a one-day training workshop utilizing training procedures and materials that were previously used by ILSI RF in other pediatric settings. The training materials were modified to be appropriate for the WIC setting. A pre- and post-test was administered to assess staff's insights into major barriers to effective counseling and strategies to address those barriers. The skills training consisted of a review of recommended assessment

and counseling techniques (see Appendix A for flowchart) and an orientation to a variety of tools and materials for use in counseling clients about nutrition and physical activity. The training also included a viewing of the video entitled, “Beyond Nutrition Counseling: Reframing the Battle Against Obesity.” (10) The Beyond Nutrition Counseling videotape was produced by Video Action Fund, a non-profit production company, for the Kentucky Fit WIC 1 project. The video features day-in-the-life segments with three low-income WIC clients as well as staff and other health professionals to highlight the barriers parents face raising young children and potential solutions to address these barriers. As a result of input from the NM WIC Nutrition Task Team and training time limitations, the discussion guide and methodology for implementation was adapted for the New Mexico WIC setting. For GHT purposes and available training time, the facilitated discussion segments were too long. Thus, the main modification to the video tool was to conduct shorter, small group discussions and report out to the larger group. Experiential training components included applying the counseling practices and tools to case studies and the process for charting the topics discussed and goals set during counseling sessions. A charting and documentation guide was reviewed and discussed (Appendix B).

A major component of the skills training was the review and practice utilization of tools that were designed to complement motivational interviewing when counseling the parents of overweight or obese children. Previously, a variety of counseling tools and nutrition and physical activity educational resources had been presented to WIC staff in focus groups. Using feedback from the staff and input from the Nutrition Task Team, the final set of tools consisted of the following: 1) BMI poster; 2) Nutrition and Activity Self-History form (NASH); 3) Report Card / Action Plan (ReCAP); and, 4) Talking Tips. The following section describes each tool, all of which were available in English and Spanish. Images of the tools are contained in Appendix C.

- *BMI Poster*

The BMI poster is intended to relieve some of the confusion in regard to BMI percentiles and what is considered to be a healthy weight. This BMI poster allows the nutritionist to use visuals of two young boys who are virtually the same age, but one is a healthy weight while the other is obese. Similar to the Report Card, the Poster features categories of green, yellow and red to emphasize the “stop light” approach. That is, if a child’s weight is healthy the green bar is referenced vs. the yellow and red bars which apply to the underweight, overweight or obese categories. The goal of expressing the child’s weight category in color is to relay the severity of nutritionists’ message, which may be misunderstood when BMI is only expressed in percentiles.

- *The NASH*

Counseling skills are vital to build rapport between WIC staff and their clients. The NASH form, originally created and evaluated in the primary care setting, was modified for the WIC setting and supplanted the food frequency questionnaires that are currently used in most WIC clinics. The purpose of the NASH is to help WIC staff assess the client’s dietary and physical behaviors (what they’re doing well and risk behaviors) and their readiness to make lifestyle changes and set goals. The form was designed to have specific questions to help prompt WIC clients to express their level of concern regarding their child’s weight-related habits; thus, allowing WIC staff to address these issues.

- *Report Card/Action Plan (ReCAP)*

The report card is a simple form filled out by the nutritionist that carries the vital information about the child’s overall health. The report card (front side) documents for the parent or guardian the child’s weight, height, current BMI-for-age percentile (BMI%) and

hemoglobin (HG) levels along with those measures at the prior visit. This Report Card also features bars with green, yellow and red segments denoting healthy, moderate risk, and high risk relative to the BMI% and HG results. The Action Plan (back side) documents the next appointment date, referral information, and various goals that a WIC mother might select. In general, the ReCAP provides the nutritionist with an outline of the important discussion points that should be addressed during the certification and recertification process. In addition, this tool is taken home by the client to allow for easy reference and documentation of what was discussed during the nutrition session.

- *Talking Tips*

Talking Tips is a counseling tool that allows clients to select a topic that they would like to discuss from a list of choices presented in a laminated 8½ x 11 format. The Talking Tips tool presents color pictures on the front that present healthy lifestyle choices including: playing together as a family, eating fruits and vegetables, watching less TV, choosing healthy beverages, eating a healthy breakfast, offering “child-sized” portions, and enjoying family meals. On the back, there is text describing the recommended behavior (from guidelines or evidence) and points of counseling that can be used by the WIC staff person regarding that choice. By allowing the client to select one of the seven topics, nutritionists are following basic motivational interviewing techniques that ensure the client chooses areas of interest or concern. Selection of a particular topic also provides a starting point for the nutritionist to focus on in counseling.

#### *D. Wellness Programs*

Staff wellness programs may lead to improvement in staff's healthy behaviors, thereby increasing chances that staff will serve as role models for clients and lead to more comfort for staff to discuss these behaviors with clients. The following tasks were performed to develop wellness programs that were tailored to each clinic's needs and desires:

1. A focus group was conducted in February 2008 with five WIC staff (all female) to determine specific wellness program topics;
2. Based on focus group feedback, a set of topic-specific GHT staff wellness materials was created for the clinics to test. A binder containing 23 wellness activities, along with supplemental public domain resources, was provided to all of the wellness clinics to inform the wellness programs;
3. A clinic wellness champion job description (Appendix D) was created and disseminated to intervention clinics for recruitment purposes;
4. A staff volunteer wellness champion (or co-champions) was identified for each intervention clinic;
5. Wellness champions worked with clinic staff to plan monthly wellness activities for each intervention clinic;
6. A list of wellness themes and observances were created and disseminated to wellness intervention clinics. Champions and staff created wellness-themed bulletin boards to inform and promote healthy behaviors; and,
7. Incentives were identified and distributed at the clinic level. A few clinics requested donations from local business. Examples of incentives at individual clinics include: fresh cheese from Cheese Plant, coupons for milk, calendars, recipe books from Dairy and

Beef Councils. As a result of General Mills support, the GHT team also provided \$40 gift cards to Champions to buy items they decided the wellness group would enjoy.

8. Incentives in the form of \$100 Wal-Mart gift cards were available via random drawings – one winner per region in each of five regions -- to wellness program participants who returned goals documentation. Drawings were done by UNM on a quarterly basis.

This process for the staff wellness intervention was expected to result in unique clinic level wellness programs.

### *E. Instruments*

*Anthropometric measures.* At a pre-intervention annual meeting of statewide WIC staff, 75 staff were measured for their heights and weights by trained nursing students. Subjects were measured three times for each dimension to enhance precision. These measures were used to calculate participants' body mass indexes (BMI) at baseline. This measure of BMI was eventually used to establish concurrent validity evidence (i.e., evidence that two measures of the same attribute correlate highly) for subsequent measures of BMI that were calculated using self-reported measures of height and weight. (See Appendix E for measured anthropometric results.)

*Step Counts.* Omron model HJ-720ITC pedometers were utilized to document the level of physical activity among WIC staff. Omron pedometers clip to the waist, have a memory capacity of 41 days, and allow the downloading of data directly from the pedometer to a computer. Staff wore the pedometers for baseline data collection around March 28, 2008 for 14 days. All WIC staff wore the pedometers during the intervention period as follows: January 26, 2009 for 8 days; August 17, 2009 for 10 days; and February 25, 2010 for 10 days (see Appendix F for step count reliability data).

*Online Self-Reports.* Several variables of interest were measured using an online survey developed for this project that was administered prior to the intervention (June 2008) and at four intervention points (January 2009, July 2009, January 2010 and July 2010) to all WIC staff at the participating clinics. The online survey contained questions related to: 1) demographic characteristics; 2) height and weight; 3) physical and sedentary activities over the previous 7 days; 4) Physical and Social Self Concept scales from the *Tennessee Self Concept Scale* (15); 5) General Health, Physical Functioning, and Energy/Fatigue Scales from *Rand's Short-Form Health Survey* (SF-36) (16,17); 6) General Nutrition; 7) Exercise Self-Efficacy (18); 8) Body Area Satisfaction Scale (19); and, 9) nutritionists' motivational interviewing skills, assessment skills, and counseling self-efficacies (20). Reliability coefficients were calculated for each measure and evaluated using the common "rule of thumb" criteria for assessing reliability coefficients that suggests: less than .60, unacceptable score reliability; .60 to .70, questionable score reliability; .70 to .80, acceptable score reliability; .80 to .90, very good score reliability; and, greater .90, excellent score reliability. See Appendices G through M for item content as well as test-retest reliability and when appropriate single-administration (i.e., Cronbach's alpha) reliability and for each subscale.

*Client Satisfaction - Survey.* The WIC Client Satisfaction Survey is a two page survey developed for this study. The first section of the survey contains demographic questions. The second section asks whether the following events occurred during the meeting with the nutritionists: 1) was the client shown a health report card for the child; 2) was child's BMI discussed; 3) was the child's BMI "low", "healthy" or "high"; 4) was a plan to improve the child's BMI discussed; and 5) were physical activity and dietary strategies discussed. The third section contains items that are meant to ascertain the client's satisfaction with clerk

professionalism, facility quality, nutritionist art of care, nutritionist technical skill, facility quality and program convenience. See Appendix N for item content for each subscale. Nutritionists gave the paper survey to clients at the conclusion of a child certification visit and asked the client to place the completed survey in a box in the lobby.

*Client Satisfaction - Peer Interviews.* To assess client satisfaction, nine female peers of WIC clients were trained as surveyors. These individuals were recruited based on the following qualifications: a WIC client, polite yet able to steer questioning, unbiased, good memory, able to attend two trainings, able to visit a variety of clinics, able to receive reimbursement, ability to converse in English and Spanish, understanding of the WIC program, and availability to complete a certain number of WIC client interviews in a set window of time. The original plan was to conduct peer surveys at three time points around the state in a sample of clinics. Due to time, financial constraints and other challenges (described later in this section), the peer surveys were conducted at two time points (March 2009 and March 2010) in Region 1-3. Surveys were collected from clients in 13 clinics: four skills + wellness clinics; three skills only clinics; three wellness only clinics; and three control clinics). The project director, JoAnn Fuller, contacted clinics to identify busiest appointment days (i.e. those with a high number of certification visits) so that there would be clients for peer interview purposes. Schedules were aligned between the clinics and the peer interviewers to ensure the required quantity of interviews could be realized during the collection period.

As noted earlier, the GHT team ran into some complications in enacting the peer surveyor component of the project. It was discovered after the first round of surveys that one peer surveyor asked for an interpreter during the interview period, which subsequently disrupted

clinic operations. Based on this information, all nine peer surveyors were contacted individually and asked about their Spanish language skills. Three advised the project director that they were not really comfortable conducting the interviews in Spanish. It is likely the peer surveyors were unaware that interviewing in Spanish is quite different from interacting with family in Spanish due to dialect differences, phrasing, terminology, etc. A proposal for conducting phone interviews was created and submitted to UNM's Institutional Review Board, but the modification was not accepted. This challenge resulted in the inability to perform the second round of peer interviews as scheduled in September 2010 prior to the implementation of the new WIC food rule.

Colleagues at WIC suggested that implementing the new food rule would require two to four months. Therefore, the second round of peer surveys were delayed and collected during the final data collection point in March 2010. During the delay, a protocol for retraining the peer surveyors was developed. Only three peer surveyors collected data during the second phase. To ensure quality interviews in round two, a UNM graduate student made an appointment with a peer surveyor for observation purposes. The student arrived one-half hour before the first interview to refresh surveyors' memory of skills training and observe one or two interviews. Then feedback was provided immediately to the interviewer. Before the second survey, a UNM graduate student provided the "refresher" training for the interviewers and then observed every interviewer conduct several interviews to ensure the established protocol was followed.

*Chart Abstraction Measures.* For abstraction a rubric was developed to assign the codes (see Appendix O). This rubric was created with the input of a group of WIC nutritionists and GHT program developers. WIC client chart "coders" (UNM graduate students), trained and assessed to ensure inter-rater reliability, were used for each abstraction event. Prior to abstraction

the coder received a period of training. The training consisted of discussing each coding category and reviewing charts to identify examples within the charts of each category. Furthermore, to assure the coding procedure was not rater dependent and consistent, two random samples of 20 and 40 charts, respectively, were drawn and scored by two raters. The resulting scores were then assessed for rater agreement using Cohen's kappa, a measure of agreement for nominal data. Excluding barriers, which had adequate agreement, the coding categories had "substantial" to "almost perfect" agreement. (21)

*GHT Trainings and Tool Ratings.* At each training, WIC nutritionists in the pediatric overweight skills trainings were asked to evaluate the quality of the trainings and tools using Likert-type scales ("strongly disagree" to "strongly agree").

*Goal Selection and Status.* Participants in the GHT wellness program were asked whether they had selected one of the following health-related goals: increase physical activity, improve muscular strength, improve aerobic conditioning, increase daily walking, lose weight, gain weight, improve diet, increase fruits and vegetables, reduce sweetened beverages, and reduce television viewing. Initially, monthly paper-based survey tools were used to gather goal achievement information (Appendix P). Beginning in October of 2009, on-line survey tools were used monthly to gather information from participants about goals selected and progress toward those goals as well as information from Wellness Champions about monthly activities and goals.

#### *F. Analyses*

*Pedometer Data.* Due to the longitudinal nature of this data, missing data were present within each time point and between time points. For each time point, subjects with three or more

days of data were considered as having provided sufficient data and their means were calculated. Between time points, missing data were imputed using multiple imputation (22) for missing values (range 6.2% -10.4%) and compared for systematic missing data. The comparison of data patterns indicated that missing data equally came from both treatment conditions. The resulting data set for those who provided baseline data was used for the remainder of analyses.

The pedometer data was analyzed the following two ways: 1) to assess the specified goals, improvement over baseline was calculated and compared by wellness program group using mixed analysis of variance with change from time one as a within-subjects factor and wellness program group as a between subjects factor; and 2) to examine mean differences, mixed analyses of variance were performed with time as a within-subjects factor, condition as a between-subjects factor and baseline scores as a variance-reducing covariate.

For each analysis three effects of interest were evaluated for statistical significance using a type I error rate of .05: the main effect of condition, which answers the question of whether there are group differences across all post-intervention time periods; the interaction of condition by time, which answers the question of whether there are differential group differences by time point; and, the main effect of time, which answers whether there are differences between times. The former two effects are the primary effects of interest, because the first identifies the overall effectiveness of the interventions and the second whether effectiveness of the programs differs by time period. Cohen's *d*, a standardized measure of effect size was calculated when condition-related differences were observed. (23)

*Online Survey Data.* The outcomes described in the online survey section were subjected to the same analyses as the pedometer data. Missing data (range 4%-16%) was imputed using the same methodology as described above. Participants who provided baseline data were analyzed

for change over time by intervention group membership after adjusting for baseline status (i.e., baseline measures were used as covariates). Outcomes associated with physical activity, BMI, diet, body image, exercise self-efficacy and SF-36 measures of health function were expected to be responsive to the wellness program intervention and were analyzed with wellness group membership (wellness program vs. no wellness program) as a between-subject factor. The nutritional counseling outcomes (MI skills, assessment skills, and self-efficacies) were expected to be responsive to the skills training and wellness program interventions, as well as the combined effects of the two treatments, and were analyzed with skills training group membership (skills training vs. usual practice), wellness program group membership (wellness vs. usual practice) as between-subject factors and the interaction of the two factors (i.e., skills training by wellness program).

*Client Satisfaction.* WIC clients' self-reported satisfaction was analyzed in two ways. First, individual level data were analyzed using factorial analysis of variance within each time point to determine whether condition-related differences were present. For each of these analyses skills training and wellness program group membership and child BMI status (low vs. normal vs. high) were used as between-subjects factors to identify whether the skills training and wellness program intervention resulted in improved satisfaction and more specifically to determine whether BMI status of the child moderated the impact of the skills training.

Results from the peer interviews were analyzed using logistic regression to determine whether skills training and wellness program interventions as well as the combination of the two increased the likelihood of negative and positive comments being made by a client during the interview. In these analyses statistically significant (i.e.,  $p < .05$ ) odds ratios greater and less than one indicate the statement was more or less likely to be made, respectively.

*Chart Abstraction Measures.* Data from the chart abstractions were analyzed using chi-square tests of proportion. The purpose of this test was to determine whether condition-related differences were apparent in the percentage of nutritionists documenting each type of event. Our expectation was nutritionists who had received skills training would document counseling practices at a greater rate than those from clinics who did not receive the skills training.

*GHT Trainings and Tool Ratings.* WIC nutritionists' evaluations of the quality of the skills trainings and tools were evaluated by calculating percentage of respondents selecting a particular level of agreement with a statement regarding aspects of the pediatric overweight trainings and specific tools. These data were examined throughout the project to refine and evaluate the quality of the trainings and tools.

*Goal Selection and Status.* WIC wellness program participants' self-reports of goal selection and goal attainment were analyzed descriptively. The percentage of respondents selecting a particular goal and whether they had met the goal was calculated and compared to the 75% benchmarks mentioned in the previous section.

## **RESULTS**

The NM WIC Get Healthy Together project results are presented by research questions as listed on page 7.

**RQ1. Does participation in a staff wellness program lead to increased physical activity by WIC staff?**

Objective: At least 50% of WIC staff will achieve an average of 10,000 steps per day and 30% will at least double their daily steps from baseline.

*A. Pedometer Data / Step Counts*

i. *Primary Analysis:* The number of participants reaching the step goal at baseline, three months, nine months and 15 months after the wellness program began were compared for participants in the wellness program and the control condition. Condition by time means and standard deviations are reported in Table 3. At baseline no participants in either group had 10,000 steps. At three months one participant in the control condition had recorded 10,000 steps. At nine months no participants in either group achieved the 10,000 steps goal and lastly at 15 months one person in the wellness program achieved the 10,000 steps goal.

**Table 3. Pedometer Step Count Means (Standard Deviations) by Condition <sup>a</sup>**

	<b>Wellness Program</b>	<b>Control</b>
Baseline: Summer 2008	4307.3 (1604.6)	4453.7 (2017.4)
Winter 2009: 3 months after Wellness Program Began	3864.8 (1506.8)	4128.0 (2052.3)
Summer 2009: 9 months after Wellness Program Began	4424.6 (1466.6)	4385.5 (1812.9)
Winter 2010: 15 months after Wellness Program Began	4112.0 (1779.6)	4052.5 (2023.7)
Overall mean of post intervention times	4177.2 (1589.4)	4255.7 (1976.5)

<sup>a</sup> No condition-related differences were statistically significant (i.e., all *ps* > .05).

The second part of the objective was the doubling of step count from baseline to each time point. At three months, 8% and 4% of the participants in the wellness program and control groups had doubled their step count, respectively. At nine months, 4% and 5% of the participants in the wellness program and control groups had doubled their step count, respectively. At 15 months after the wellness program began, 8% and 6% of the participants in the wellness program and control groups had doubled their step count, respectively.

ii. *Supplemental Step Count Analyses:*

- *Supplemental Step Count Analysis #1.* As finer-grained analysis the means of each condition (wellness program or control) were compared using a mixed-analysis of variance. This analysis was to ascertain whether there was a mean difference across time points in step count by condition. In a mixed-analysis of variance, the between (wellness program vs. control) by within (time) interaction is the primary effect of interest, with the expectation being the step count will increase more rapidly over time in the wellness group relative to the control group. For the present analysis the interaction of condition by time was not statistically significant,  $p = .70$ . The within-subjects factor of time was statistically significant,  $p = .021$ , with more steps taken at baseline and nine months ( $M_s = 4387.62$  and  $4397.66$  steps, respectively) than at three months ( $M = 4009.19$  steps), both  $ps < .05$  and  $ds > .20$ . This result is likely due to seasonal fluctuations in physical activity as the three-month time point was during winter. The results of the analysis do not support the efficacy of the wellness program in terms of step count improvement.

- *Supplemental Step Count Analysis #2.* Throughout the course of the wellness program the goals of participants and wellness champions were gathered monthly. The primary purpose of this longitudinal tracking was to identify clinics of varying levels of implementation fidelity for encouragement or remediation if necessary.

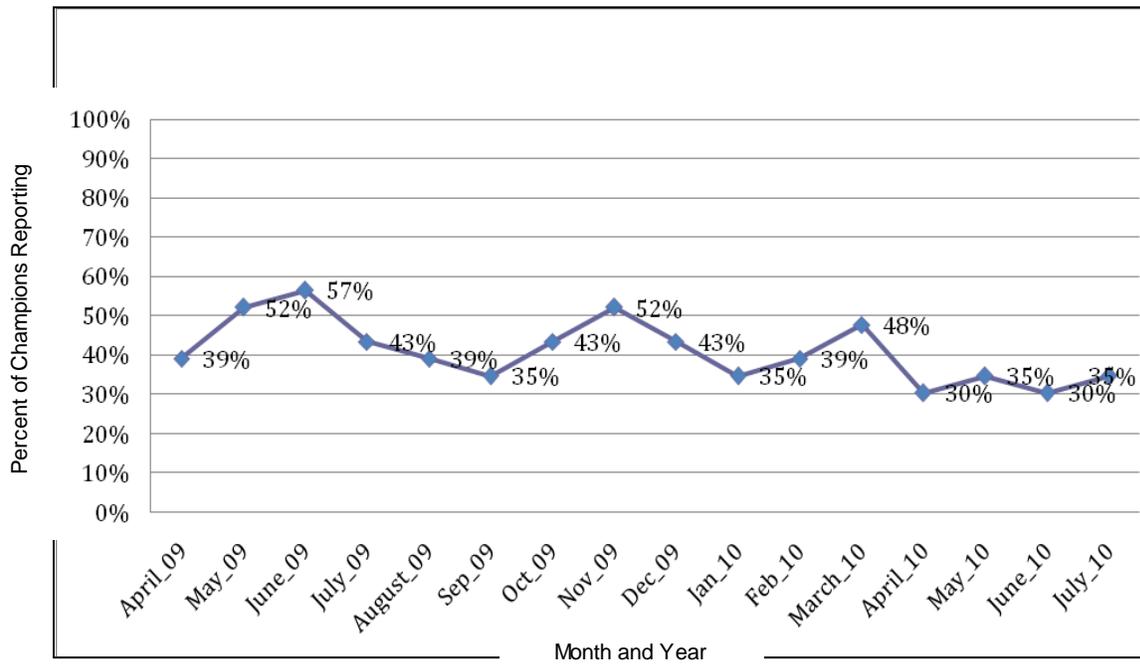
Table 4 and Figure 2 report the percentage of total wellness reports received from each champion over the course of the study and the percentages of champions reporting by month, respectively. As evident from Table 4, a considerable amount of variability existed between champions, with a few champions (n = 4) failing to report whether a wellness meeting had occurred for a single month of the study and one champion reporting for all time periods; the mean percent of wellness champions reporting wellness program meetings was 48.3% (SD = 33%).

**Table 4. Percent of Wellness Champion Reports Received by Clinic**

Clinic	Total % of Reports from 3/09 to 8/10	Total % of Online Reports
PHD R1 & R3 Belen HO	52.94%	77.78%
PHD R1 & R3 Bloomfield HO	0.00%	0.00%
PHD R1 & R3 Cibola County/Grants HO	0.00%	0.00%
PHD R1 & R3 First Choice North Valley	94.12%	88.89%
PHD R1 & R3 First Choice South Valley HO	23.53%	44.44%
PHD R1 & R3 First Nations HO	29.41%	11.11%
PHD R1 & R3 Gallup HO	0.00%	0.00%
PHD R1 & R3 Northwest Valley	29.41%	44.44%
PHD R1 & R3 Southeast HO	76.47%	88.89%
PHD R1 & R3 Westside HO	58.82%	66.67%
PHD R2 La Familia HO	58.82%	55.56%
PHD R2 Mora HO	23.53%	22.22%
PHD R2 Rio Arriba/Tierra Amarilla HO	0.00%	0.00%
PHD R2 Santa Fe HO	64.71%	55.56%

PHD R4 Clovis HO	94.1%	88.89%
PHD R4 Portales HO	5.88%	11.11%
PHD R4 Tucumcari HO	82.35%	100.00%
PHD R5 Anthony HO	52.94%	44.44%
PHD R5 Deming HO	58.82%	77.78%
PHD R5 Dona Ana / East Mesa HO	29.41%	44.44%
PHD R5 Hatch HO	64.71%	44.44%
PHD R5 Las Cruces HO	52.94%	66.67%
PHD R5 Silver City HO	82.35%	77.78%

**Figure 2. Percent of Wellness Champions Reporting by Month**



Used as an indicator of implementation fidelity, the clinics were split into thirds based on amount of champion reports; this represented three “doses” for analysis in relationship to step count. The goal of the analysis was to determine whether there was a mean difference in step count between the three levels of wellness program implementation and the control group.

Analysis of the interaction of “dose” by time failed to reveal group-related differences across all four waves,  $p = .85$ . See Table 5 for means and standard deviations.

**Table 5. Pedometer Step Count Means Reported by Wellness Program Implementation Strength <sup>a</sup>**

	Wellness Groups			Control
	Low Implementation	Medium Implementation	High Implementation	
Baseline:	4627.9	4021.0	4458.1	4444.1
Summer 2008	(1475.1)	(1523.9)	(1704.2)	(2028.6)
3 months after Wellness Program began	4286.8 (1110.8)	3993.7 (1553.9)	3747.9 (1773.7)	4075.5 (2011.5)
9 months after Wellness Program began	4866.3 (1290.8)	4460.8 (1557.7)	4331.3 (1543.8)	4336.8 (1791.6)
15 months after Wellness Program began	4870.6 (1327.3)	3908.9 (1736.2)	3996.9 (1902.8)	4054.1 (2036.8)
Overall mean after Wellness Program began	4662.9 (1301.3)	4096.1 (1592.5)	4133.5 (1731.1)	4227.6 (1967.1)

<sup>a</sup> No condition-related differences were statistically significant (i.e., all  $ps > .05$ ).

*B. Self-Reported Physical Activity.*

The Wellness program was not solely targeted at step count. The materials provided to wellness clinics targeted physical activities that may not elicit an increased step count. Several questions on the on-line staff survey sent to staff every six months were related to physical activity. Therefore, the following analyses examine the impact of the wellness program on physical activity reported on the surveys. (e.g., “During the last 7 days, on how many days did

you engage in vigorous physical activities like heavy lifting, digging, aerobics, or fast bicycling?"). See Table 6 for summary data for each condition.

**Table 6. Self-reported Physical Activity<sup>a</sup>**

	<b>3 months after Wellness Program began</b>	<b>9 months after Wellness Program began</b>	<b>15 months after Wellness Program began</b>	<b>21 months after Wellness Program began</b>
<hr/>				
Days of Vigorous Activity (VA) in last 7 days				
Wellness (n =77)	1.55 (.18)	2.28 (.21)	1.58 (.18)	1.82 (.21)
Control (n = 81)	1.68 (.18)	2.26 (.20)	1.66 (.17)	1.93 (.21)
Minutes of VA on those days				
Wellness (n =77)	22.22 (2.54)	43.12 (4.43)	29.83 (4.97)	34.95 (4.59)
Control (n = 81)	20.26 (2.48)	46.02 (4.32)	34.61 (4.85)	22.55 (4.47)
<hr/>				
Days of moderate Activity (MA) in last 7 days				
Wellness (n =77)	2.35 (.23)	2.89 (.37)	2.65 (.28)	2.29 (.67)
Control (n = 81)	2.48 (.22)	3.20 (.36)	2.31 (.27)	3.40 (.66)
Minutes of MA on those days				
Wellness (n =77)	24.43 (6.45)	36.03 (6.05)	34.53 (6.55)	31.70 (5.73)
Control (n = 81)	35.63 (6.29)	43.37 (5.89)	29.73 (6.39)	36.28 (5.58)
<hr/>				
Days of walking in last 7 days				
Wellness (n =77)	4.35 (.25)	4.47 (.27)	3.77 (.29)	4.11 (.29)
Control (n = 81)	4.35 (.25)	4.64 (.26)	4.03 (.28)	4.23 (.28)

**Table 6 (continued). Self-reported Physical Activity<sup>a</sup>**

	<b>3 months after Wellness Program began</b>	<b>9 months after Wellness Program began</b>	<b>15 months after Wellness Program began</b>	<b>21 months after Wellness Program began</b>
<hr/>				
Minutes of walking on those days				
Wellness (n =77)	41.60 (9.63)	60.75 (8.33)	39.10 (8.63)	36.01 (6.70)
Control (n = 81)	54.23 (9.38)	56.51 (8.12)	58.13 (8.42)	48.61 (6.53)
<hr/>				
Hours of sitting on avg. weekday				
Wellness (n =77)	15.63 (2.76)	13.09 (2.45)	10.96 (1.06)	17.19 (7.53)
Control (n = 81)	12.57 (2.69)	13.44 (2.39)	8.33 (1.04)	7.11 (7.34)

<sup>a</sup> Standard errors in parentheses. All means adjusted for baseline differences. No statistically significant differences found between conditions.

Physical activity outcomes assessed included vigorous, moderate, and walking activity (days and time) as well as hours of sedentary activity. Excluding sedentary activity, for all measures baseline reported activity levels were significant predictors of the subsequent activity level,  $ps < .05$ . However, the condition by time interactions were nonsignificant, which indicates wellness program participants did not differ from control by time. In addition, the main effect of condition was nonsignificant (i.e., both  $ps > .05$ ) for each measure of activity, which indicates no difference in post intervention means between the groups. In addition, on several physical activity measures the main effect of time was statistically significant,  $ps < .05$  which implicates seasonal differences in physical activity. With sedentary activity none of the effects were statistically significant (i.e., all  $ps > .05$ ).

### *C. Discussion – RQ1 WIC Staff Physical Activity*

The objective of at least 50% of WIC staff achieving an average of 10,000 steps per day was not achieved. Only a few isolated individuals reached this goal. Moreover, only 4% to 8% of participants achieved a doubling of step counts at any of the time points, and there was no significant difference in relation to intervention or control condition. While some within-individual variation in mean step counts was observed, this was likely due to seasonal, weather-related effects on physical activity. In summary, objective assessment of physical activity using step counters proved challenging to implement in the context of busy WIC clinics. The data that were collected indicate that substantial, measurable changes in physical activity are difficult to achieve.

### **RQ2. Does participation in a staff wellness program lead to an individual's ability to achieve self-selected personal health goals?**

Objective: At least 75% of the WIC staff will report an improvement in two personally selected health behaviors.

#### *A. Health Behaviors*

Forty-nine participants from clinics that offered wellness programs (63%) responded to the paper-based or on-line survey questions that assessed goals selected and goals achieved (see Table 7). At least 75% of participants reported making progress toward achieving the following goals: physical activity (84%), increasing fruit and vegetable consumption (88.6%), diet-unspecified (78%), walking (82.9%), weight loss (75.6%), reducing sugar sweetened beverage intake (75.7%) and reducing television viewing (85%). Due to the method of data collection, it

is not possible to track how many individuals achieved more than one of their personally selected goals.

**Table 7. Personal Wellness Goals Ranked by Percent of Staff Selecting These Goals, Showing Self-reported Progress by Percent (Count) of Wellness Participants (N = 49)**

<b>Goal</b>	<b><i>Did Not Select</i></b>	<b><i>No Progress</i></b>	<b><i>Some Progress</i></b>	<b><i>Steady Progress</i></b>	<b><i>Nearly Achieved</i></b>	<b><i>Achieved</i></b>
Physical Activity	8.2% (4)	14.3% (7)	28.6 % (14)	34.7% (17)	2% (1)	12.2% (6)
Fruit and Veg.	10.2% (5)	10.2% (5)	22.4% (11)	26.5% (13)	16.3% (8)	14.2% (7)
Diet	16.3% (8)	18.4% (9)	22.4% (11)	26.5% (13)	8.2% (4)	16.4% (8)
Walking	16.3% (8)	14.3% (7)	22.4% (11)	22.4% (11)	12.2% (6)	12.3% (6)
Weight Loss	16.3% (8)	20.4% (10)	22.4% (11)	18.4% (9)	10.2% (5)	12.2% (6)
Aerobic Activity	26.5% (13)	28.6% (14)	22.4% (11)	8.2% (4)	2.0% (1)	12.2% (6)
Muscle Strength	32.7% (16)	18.4% (9)	24.5% (12)	12.2% (6)	4.1% (2)	8.1% (4)
Sweetened Bev.	32.7% (16)	8.2% (4)	18.4% (9)	16.3% (8)	2.0% (1)	19.4% (11)
Television Time	44.9% (22)	8.2% (4)	14.3% (7)	12.2% (6)	2.0% (1)	18.3% (9)
Weight Gain	69.4% (34)	14.3% (7)	10.2% (5)	2.0% (1)	2.0% (1)	4.0% (2)

### *B. Qualitative Responses*

With an online survey, WIC staff were asked to comment on the following: 1) overall GHT wellness program experience; 2) what helped them to participate in the wellness program; and, 3) what challenges they experienced with the wellness program.

In response to the first question, a few representative positive comments are highlighted: “In all I think the seeds of change have been planted and more are aware of advantages of healthy lifestyles,” “Having a reason to exercise makes it a goal worth doing!” and, “Thanks for your support and knowledge you have shared with us.” Negative comments regarding the GHT experience were: “Even these surveys take too much time,” “Management must buy into it which they did not and give the coaches time to plan and promote activities. This clinic goes at full speed all the time and most employees aren't even able to take breaks and do errands during lunch” and “When management stopped us from doing exercise tapes or any other exercise during work hours, it was hard to come back from that”.

The following comments were made about components that helped participation in the wellness program: “The reminders of our meetings and wanting more info on making changes for me and my family,” “By seeing my co-workers get involved and to see their progress and motivation in the program,” “Monthly Surveys” and “Having a designated Wellness Coordinator.” In terms of challenges, respondents provided the following comments: “Staff does not want to make a change,” “The longevity of it. At first everyone was excited to participate and then as time went on and one people stopped participating,” “Workload at work and home,” and “Short staffed and very busy.”

### *C. Discussion – RQ2 Staff Wellness and Self-selected Personal Health Goals*

Analysis of the goal reporting indicates that participants selected several goals and 75% or more felt that they had made progress towards the goals related to physical activity, fruit and vegetable intake, walking, diet, weight loss, sugar sweetened beverages intake and television viewing. Substantial progress was reported towards increasing muscular strength and reducing weight gain (> 70% felt they had made progress), but the objective target of 75% perceiving improvement was not met.

The open-ended responses provide context to the quantitative data. The responses indicate that the program was generally well received when implemented. The respondents indicated that they enjoyed the program and working together towards goals. However, time constraint in the workplace was commonly reported as a problem. In addition, the program was hampered by the recent removal of a previous policy that allocated employees an exercise period during the workday.

### **RQ3. Does participation in a staff wellness program result in improved physical and social self concepts, general health, physical functioning, energy, body satisfaction, and exercise self-efficacy?**

#### Objectives:

- 1) At least 75% of WIC staff will report improved self-concept related to physical activity; and,
- 2) At least 75% of WIC staff will report improved self-concept related to body satisfaction.

A. Primary Analyses – Self-Concept / Self-Efficacy

Results for physical activity and body satisfaction self concept are reported in Table 8. There was no difference between participants in the wellness program and the control condition in percent of participants improving for physical and social self concepts, general health, physical functioning, energy, body satisfaction, and exercise self-efficacy (i.e., all *ps* > .05).

**Table 8. Percent of Participants Improving from Baseline by Condition and Time Period<sup>a</sup>**

	<b>Baseline Mean Score</b>	<b>% Improved 3 months after Wellness Program began</b>	<b>% Improved 9 months after Wellness Program began</b>	<b>% Improved 15 months after Wellness Program began</b>	<b>% Improved 21 months after Wellness Program began</b>
Energy/Fatigue Self-concept					
Wellness (n =77)	59.02 (2.28)	54%	51%	57%	41%
Control (n = 80)	53.64 (2.29)	50%	49%	46%	42%
General Health Self Concept					
Wellness (n =77)	67.72 (2.05)	44%	55%	45%	54%
Control (n = 80)	65.16 (2.00)	42%	55%	56%	65%
Phys. Functioning Self Concept					
Wellness (n =77)	88.70 (2.13)	22%	26%	29%	41%
Control (n = 80)	85.67 (2.07)	23%	32%	40%	34%
Exercise Self-efficacy					
Wellness (n =77)	2.77 (.11)	57%	45%	51%	51%
Control (n = 80)	2.96 (.10)	53%	48%	49%	54%
Physical Self Concept					
Wellness (n =77)	3.50 (.05)	49%	51%	27%	61%
Control (n = 80)	3.43 (.05)	44%	59%	29%	62%

	<b>Baseline Mean Score</b>	<b>% Improved 3 months after Wellness Program began</b>	<b>% Improved 9 months after Wellness Program began</b>	<b>% Improved 15 months after Wellness Program began</b>	<b>% Improved 21 months after Wellness Program began</b>
Social Self Concept					
Wellness (n =77)	4.05 (.05)	42%	46%	46%	45%
Control (n = 80)	3.99 (.05)	43%	52%	50%	44%
Body Satisfaction					
Wellness (n =77)	3.00 (.08)	51%	57%	58%	62%
Control (n = 80)	3.13 (.08)	61%	62%	63%	70%

<sup>a</sup> Standard errors in parentheses. No statistically significant differences found between conditions.

*B. Secondary Analyses – Self-Concept / Self-Efficacy*

As a more detailed analysis, the means of each condition were compared using a mixed-analysis of variance with wellness program condition (wellness vs. control) as a two-level between subjects factor, the four post-intervention periods as a within-subjects factor, and baseline as a covariate. As with the prior analyses, for all measures baseline scores were significant predictors of the outcome,  $ps < .05$  while no statistical differences were found between conditions on the measures (i.e., all  $ps > .05$ ).

*C. Discussion – RQ3 WIC Staff Self-Concept / Self-Efficacy*

As with the pedometer data and self-reported physical activity, the wellness program intervention did not have a differential effect on change in the analyzed variables of self-concepts and self-efficacy. This finding could be due to the wellness programs possibly not being fully implemented by a large number of clinics (see goal report data in Figure 2).

**RQ4. Does participation in a staff wellness program result in improved self-reported diet and BMI?**

*A. Dietary Behavior Outcomes*

The wellness program also provided materials that targeted dietary behaviors. Therefore, the following analyses examine the impact of the wellness program on dietary behavior outcomes (e.g., “How many times did you eat vegetables yesterday?”). See Table 9 for a summary of this data.

**Table 9. Self-reported Dietary Behavior in Servings Per Day <sup>a</sup>**

	<b>3 months after Wellness Program began</b>	<b>9 months after Wellness Program began</b>	<b>15 months after Wellness Program began</b>	<b>21 months after Wellness Program began</b>
<i>Vegetable Servings*<sup>b</sup></i>				
Wellness (n =77)	2.05 (.12)	1.96 (.11)	2.10 (.12)	2.03 (.12)
Control (n = 81)	1.83 (.12)	1.74 (.11)	1.72 (.12)	1.87 (.12)
<i>Fruit Servings*</i>				
Wellness (n =77)	1.52 (.11)	1.91 (.12)	1.64 (.12)	1.89 (.11)
Control (n = 81)	1.38 (.11)	1.62 (.11)	1.44 (.12)	1.77 (.11)
<i>Bran Cereal Servings*</i>				
Wellness (n =77)	0.83 (.09)	0.56 (.08)	0.68 (.11)	0.80 (.09)
Control (n = 81)	0.39 (.09)	0.41 (.07)	0.58 (.11)	0.53 (.09)
<i>Bean Servings*</i>				
Wellness (n =77)	1.13 (.11)	0.63 (.09)	0.87 (.11)	0.75 (.10)
Control (n = 81)	0.67 (.11)	0.44 (.09)	0.67 (.10)	0.72 (.10)
<i>Candy Bars</i>				
Wellness (n =77)	0.32 (.07)	0.20 (.07)	0.28 (.08)	0.33 (.08)
Control (n = 81)	0.27 (.07)	0.14 (.06)	0.40 (.08)	0.36 (.07)

	3 months after Wellness Program began	9 months after Wellness Program began	15 months after Wellness Program began	21 months after Wellness Program began
<i>French Fries</i>				
Wellness (n =77)	0.31 (.07)	0.16 (.05)	0.26 (.08)	0.23 (.05)
Control (n = 81)	0.21 (.07)	0.18 (.04)	0.26 (.08)	0.23 (.05)
<i>Potato Chips*</i>				
Wellness (n =77)	0.29 (.05)	0.29 (.08)	0.27 (.06)	0.25 (.08)
Control (n = 81)	0.31 (.05)	0.43 (.07)	0.36 (.06)	0.49 (.08)
<i>Junk Food</i>				
Wellness (n =77)	0.73 (.09)	0.62 (.08)	0.57 (.09)	0.76 (.10)
Control (n = 81)	0.55 (.09)	0.62 (.08)	0.64 (.09)	0.56 (.10)
<i>Dairy Servings</i>				
Wellness (n =77)	1.75 (.11)	1.52 (.10)	1.67 (.13)	1.63 (.10)
Control (n = 81)	1.39 (.11)	1.57 (.09)	1.45 (.13)	1.54 (.10)
<i>Sugar Drinks</i>				
Wellness (n =77)	0.59 (.08)	0.67 (.08)	0.68 (.10)	0.69 (.10)
Control (n = 81)	0.52 (.08)	0.65 (.08)	0.64 (.10)	0.67 (.10)
<i>Lowfat Dairy Products</i>				
Wellness (n =77)	1.53 (.11)	1.51 (.12)	1.30 (.12)	1.34 (.11)
Control (n = 81)	1.42 (.11)	1.46 (.12)	1.25 (.12)	1.38 (.11)

<sup>a</sup> Standard errors in parentheses. All means adjusted for condition baseline differences.

<sup>b</sup> Variables with asterisks had statistically significant condition-related differences on mean post-intervention consumption in favor of the wellness program condition.

- *Vegetables.* The mean number of servings of vegetables consumed per day across time points during the intervention was greater for the wellness program participants ( $M = 2.03$  servings) than the control group ( $M = 1.79$  servings), Cohen's  $d = .17$ ,  $p = .02$ .

- *Fruit.* Regardless of post-intervention time point, the wellness program participants reported consuming a larger number of servings of fruit ( $M = 1.74$ ) relative to the control condition ( $M = 1.55$ ),  $d = .12$ ,  $p = .056$  one tailed.
- *Bran Cereal.* Wellness program participants reported a higher mean number of servings ( $M = 0.72$ ) of bran cereal compared to the control condition ( $M = 0.48$ ),  $d = .19$ ,  $p < .01$ .
- *Beans.* Participants in the wellness program group self-reported consuming more beans ( $M = 0.85$ ) post-intervention than those in the control group ( $M = 0.62$ ),  $d = .16$ ,  $p = .04$ .
- *Potato Chips.* The wellness program participants reported eating fewer servings of potato chips ( $M = 0.27$  servings) than the control condition ( $M = 0.40$ ),  $d = .17$ . These condition-related differences were observed after the intervention regardless of time,  $p = .02$ .
- *Candy Bars, French Fries, Junk Food, Dairy Products, Sugary Drinks and Lowfat Dairy products.* For each of these food items, there was no difference in reported consumption between participants in the wellness program and those in the control, all  $ps > .05$ .

#### B. *Self-Reported Body Mass Index*

The self-reported percent change and mean body mass index were compared for those in the wellness program and those not exposed to the wellness program. No condition-related differences were observed in percent BMI reduction, see Table 10.

**Table 10. Self-reported BMI at Baseline and Percent of Staff Reporting an Improvement in BMI by Condition and Time Period <sup>a</sup>**

	<b>Baseline Mean</b>	<b>% improving 3 months after Wellness Program began</b>	<b>% improving 9 months after Wellness Program began</b>	<b>% improving 15 months after Wellness Program began</b>	<b>% improving 21 months after Wellness Program began</b>
BMI					
Wellness (n =77)	29.36 (.74)	53%	53%	45%	50%
Control (n = 80)	30.63 (.73)	46%	46%	50%	48%

<sup>a</sup> Standard errors in parentheses. No statistically significant differences found between conditions.

Furthermore, an analysis of means indicated that no condition-related differences in mean BMI were present during the post-intervention time periods (all *ps* > .05). Of additional interest to the study was the mean BMI and percentage of WIC personnel who would be considered underweight (BMI less than 18.4), healthy (18.5 to 24.9), overweight (25 to 29.9) and obese (greater than 30) by time point. Therefore, the self-reported mean BMI and BMI category by time points are reported in Table 11.

**Table 11. Mean Self-reported BMI and Percent in Each BMI Category by Time Point <sup>a</sup>**

	<b>Baseline</b>	<b>3 months after Wellness Program began</b>	<b>9 months after Wellness Program began</b>	<b>15 months after Wellness Program began</b>	<b>21 months after Wellness Program began</b>
Mean BMI	29.53	29.27	29.40	29.43	29.65
	(0.44)	(0.44)	(0.44)	(0.45)	(0.46)

**Percent in Each BMI Category**

Underweight (BMI less than 18.4)	0.9%	0.9%	0.9%	0.9%	0.5%
Healthy (18.5 to 24.9)	23.2%	26.9%	26.4%	24.1%	24.6%
Overweight (25 to 29.9)	35.5%	32.5%	33.0%	35.4%	34.1%
Obese (greater than 30)	40.3%	39.6%	39.6%	39.6%	40.8%

<sup>a</sup> Standard errors in parentheses.

*C. Discussion – RQ4 WIC Staff Wellness and Self-reported BMI*

The evidence suggests that the GHT wellness programs had an impact on dietary habits, or at least self-reported dietary habits. The small positive effects observed indicating increased consumption of fruits, vegetables, bran cereal and beans and reduced consumption of potato chips. These results suggest that the wellness programs implemented by the WIC staff had a tendency to focus on diet rather than physical activity, or that dietary change is more responsive to clinic level interventions in time-limited settings.

One should consider the wellness programs were unique to each clinic and that the program evaluation utilized a true experimental design. First, clinic employees may have chosen to focus on wellness activities for which pedometers and self-reported activity were not sensitive measures. Second, in contrast to a Fit WIC 1 study (9), which used a pretest-posttest design at three sites, GHT utilized a true experimental design to evaluate the effectiveness of the wellness intervention. As can be seen from our data seasonal variations in physical activity occur. These seasonal variations along with a pretest-posttest design with an intervention implemented in the

winter could result in the appearance of an effective intervention while a more rigorous experimental design may not show such an effect.

**RQ5. Does participation in skills training result in an improvement in WIC staff’s charting documentation of counseling for pediatric overweight prevention?**

*A. Recording of Age, Height, Weight and BMI*

The means and standard deviations for client age, height, weight and BMI on charts from the clinics with the skills training and the control clinics are reported in Table 12 for each time charts were reviewed.

**Table 12. Demographics from Client Charts Reviewed from Clinics Receiving Skills Training or Control**

	<b>Skills Training</b>	<b>Control</b>	<b>MS<sub>E</sub></b>	<b>p</b>
<b>Baseline</b>				
Age in years	3.66 (.86)	3.88 (.87)	0.74	.08
Height in inches	38.58 (4.14)	39.32 (3.39)	14.39	.042*
Weight in pounds	41.92 (8.25)	43.42 (8.69)	71.85	.065
BMI percentile for age	96.99 (2.84)	97.13 (2.66)	7.59	.58
<b>6 months after Skills Training</b>				
Age in years	3.69 (.93)	3.85 (0.89)	0.83	.12
Height in inches	38.69 (4.46)	39.73 (3.80)	17.45	.027*
Weight in pounds	41.28 (8.21)	42.58 (9.09)	74.51	.18
BMI percentile for age	95.33 (4.23)	94.69 (4.36)	18.44	.18
<b>12 months after Skills Training</b>				
Age in years	4.07	3.97	0.488	.11

Height in inches	37.59	37.60	8.55	.96
Weight in pounds	37.51	37.78	43.72	.66
BMI percentile for age	93.91	94.01	21.64	.82
<b>18 months after Skills Training</b>				
Age in years	4.07 (0.72)	3.97 (0.67)	0.489	.16
Height in inches	37.56 (2.89)	37.67 (2.98)	8.63	.67
Weight in pounds	37.45 (6.44)	37.93 (6.80)	43.85	.44
BMI percentile for age	93.97 (4.55)	94.06 (4.63)	21.10	.84

\* Statistically significant  $p < .05$

After protecting the type I error rate at .05 no statistically significant differences were observed between training conditions in regard to the recording of age, height, weight and BMI for age percentile.

*B. Other Documentation Practices*

*i. Pre-intervention (December 2007 to May 2008).*

*Documentation practices.* The percentage of each documentation practice observed on the charts and whether they differed by clinic training condition are reported in Table 13. Chi-square analyses revealed one significant difference between conditions in pre-intervention practices with the control condition more likely to document successes (67.7%) relative to the skills condition (51.3%).

**Table 13. Pre-intervention Percentage of Charts Documenting Specific Items by Treatment Condition**

Clinic Assignment
-------------------

	<b>Skills Training (n =224)</b>	<b>Control (n = 217)</b>	<b>p</b>
<b>Counseling Documentation</b>			
Weigh Status documented	7.6%	2.3%	.01
Readiness to change documented	8.9%	7.4%	.55
Risk Behavior Counseling	63.8%	57.1%	.15
Documented tool use	22.8%	15.7%	.06
Documented Successes	51.3%	67.7%	< .001*
Documented Issues/Barriers	62.9%	57.6%	.25
Weigh related goal set	0.4%	1.4%	.30
Television Viewing Goal	0.0%	0.0%	NA
Activity Goal	1.8%	0.9%	.43
Family Meals Goal	0.0%	1.7%	.08
Fruit Goal	37.1%	40.6%	.45
Beverage Goal	14.7%	16.1%	.68
Breakfast Goal	0.0%	0.0%	NA
Child Portions Goal	0.4%	0.5%	.98
Medical Referral	13.4%	11.6%	.56

\* Statistically significant with a false detection rate of .05.

ii. *Time One: Six Months Post-intervention (June 2008 to November 2008).*

*Documentation practices.* The percentage of each documentation practice observed on the charts and whether they differed by clinic training condition are reported in Table 14. The results of the chi-square analyses revealed documentation differences between conditions. Relative to the control condition, differences in favor of the skills training condition were apparent in counseling documentation.

**Table 14. Percentage of Charts Documenting Specific Items by Treatment Condition at 6 months After Skills Training**

	Clinic Assignment		p
	Skills Training (n = 174)	Control (n = 147)	
<b>Counseling Documentation</b>			
Weigh Status documented	<b>71.3%</b>	45.6%	<.001*
Readiness to change documented	<b>73.6%</b>	58.5%	.004*
Risk Behavior Counseling	66.7%	63.3%	.52
Documented tool use	<b>78.2%</b>	40.1%	<.001*
Documented Successes	44.3%	<b>67.3%</b>	<.001*
Documented Issues/Barriers	48.3%	<b>63.3%</b>	<.001*
Weigh related goal set	0.0%	2.0%	.09
Television Viewing Goal	2.9%	0.0%	.04
Activity Goal	<b>7.5%</b>	0.7%	.002*
Family Meals Goal	0.0%	0.0%	N/A
Fruit Goal	18.4%	<b>31.3%</b>	.007*
Beverage Goal	<b>35.1%</b>	15.6%	<.001*
Breakfast Goal	0.6%	0.0%	.54
Child Portions Goal	1.1%	1.4%	.62
Medical Referral	17.2%	8.2%	.01*

\* Statistically significant with a false detection rate of .05.

Charts from the skills trained clinics had a higher percentage of documentation related to weight status, readiness to change, general tool usage, activity goals, beverage consumption goals and medical referrals. Documentation differences that indicated an advantage for the control condition were also observed with the control condition being more likely to document the following: failure to meet dietary guidelines, successes, barriers and fruit consumption goals.

iii. *Time Two: Twelve Months Post-intervention (December 2008 to May 2009).*

*Documentation practices.* The percentage of each documentation practice observed on the charts at the second post intervention abstraction and whether they differed by training condition are reported in Table 15.

**Table 15. Percentage of Charts Documenting Specific Items by Treatment Condition at 12 Months After Skills Training**

	Clinic Assignment		<i>p</i>
	Skills Training (n = 225)	Control (n = 215)	
<b>Counseling Documentation</b>			
Weigh Status documented	<b>81.3%</b>	47.4%	< .001*
Readiness to change documented	<b>76.4%</b>	49.3%	< .001*
Risk Behavior Counseling	<b>80.0%</b>	54.4%	<.001*
Documented tool use	<b>85.3%</b>	48.4%	<.001*
Documented Successes	72.4%	77.7%	.20
Documented Issues/Barriers	68.4%	65.6%	.52
Weigh related goal set	0.9%	2.8%	.13
Television Viewing Goal	0.9%	0.0%	.14
Activity Goal	<b>8.4%</b>	2.3%	<.001*
Family Meals Goal	2.7%	1.4%	.34
Fruit Goal	8.4%	<b>28.8%</b>	< .001*
Beverage Goal	<b>42.2%</b>	20.0%	< .001*
Breakfast Goal	0.0%	0.9%	.14
Child Portions Goal	2.7%	2.3%	.81
Medical Referral	<b>17.8%</b>	8.4%	.004*

\* Statistically significant with a false detection rate of .05.

The results of the chi-square analyses revealed documentation differences between conditions. Relative to the control condition differences in favor of the skills training condition were apparent in counseling documentation with the charts from the skills-trained clinics having a higher percentage of documentation related to weight status, readiness to change, risk behavior counseling, general tool usage, activity goals, beverage consumption goals and medical referrals. One practice, documentation of fruit goals, was in higher in the control condition.

*iv. Time Three: Eighteen Months Post-intervention (June 2009 to December 2009).*

The percentages of charts containing each documentation practice for the final abstraction period are reported in Table 16.

**Table 16. Percentage of Charts Documenting Specific Items by Treatment Condition at 18 Months After Skills Training**

	Clinic Assignment		p
	Skills Training (n = 230)	Control (n = 209)	
<b>Counseling Documentation</b>			
Weigh Status documented	<b>80.4%</b>	47.4%	< .001*
Readiness to change documented	<b>74.3%</b>	50.2%	< .001*
Risk Behavior Counseling	<b>78.3%</b>	55.0%	< .001*
Documented tool use	<b>84.8%</b>	47.4%	< .001*
Documented Successes	70.4%	<b>79.9%</b>	.02*
Documented Issues/Barriers	67.8%	66.5%	.76
Weigh related goal set	1.9%	2.9%	.11
Television Viewing Goal	1.7%	0.0%	.055
Activity Goal	<b>8.3%</b>	2.4%	.007*
Family Meals Goal	2.6%	1.4%	.38
Fruit Goal	8.7%	<b>28.2%</b>	< .001*
Beverage Goal	<b>41.7%</b>	19.1%	< .001*

Breakfast Goal	0.0%	1.0%	.13
Child Portions Goal	2.6%	2.4%	.88
Medical Referral	<b>17.4%</b>	8.1%	.004*

\* Statistically significant with a false detection rate of .05.

A high degree of agreement with the second post-intervention charts was observed with chi-square analyses indicating condition related differences in favor of the skills training condition on weight status, readiness to change, risk behavior counseling, general tool usage, activity goals, beverage consumption goals and medical referrals. As with time two, the control condition documented setting more fruit goals relative to the skills condition. In addition, and contrary to time two results, the control condition documented more successes than the skills training condition.

*C. Discussion – RQ 5 Skills Training and WIC staff’s Charting Documentation*

Pre-intervention charts indicate that the conditions were statistically comparable on all but one charting practice, the documentation of successes. Intervention and control groups are comparable on BMI, weight, age and height at all four times. It is possible that most of the charting decisions are based on BMI status of the 2-5 year old WIC client. There are documentation differences primarily in favor of the skills training program with 6 of 9 differences at post time 1; 7 of 8 at post time two; and 7 of 9 at post time 3. The relatively stable difference on post times 2 and 3 map well to GHT skills training and reinforcement events. Also, the one statistical difference in favor of the control condition was on successes and this difference was present at baseline.

**RQ6. Does participation in skills training result in an improvement in WIC staff’s self-efficacy related to pediatric overweight prevention?**

*A. Primary Analysis*

*Assessment Skill Self-Efficacy.* The analysis failed to reveal differences in the nutritionists’ self-reported self efficacy (i.e., all *ps* > .05) between those who had received skills training and those who had not. See Table 17 for percent improving from time one by condition.

**Table 17. Percent of Nutritionists Improving in Assessment Skill Self-efficacy by Condition and Time <sup>a</sup>**

	<b>% Improving 6 months after Skills Training</b>		<b>% Improving 12 months after Skills Training</b>		<b>% Improving 18 months after Skills Training</b>		<b>% Improving 24 months after Skills Training</b>	
	<b>Skills (y)</b>	<b>Skills (n)</b>	<b>Skills (y)</b>	<b>Skills (n)</b>	<b>Skills (y)</b>	<b>Skills (n)</b>	<b>Skills (y)</b>	<b>Skills (n)</b>
Wellness	68%	60%	58%	70%	68%	60%	78%	75%
Control	73%	48%	77%	52%	40%	56%	68%	52%

<sup>a</sup> No differences are statistically significant (i.e., all *ps* > .05).

*Motivational Interviewing Self-Efficacy.* No condition-related differences were observed (see Table 18).

**Table 18. Percent of Nutritionists Improving in Motivational Interviewing Skill Self-efficacy by Condition and Time <sup>a</sup>**

	% Improving 6 months after Skills Training		% Improving 12 months after Skills Training		% Improving 18 months after Skills Training		% Improving 24 months after Skills Training	
	Skills (y)	Skills (n)	Skills (y)	Skills (n)	Skills (y)	Skills (n)	Skills (y)	Skills (n)
Wellness	58%	55%	79%	70%	84%	65%	84%	80%
Control	50%	56%	50%	76%	59%	68%	64%	80%

<sup>a</sup> No differences are statistically significant (i.e., all *ps* > .05).

*Counseling with Language Differences.* The three-way (wellness program by skills training by time) and two-way (wellness program by skills training, wellness program by time, and skills training by time) interactions were non-significant (see Table 19). The main effect of skills training was statistically significant, *p* = .029. A higher percentage of nutritionists in the skills training condition (*M* = 74%) gained in self-efficacy for counseling in the presence of language differences relative to the control (*M* = 59%).

**Table 19. Percent of Nutritionists Improving Counseling Self-efficacy when Language Differences are Present by Condition and Time <sup>a</sup>**

	% Improving 6 months after Skills Training		% Improving 12 months after Skills Training		% Improving 18 months after Skills Training		% Improving 24 months after Skills Training	
	Skills (y)	Skills (n)	Skills (y)	Skills (n)	Skills (y)	Skills (n)	Skills (y)	Skills (n)
Wellness	79%	70%	95.0%	40%	73%	60%	63%	55%
Control	59%	60%	73%	64%	77%	76%	73%	44%

<sup>a</sup> Main effect of skills statistically significant, *F*(1, 82) = 4.91, *MS*<sub>E</sub> = .412, *p* = .029, with skills (*M* = 74%) mean change higher than the no skills condition (*M* = 59%).

*Counseling with Cultural Differences.* No statistical differences were observed between conditions or across time in counseling when cultural differences were present. (See Table 20: all  $ps > .05$ ).

**Table 20. Percent of Nutritionists Improving in Counseling Self-efficacy when Cultural Differences are Present by Condition and Time <sup>a</sup>**

	<b>% Improving 6 months after Skills Training</b>		<b>% Improving 12 months after Skills Training</b>		<b>% Improving 18 months after Skills Training</b>		<b>% Improving 24 months after Skills Training</b>	
	<b>Skills (y)</b>	<b>Skills (n)</b>	<b>Skills (y)</b>	<b>Skills (n)</b>	<b>Skills (y)</b>	<b>Skills (n)</b>	<b>Skills (y)</b>	<b>Skills (n)</b>
Wellness	63%	60%	68%	70%	68%	75%	68%	80%
Control	64%	72%	68%	60%	64%	72%	64%	64%

<sup>a</sup> No differences are statistically significant (i.e., all  $ps > .05$ ).

*Counseling about physical activity.* See Table 21. No statistically significant main effects or interactions were observed.

**Table 21. Percent of Nutritionists Improving in Counseling Self-efficacy about Physical Activity by Condition and Time <sup>a</sup>**

	<b>% Improving 6 months after Skills Training</b>		<b>% Improving 12 months after Skills Training</b>		<b>% Improving 18 months after Skills Training</b>		<b>% Improving 24 months after Skills Training</b>	
	<b>Skills (y)</b>	<b>Skills (n)</b>	<b>Skills (y)</b>	<b>Skills (n)</b>	<b>Skills (y)</b>	<b>Skills (n)</b>	<b>Skills (y)</b>	<b>Skills (n)</b>
Wellness	58%	60%	69%	65%	63%	70%	58%	70%
Control	59%	56%	55%	72%	64%	64%	50%	80%

<sup>a</sup> No differences are statistically significant (i.e., all  $ps > .05$ ).

*Counseling about nutrition.* No statistical relationships were identified; see Table 22.

**Table 22. Percent of Nutritionists Improving in Counseling Self-efficacy about Nutrition by Condition and Time <sup>a</sup>**

	% Improving 6 months after Skills Training		% Improving 12 months after Skills Training		% Improving 18 months after Skills Training		% Improving 24 months after Skills Training	
	Skills (y)	Skills (n)	Skills (y)	Skills (n)	Skills (y)	Skills (n)	Skills (y)	Skills (y)
Wellness	84%	90%	95%	90%	84%	75%	85%	90%
Control	82%	96%	91%	96%	77%	92%	82%	92%

<sup>a</sup> No differences are statistically significant (i.e., all *ps* > .05).

*B. Additional Analyses*

As finer-grained analysis, the means of each condition were compared using a mixed-analysis of variance (See Tables 23-28). The results were analogous to the analyses of the percentage change analyses above. No differences emerged between conditions on nutritionists’ self-efficacy for counseling assessment skills, MI-Skills, cultural differences, physical activity, and nutrition. A statistically significant difference was observed on counseling when language differences are present with the skills training condition ( $M = 3.90$ ) reporting higher self-efficacy than the control condition ( $M = 3.73$ ) regardless of post-intervention period,  $d = .22$ .

**Table 23. Mean Assessment Skills Self-efficacy of Nutritionists by Condition and Time <sup>a</sup>**

	<b>Baseline</b>		<b>6 months After Skills Training</b>		<b>12 months After Skills Training</b>		<b>18 months After Skills Training</b>		<b>24 After Skills Training - Intervention</b>	
	<b>Skill s</b>	<b>Contro l</b>	<b>Skill s</b>	<b>Contro l</b>	<b>Skill s</b>	<b>Contro l</b>	<b>Skill s</b>	<b>Contro l</b>	<b>Skill s</b>	<b>Contro l</b>
Wellnes s	4.29	4.50	4.48	4.41	4.47	4.58	4.44	4.43	4.59	4.69
Control	4.33	4.54	4.44	4.30	4.59	4.50	4.42	4.37	4.61	4.43

<sup>a</sup> No differences are statistically significant (i.e., all *ps* > .05). Post-intervention means are adjusted for baseline differences. Values close to 1 represent lower self-efficacy and values close to 5 are higher self-efficacy.

**Table 24. Mean Motivational Interviewing Self-efficacy by Condition and Time <sup>a</sup>**

	<b>Baseline</b>		<b>6 months After Skills Training</b>		<b>12 months After Skills Training</b>		<b>18 months After Skills Training</b>		<b>24 After Skills Training - intervention</b>	
	<b>Skills</b>	<b>Control</b>	<b>Skills</b>	<b>Control</b>	<b>Skills</b>	<b>Control</b>	<b>Skills</b>	<b>Control</b>	<b>Skills</b>	<b>Control</b>
Wellness	3.93	3.92	4.01	3.93	4.25	4.08	4.12	3.97	4.27	4.11
Control	4.02	3.95	3.91	3.97	4.00	4.22	3.93	4.10	4.16	4.24

<sup>a</sup> No differences are statistically significant (i.e., all *ps* > .05). Post-intervention means are adjusted for baseline differences. Values close to 1 represent lower self-efficacy and values close to 5 are higher self-efficacy.

**Table 25. Mean Self-efficacy for Counseling when Language Differences are Present by Condition and Time <sup>a</sup>**

	Baseline		6 months After Skills Training		12 months After Skills Training		18 months After Skills Training		24 After Skills Training - intervention	
	Skills	Control	Skills	Control	Skills	Control	Skills	Control	Skills	Control
Wellness	3.61	3.91	3.89	3.83	4.09	3.45	4.07	3.80	3.81	3.76
Control	3.45	3.63	3.69	3.65	3.78	3.77	3.92	3.87	3.92	3.68

<sup>a</sup> No differences are statistically significant (i.e., all *ps* > .05). Post-intervention means are adjusted for baseline differences. Values close to 1 represent lower self-efficacy and values close to 5 are higher self-efficacy.

**Table 26. Mean Self-efficacy for Counseling when Cultural Differences are Present by Condition and Time <sup>a</sup>**

	Baseline		6 months After Skills Training		12 months After Skills Training		18 months After Skills Training		24 After Skills Training - intervention	
	Skills	Control	Skills	Control	Skills	Control	Skills	Control	Skills	Control
Wellness	3.74	3.68	3.71	3.74	3.80	3.82	3.87	3.81	3.92	3.94
Control	3.55	3.75	3.66	3.88	3.75	3.73	3.66	3.94	3.94	3.78

<sup>a</sup> No differences are statistically significant (i.e., all *ps* > .05). Post-intervention means are adjusted for baseline differences. Values close to 1 represent lower self-efficacy and values close to 5 are higher self-efficacy.

**Table 27. Mean Self-efficacy for Counseling about Physical Activity by Condition and Time <sup>a</sup>**

	Baseline		6 months After Skills Training		12 months After Skills Training		18 months After Skills Training		24 After Skills Training - intervention	
	Skill s	Contro l	Skill s	Contro l	Skill s	Contro l	Skill s	Contro l	Skill s	Contro l
Wellnes s	3.24	3.31	3.22	3.35	3.46	3.36	3.30	3.38	3.26	3.45
Control	3.21	3.19	3.31	3.33	3.39	3.48	3.37	3.38	3.23	3.49

<sup>a</sup> No differences are statistically significant (i.e., all *ps* > .05). Post-intervention means are adjusted for baseline differences. Values close to 1 represent lower self-efficacy and values close to 5 are higher self-efficacy.

**Table 28. Mean Self-efficacy for Counseling about Nutrition by Condition and Time <sup>a</sup>**

	Baseline		6 months After Skills Training		12 months After Skills Training		18 months After Skills Training		24 After Skills Training - intervention	
	Skill s	Contro l	Skill s	Contro l	Skill s	Contro l	Skill s	Contro l	Skill s	Contro l
Wellnes s	3.07	3.26	3.72	3.56	3.71	3.58	3.66	3.45	3.59	3.61
Control	3.15	3.18	3.53	3.76	3.56	3.75	3.51	3.69	3.64	3.66

<sup>a</sup> No differences are statistically significant (i.e., all *ps* > .05). Post-intervention means are adjusted for baseline differences. Values close to 1 represent lower self-efficacy and values close to 5 are higher self-efficacy.

### *C. Discussion – RQ6 Skills Training and Improvement in WIC Staff’s Self-efficacy*

The nutritionist self-efficacies were expected to be responsive to the skills training and wellness program interventions. Specifically, it was expected that nutritionists who participated in the combination of the skills training and wellness interventions would report higher self-efficacy for nutritional counseling (i.e., the interaction of skills and wellness interventions would have positive synergistic effects). Furthermore, the main effects of skills training and wellness program were also expected to result in improved nutritional counseling self-efficacies.

The results of the analyses are inconclusive in terms of whether the skills training and wellness programs alone or in unison improved nutritionists’ self-efficacies in regards to counseling assessment skills, MI skills, cultural differences, physical activity, and nutrition. The results do indicate that the skills training improved nutritionists self-efficacy for counseling when language differences were present. Although speculative, this improvement may be attributable to the visual nature of the GHT materials.

### **RQ7. Is participation in a skills training about pediatric overweight valued by WIC staff?**

#### *A. Primary Skills Training*

*Overall Perception of Training, Knowledge and Confidence in Counseling about Pediatric Overweight.* Respondents were asked to state their level of agreement with statements about the training on Likert scale with “strongly agree” and “strong disagree” as the anchors. The skills training was well received with 96%, 92%, and 88% positive responses on “Overall

Perception of Training”, “Knowledge Improvement” and “Confidence in Counseling”, respectively (see Table 29).

**Table 29. Participant Ratings of June 2008 Pediatric Training Usefulness and Knowledge and Confidence Improvement (n in parentheses)**

	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
Overall, the pediatric overweight reinforcement training was useful.	44.2% (23)	51.9% (27)	3.8% (2)	0% (0)	0% (0)
Having participated in the reinforcement training, I feel my knowledge of pediatric overweight was improved.	30.8% (16)	61.5% (32)	5.8% (3)	1.9% (1)	0% (0)
Having participated in the reinforcement training, I feel more confident in my ability to counsel WIC clients about pediatric overweight.	25.0% (13)	59.6% (31)	11.5% (6)	0% (0)	0% (0)

*Training Component Usefulness.* In rating the usefulness for individual component of the skills training, a scale with “not useful” to “very useful” as anchors was used (see Table 30). The review of obesity trends, Beyond Nutrition Counseling video, introduction of new tools and charting guidelines were rated as “somewhat useful” or “very useful” by at least 90% of the participants. Although highly regarded in general, the case studies and role plays were rated as “somewhat useful” or “very useful” by 84% of the participants.

**Table 30. Participant Ratings of June 2008 Pediatric Overweight Training Components' Usefulness (n in parentheses)**

	<b>Very Useful</b>	<b>Somewhat Useful</b>	<b>Neutral</b>	<b>Not Useful</b>
Review of obesity trends, causes, and prevention	70.6% (36)	29.4% (15)	0% (0)	0% (0)
Beyond Nutrition Counseling Video and discussion of barriers and solutions.	50.0% (26)	48.1% (25)	1.9% (1)	0% (0)
Review of New Mexico WIC flow chart and tools	59.6% (31)	32.7% (17)	3.8% (2)	3.8% (2)
Charting guidelines	61.5% (32)	28.8% (15)	5.8% (3)	3.8% (2)
Case studies and role plays	51.9% (27)	32.7% (17)	9.6% (5)	5.8% (3)

*B. Reinforcement Trainings*

Respondents were asked to select all the areas that they felt would benefit from further reinforcement trainings. Obtaining the highest percent of positive responses was “*Additional discussion of barriers and solutions to pediatric overweight*” with 71.1% selecting this option. This was followed by 64.4% selecting “*Additional information about New Mexico WIC materials and resources to address pediatric overweight,*” 55.6% selecting “*review of*

procedures for using tools” and 44% selecting “More in-depth review of obesity trends, causes, and prevention.” Receiving the lowest rating from respondents was “Case studies and role playing” with only 17.8% of respondents requesting more training of this nature.

*C. Delivery Method for Follow-Up Trainings and Support*

When asked “What type of follow-up training or support would you like to receive?” 72.3% wanted group meetings or workshops, 70.2% indicated wanting to receive e-mail tips, 14.9% wanted one-on-one training, 8.5% and requested telephone conference call support. 6.4% of the respondents specified that no further training was needed.

Participants in the reinforcement training reported very similar ratings compared to the first training (see Tables 31 and 32). The minor differences were a reduction in the Strongly Agree category for “I feel my knowledge of pediatric overweight was improved” and “I feel more confident in my ability to counsel WIC clients about pediatric overweight” as well as a reduction in the rating of Very Useful for “Review of New Mexico WIC flow chart” “Charting guidelines” and “Case studies and role plays.”

**Table 31. Participant ratings of January 2009 pediatric reinforcement training usefulness and knowledge and confidence improvement**

	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
Overall, the pediatric overweight reinforcement training was useful.	16.9% (10)	71.2% (42)	10.2% (6)	1.7% (1)	0% (0)
Having participated in the reinforcement training, I feel my knowledge of pediatric overweight was improved.	13.8% (8)	66.1% (39)	18.6% (11)	1.7% (1)	0% (0)

Having participated in the reinforcement training, I feel more confident in my ability to counsel WIC clients about pediatric overweight.	8.5%	67.8%	20.3%	3.4%	0%
	(5)	(40)	(12)	(2)	(0)

**Table 32. Participant ratings of January 2009 pediatric overweight reinforcement training components**

	<b>Very Useful</b>	<b>Somewhat Useful</b>	<b>Neutral</b>	<b>Not Useful</b>
Review of obesity trends, causes, and prevention	49.2% (29)	37.3% (22)	13.6% (8)	0% (0)
Beyond Nutrition Counseling Video and discussion of barriers and solutions.	35.6% (21)	42.4% (25)	20.3% (12)	1.7% (1)
Review of New Mexico WIC flow chart and tools	37.3% (22)	50.8% (30)	10.2% (6)	1.7% (1)
Charting guidelines	42.4% (25)	44.1% (26)	13.6% (8)	0% (0)
Case studies and role plays	20.3% (12)	55.9% (33)	18.6% (11)	5.1% (3)

*D. Discussion – RQ7 Skills Training Valued by WIC Staff*

Results from the survey provide evidence that participants in both skills training sessions generally had a positive experience. Through the training, respondents were able to gain more knowledge and confidence in their ability to counsel clients on pediatric overweight issues. The

majority of respondents felt that all portions of the training were useful, with the review of obesity trends, causes, and prevention being the most useful portion and case studies and role playing being the least. Looking ahead to future pediatric overweight trainings, training developers should consider several areas highlighted by participants' responses. The responses demonstrated that participants valued the review of obesity trends and prevention. This is an area that should be updated and continually reviewed, as it is beneficial to respondents and their daily practice.

**RQ8. Does staff participation in a wellness program or skills training result in an improvement in WIC clients' satisfaction with the way WIC staff addresses pediatric overweight prevention during the certification visit?**

*A. Client Satisfaction Surveys*

The results for the client satisfaction analyses are presented by post-intervention period which were at eight, 15 and 22 months after the skills training (spring 2009, fall 2009, and spring 2010). Initially, each outcome was analyzed with wellness program and skills training as between-subjects factors and the interaction included. However, these analyses failed to identify conclusive results.

Due to prior analyses that indicated the wellness programs were not fully implemented by the clinics, the data were further analyzed with skills condition (skills training vs. usual care) and BMI status (low vs. medium vs. high) of the client's child as a between-subjects factors along with the interaction of the two factors (i.e., skills training by BMI status). See Tables 33 and 34 for summary of results by analysis strategy.

**Table 33. Mean Client Satisfaction on Each Dimension by Condition and Time (standard errors in parentheses)<sup>a</sup>**

	8 months after Skills			15 months after Skills			22 months after Skills		
	Training			Training			Training		
<b>Clerk Satisfaction</b>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>
Wellness	5.46 (.04)	5.44 (.05)	5.54 (.03)	5.39 (.07)	5.41 (.08)	5.40 (.05)	5.52 (.06)	5.49 (.08)	5.50 (.05)
Control	5.59 (.04)	5.50 (.04)	5.45 (.03)	5.54 (.07)	5.55 (.07)	5.55 (.05)	5.55 (.07)	5.47 (.06)	5.51 (.05)
<i>Across Wellness</i>	5.52 (.03)	5.47 (.03)		5.47 (.05)	5.48 (.05)		5.53 (.05)	5.48 (.05)	
<b>Nutritionist Care</b>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>
Wellness	5.30 (.05)	5.18 (.05)	5.24 (.03)	5.27 (.06)	5.20 (.07)	5.23 (.04)	5.43 (.07)	5.40 (.08)	5.42 (.05)
Control	5.41 (.05)	5.38 (.05)	5.40 (.03)	5.40 (.06)	5.32 (.06)	5.36 (.04)	5.44 (.08)	5.39 (.07)	5.41 (.05)
<i>Across Wellness</i>	5.35 (.03)	5.28 (.03)		5.33 (.04)	5.26 (.04)		5.44 (.05)	5.39 (.05)	
<b>Nutritionist Tech.</b>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>
Wellness	5.38 (.05)	5.26 (.05)	5.32 (.03)	5.29 (.06)	5.20 (.07)	5.25 (.04)	5.48 (.07)	5.41 (.08)	5.44 (.05)
Control	5.46 (.05)	5.40 (.05)	5.45 (.03)	5.44 (.06)	5.33 (.06)	5.38 (.04)	5.45 (.08)	5.37 (.07)	5.41 (.05)
<i>Across Wellness</i>	5.42 (.03)	5.33 (.03)		5.36 (.04)	5.27 (.04)		5.46 (.05)	5.39 (.05)	
<b>Facility Safety</b>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>
Wellness	5.31	5.29	5.30	5.34	5.31	5.32	5.50	5.38	5.44

	8 months after Skills			15 months after Skills			22 months after Skills		
	Training			Training			Training		
	(.05)	(.05)	(.03)	(.06)	(.07)	(.04)	(.07)	(.07)	(.05)
Control	5.50	5.46	5.48	5.47	5.36	5.41	5.53	5.34	5.43
	(.05)	(.05)	(.04)	(.06)	(.06)	(.04)	(.08)	(.07)	(.05)
<i>Across Wellness</i>	5.40	5.37		5.40	5.33		5.51	5.36	
	(.03)	(.03)		(.04)	(.04)		(.05)	(.05)	
<b>General Satisfaction</b>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>
Wellness	5.18	5.18	5.18	5.11	5.10	5.11	5.35	5.35	5.34
	(.06)	(.06)	(.04)	(.06)	(.05)	(.04)	(.07)	(.08)	(.05)
Control	5.30	5.40	5.35	5.22	5.26	5.24	5.41	5.28	5.34
	(.06)	(.06)	(.04)	(.05)	(.05)	(.04)	(.08)	(.07)	(.05)
<i>Across Wellness</i>	5.24	5.29		5.17	5.18		5.38	5.31	
	(.04)	(.04)		(.04)	(.04)		(.05)	(.05)	

<sup>a</sup> The main effects of both conditions and the interaction were not statistically significant (i.e., all *ps* > .05).

**Table 34. Mean Client Satisfaction on Each Dimension by Skills, BMI and Time (standard errors in parentheses) <sup>a</sup>**

	8 months after Skills			15 months after Skills			22 months after Skills		
	Training			Training			Training		
<b>Clerk Satisfaction</b>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>
Low BMI	5.62	5.31	5.46	5.36	5.62	5.49	5.32	5.68	5.50
	(.07)	(.10)	(.08)	(.13)	(.19)	(.13)	(.16)	(.23)	(.14)
Healthy BMI	5.50	5.48	5.49	5.50	5.49	5.49	5.52	5.57	5.54
	(.03)	(.04)	(.02)	(.06)	(.06)	(.04)	(.06)	(.05)	(.04)
High BMI	5.62	5.55	5.59	5.45	5.53	5.49	5.55	5.38	5.47
	(.07)	(.08)	(.05)	(.13)	(.17)	(.10)	(.14)	(.13)	(.09)
<i>Across BMI</i>	5.58	5.45		5.55	5.43		5.46	5.55	
	(.05)	(.04)		(.09)	(.07)		(.07)	(.09)	
<b>Nutritionist Care.</b>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>
Low BMI	5.51	5.06	5.28	5.31	5.36	5.34	5.61	5.26	5.44

	8 months after Skills Training			15 months after Skills Training			22 months after Skills Training		
	(.16)	(.10)	(.09)	(.15)	(.16)	(.11)	(.26)	(.16)	(.15)
Healthy BMI	5.34	5.35	5.35	5.33	5.29	5.31	5.46	5.46	5.46
	(.04)	(.04)	(.03)	(.05)	(.05)	(.03)	(.06)	(.06)	(.04)
High BMI	5.37	5.17	5.27	5.40	5.27	5.34	5.31	5.33	5.32
	(.08)	(.09)	(.06)	(.10)	(.13)	(.08)	(.13)	(.14)	(.09)
<i>Across BMI</i>	5.41	5.19		5.35	5.31		5.46	5.35	
	(.06)	(.05)		(.06)	(.07)		(.10)	(.07)	
<b>Nutritionist Tech.</b>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>
Low BMI	5.44	5.12	5.28	5.25	5.43	5.34	5.66	5.28	5.47
	(.15)	(.10)	(.09)	(.14)	(.14)	(.10)	(.24)	(.16)	(.15)
Healthy BMI	5.42	5.38	5.40	5.38	5.29	5.34	5.50	5.45	5.48
	(.04)	(.04)	(.03)	(.05)	(.05)	(.03)	(.06)	(.06)	(.04)
High BMI	5.42	5.30	5.36	5.48	5.43	5.46	5.33	5.38	5.36
	(.08)	(.09)	(.06)	(.10)	(.13)	(.08)	(.13)	(.14)	(.09)
<i>Across BMI</i>	5.43	5.27					5.50	5.37	
	(.06)	(.04)					(.09)	(.07)	
<b>Facility Safety</b>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>
Low BMI	5.44	5.28	5.36	5.18	5.45	5.31	5.69	5.34	5.52
	(.16)	(.10)	(.09)	(.10)	(.15)	(.10)	(.24)	(.17)	(.14)
Healthy BMI	5.39	5.39	5.39	5.45	5.31	5.38	5.55	5.37	5.46
	(.04)	(.04)	(.03)	(.05)	(.05)	(.03)	(.06)	(.06)	(.04)
High BMI	5.45	5.40	5.43	5.34	5.45	5.39	5.41	5.49	5.45
	(.09)	(.10)	(.06)	(.10)	(.14)	(.08)	(.13)	(.14)	(.10)
<i>Across BMI</i>	5.43	5.36		5.32	5.40		5.55	5.40	
	(.05)	(.06)		(.06)	(.07)		(.07)	(.09)	
<b>General Satisfaction</b>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>
Low BMI	5.40	5.01	5.20	5.40	5.01	5.20	5.46	5.22	5.34
	(.20)	(.13)	(.12)	(.20)	(.13)	(.12)	(.16)	(.16)	(.14)

	8 months after Skills Training			15 months after Skills Training			22 months after Skills Training		
Healthy BMI	5.23 (.05)	5.37 (.05)	5.30 (.04)	5.23 (.05)	5.37 (.05)	5.30 (.04)	5.41 (.06)	5.33 (.06)	5.37 (.04)
High BMI	5.25 (.11)	5.19 (.12)	5.20 (.12)	5.25 (.11)	5.19 (.12)	5.22 (.08)	5.22 (.13)	5.42 (.14)	5.32 (.10)
Across BMI	5.29 (.08)	5.19 (.06)		5.29 (.08)	5.19 (.06)		5.36 (.09)	5.32 (.07)	

<sup>a</sup> For satisfaction with nutritionist technical skills the main effect of skills and interaction of BMI with skills were statistically significant (see text for description).

*i. Eight Months Post-Intervention Client Survey (Spring 2009)*

*Nutritionist Care.* Clients in clinics where the staff received skills training reported higher satisfaction with the nutritionist care ( $M = 5.41$ ) than clients in the clinics where there was no skills training ( $M = 5.19$ ),  $d = .28$ ,  $p < .01$ . This effect was modified by the weight status of the child,  $p = .03$ . Follow-up simple main effects within child’s BMI group (low, normal, high) revealed that clients who had children with low and high BMIs had a higher rating for nutritionist care in the clinics where skills training was provided ( $ds = .60$  and  $.28$ , respectively), while no difference was present in ratings by clients of children with healthy BMIs ( $d \approx .00$ ).

*Nutritionists Technical Skills.* When asked how well their nutritionists explained BMI, the clients reported higher satisfaction with nutritionists in the skills training condition ( $M = 5.43$ ) relative to the control condition ( $M = 5.27$ ),  $p = .03$ ,  $d = .22$ .

*Clerk Satisfaction, Facility Safety and General Satisfaction.* No condition related differences were observed,  $p > .05$ .

ii. *Fifteen Months Post-Intervention Client Survey (Fall 2009)*

No statistically significant main effects of interactions were observed on the five outcome variables.

iii. *Twenty-two Months Post-Intervention Client Survey (Spring 2010)*

No statistically significant main effects of interactions were observed on the five outcome variables.

**B. Peer Interviews**

Clients were interviewed in person by peer interviewers at two time points. They were asked to offer comments about their overall experience at the WIC clinics, specifics about what was discussed during their nutrition counseling session (see peer interviewer training protocol in Appendix Q), and about the use of GHT counseling tools.

i. *Overall Client Experiences*

Responses to these questions were categorized into clients’ reactions towards discussions related to diet, physical activity and weight. The responses were coded as present or absent (See Appendix R for more details on coding) for each parent and analyzed for condition-related effects (see Table 35 for percentage of each statement by condition).

**Table 35. Percent of Clients Making Statements about the Discussion with Nutritionist During Peer Interviews by Condition and Time**

Positive Statements about Activity Discussion	15 months after Skills Training			21 Months after Skills Training		
	Skills	Control	Across Skills	Skills	Control	Across Skills
Wellness	62.9%	20.0%	46.4%	65.7%	25.0%	45.4%

	15 months after Skills Training			21 Months after Skills Training		
Control	60.0%	30.0%	40.0%	61.5%	58.8%	60.2%
<i>Across wellness</i>	61.4%	25.0%		63.6%	41.9%	
<b>Negative Statements about Activity Discussion</b>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>
Wellness	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Control	0.0%	10.0%	5.0%	0.0%	0.0%	0.0%
<i>Across wellness</i>	0.0%	5.0%		0.0%	0.0%	
<b>Positive Statements about Weight Discussion</b>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>
Wellness	91.4%	80.0%	85.7%	84.6%	65.0%	73.9%
Control	100.0%	86.7%	93.3%	82.9%	100.0%	92.3%
<i>Across wellness</i>	95.7%	83.3%		83.7%	82.5%	
<b>Negative Statements about Weight Discussion</b>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>
Wellness	2.9%	5.0%	3.9%	8.6%	10%	9.3%
Control	0.0%	6.7%	3.3%	15.4%	0.0%	7.7%
<i>Across wellness</i>	1.4%	5.8%		12.0%	5.0%	
<b>Positive Statements about Diet Discussion</b>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>
Wellness	85.7%	80.0%	82.9%	74.3%	80.0%	77.1%
Control	90.0%	93.3%	91.7%	69.2%	88.2%	78.7%
<i>Across wellness</i>	87.9%	86.7%		71.8%	84.1%	
<b>Negative Statements about Diet Discussion</b>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>	<b>Skills</b>	<b>Control</b>	<i>Across Skills</i>
Wellness	0.0%	0.0%	0.0%	2.9%	0.0%	1.4%
Control	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<i>Across wellness</i>	0.0%	0.0%		1.4%	0.0%	

ii. *Specific Topics Discussed*

*Fifteen Months Post-intervention (Spring 2009)*

*Comments about Diet, Weight, Goals and Affect towards Appointment.* There were no differences in positive and negative statements about diet, weight, goals and affect between clinics with the skills training and clinics that did not receive the training, all  $ps > .05$ .

*Comments about Activity.* Clients in the skills trained clinics were more likely to report positive statements than those in the control (OR = 6.00,  $p = .006$ ). The main effect of wellness condition and the wellness by skills interaction were nonsignificant (i.e., both  $ps > .05$  and ORs = 1.00). There were no condition-related differences in probability of making negative statement about activity-related discussions.

*Twenty-one Months Post-intervention (Spring 2010)*

*Comments about diet, weight, goals and affect towards appointment.* The overall logistic regressions were nonsignificant, all  $ps > .05$ .

*Comments about Activity.* The logistic regression of positive activity statements was statistically significant with clients in the skills condition more likely to report positive statements than those in the control (OR = 3.085,  $p = .01$ ). The main effect of wellness condition and the wellness by skills interaction were nonsignificant (i.e., both  $ps > .05$  and ORs = 1.00). No statements were recorded regarding a negative interaction with the nutritionists about physical activity.

*C. GHT Tool Use*

During the first peer interview sessions there were no questions regarding the usage of GHT tools. However, a few participants mentioned the tools at this time. These responses were

recorded and analyzed for group differences. For the second post-intervention peer interviews the respondents were shown the tools and asked if they had seen them, and if they had seen them, to rate the quality of the tools. The results indicated that at the first post-intervention 4% and 0% of the clients in the skills training and control conditions, respectively, mentioned the presence of GHT tools. At the second post-intervention, 97.9% of the skills trained condition and 2.7% of the control condition indicated they had viewed the tools during their counseling sessions.

*Ratings of GHT tools.* Clients from the clinics that received skills training were asked to rate how useful the tools were on a scale of 1 (low) to 5 (high) in aiding their understanding of what the nutritionists were discussing. The mean ratings were high across the tools with the Report Card having a mean of 4.47 (SD = .84), the BMI poster a mean of 4.84 (SD = .47), the NASH a mean rating of 4.40 (SD = 1.03), and the Talking Tips a mean of 4.63 (SD = .69).

#### *D. Discussion – RQ8 Participation in Wellness or Skills Programs and Improvement in WIC*

##### *Client Satisfaction with WIC Staff Counseling*

The results from the paper client satisfaction survey at time one suggest that clients who had children who were low and high BMI preferred the level of care shown by the nutritionists who received the skills training, while for healthy BMI children no difference was observed between clinics. Furthermore, clients in the skills trained clinics rated the nutritionists' technical skills higher than the control clients. For all three differences the effects were small (around 2/10 of a standard deviation). At time two, a small effect in clients' general satisfaction was found in favor of the control relative to the wellness condition. At time three no differences were found between conditions. A potential explanation for the time one difference is that the new tools were novel to the clients and the nutritionists, which may have resulted in nutrition counseling related differences.

At time three, clients were asked to rate the GHT tools. It should be noted that for the control group no participants had been exposed to the NASH form or other GHT tools. However, clients consistently provided ratings for the tools even when their clinic had not received the skills training and did not use the tools. This is not surprising for three reasons: first, time constraints may have resulted in a number of participants quickly completing the survey; second, although written at a fifth grade reading level many of the respondents may have had difficulty comprehending the survey; and third, it is very possible that the clients have little awareness of the names of the tools that nutritionists utilize. These three concerns aside it should be noted that the tools were consistently rated higher in the skills condition, which indicates that a number of clients were aware of the tools. Furthermore, among the four tools the NASH and the Report Card appeared to be the most notable tools with a larger difference observed between the skills trained and control clients.

The peer interview results suggest three findings of interest. First, the clients at both survey times were more likely to make positive statements about the nutritionists' discussions about physical activity. This perception may be due to the GHT tools providing non-threatening ways for nutritionists to discuss physical activity with clients. Second, the tool-related results of the peer interviews indicate that treatment diffusion is not an explanation for the clients' survey results that indicate high ratings of the GHT tools in the control conditions. This finding also supports the explanation that the clients may not comprehend the written survey or time constraints resulted in haphazard response. Third, the client ratings of the GHT tools are consistently high, indicating that when provided access to the tools the clients find that the tools facilitate understanding of the primary issues the nutritionists are discussing.

**RQ9. Does participation in both a staff wellness program and staff skills training result in better outcomes than participating in either component alone?**

*A. Description and Discussion*

With the exception of RQ7 (the analysis of chart abstraction data) all analyses contained the interaction of wellness and skills as an effect of interest. Specifically, we were interested in whether the combination of a wellness with the pediatric overweight skills training would be more effective than the components alone. In all cases, the interaction term was non-significant (i.e.,  $p > .05$ ). This indicates that the results are inconclusive regarding the combined efficacy of wellness programs and skills training.

## **SUMMARY AND CONCLUSIONS**

*A. Wellness Intervention*

It was anticipated that implementing and sustaining an 18 month behavioral change intervention in a WIC clinic environment would present significant challenges. A state-wide, community-based intervention is difficult to fully implement due to time and system constraints faced by most WIC nutritionists. Qualitative results from GHT WIC staff surveys confirm that time constraints were felt to be a significant barrier to implementing the wellness program and achieving behavioral change goals. Even with full support from WIC administration, some clinics were not able to accommodate the change in routine needed to fit the wellness program into the monthly schedule.

Despite these challenges, the wellness interventions were generally well received. As observed in the analysis of Research Question 2, most participants in the wellness intervention perceived progress in reaching personal behavioral goals. Moreover, as noted in the analysis of

Research Question 4, participants in the wellness intervention clinics were more likely than controls to report healthy dietary practices, including increased intake of fruit, vegetables, beans and bran cereal, and a reduction in the consumption of potato chips.

The documentation of measurable behavioral changes was, however, more problematic. Analysis of step count data (Research Question 1) found no significant differences between intervention clinics and controls. And, only one individual achieved the 10,000 step daily goal. Nor were any significant differences related to intervention status found in self-reported physical activity or body satisfaction (Research Question 3). These findings indicate that achieving behavioral change, much less documenting such change objectively, is very challenging in a time-limited clinic environment.

#### *B. Skills Training Intervention*

Results relating to the skills training intervention were more positive. Overall, over 90% of staff gave a positive rating regarding the usefulness of the trainings. Moreover, skills training was associated with improved charting of obesity-related counseling practices. WIC staff exposed to the skills training were more likely to document weight status, readiness to change, risk behavior counseling, general tool usage, activity goals, beverage consumption goals and medical referrals in the client chart. Significant differences in charting practices in favor of skills training clinics were observed for 6 of 9 charting practices at 6 months, 7 of 8 practices at 12 months, and 7 of 9 practices at 18 months post intervention. Although self-reported counseling self-efficacy was not significantly improved overall, a significant improvement in counseling self-efficacy was observed when the client's first language was different from that of the WIC

nutritionist giving the counseling. It is possible that the language-specific visual materials used in counseling aided in improved self-efficacy in these circumstances.

Evaluation by WIC staff of specific components of the skills trainings (Research Question 7) indicated that the review of obesity trends, the “Beyond Nutrition Counseling” video, the introduction of new tools and the review of charting guidelines were rated as “somewhat useful” or “very useful” by at least 90% of the participants. WIC staff surveys indicated that they felt they would benefit from further reinforcement trainings, particularly in regard to: 1) “Additional discussion of barriers and solutions to pediatric overweight” (71.1%); 2) “Additional information about New Mexico WIC materials and resources to address pediatric overweight” (64.4%); 3) “Review of procedures for using tools” (55.6%); and 4) “More in-depth review of obesity trends, causes, and prevention”(44%). Finally, when asked about the type of further training or support they would like to receive, 72.3% wanted group meetings or workshops and 70.2% indicated wanting to receive e-mail tips, while only 14.9% wanted one-on-one training, and 8.5% requested telephone conference call support. These insights into staff preferences for training topics and formats may be useful in planning future WIC staff trainings.

### *C. Client Satisfaction*

Another important component of the GHT project was the assessment of the impact of the wellness and skills training interventions on WIC client satisfaction (Research Question 8). It was hypothesized that both staff wellness and skills training would have a positive effect on clients’ satisfaction. Client satisfaction was assessed using two instruments: client surveys and peer interviews. As for the evaluation of behavioral changes, assessment of client satisfaction

proved challenging. Although results were generally inconclusive, some positive findings stemming from the client surveys and peer interviews are noted below.

In regard to client surveys, initial analysis indicated general client satisfaction with WIC services, but no significant differences in relation to intervention status. A more in-depth analysis was then undertaken incorporating the body mass index (BMI) status of the child. This analysis indicated that, at the eight month evaluation, clients in clinics where the staff received skills training reported higher satisfaction with the nutritionist care than clients in the clinics where there was no skills training. This effect was modified by the weight status of the child in that clients who had children with low and high BMIs had a higher rating for nutritionist care in the clinics where skills training was provided, while no difference was present in ratings by clients with children with healthy BMIs. As noted above, however, this effect was observed only at the eight month evaluation.

Peer interviews were also used to assess client satisfaction. At the 15 month and 21 month evaluations, clients in the skills-trained clinics were more likely to report positive statements in relation to physical activity counseling than those in the control clinics. This tendency towards a more positive perception of physical activity, if valid, might be due to the GHT tools providing non-threatening ways for nutritionists to discuss physical activity with clients.

#### *D. Evaluation of Tools*

During the first peer interview sessions there were no questions regarding the usage of GHT tools. However, as part of the second post-intervention peer interviews, the respondents were shown the tools and asked if they had seen them, and if they had seen them, to rate the

quality of the tools. Clients were asked to rate the usefulness of each tool in aiding their understanding of what the nutritionist was discussing, based on a scale of 1 (low) to 5 (high). The mean ratings were high across the tools with the Report Card having a mean of 4.47 (SD = .84), the BMI poster a mean of 4.84 (SD = .47), the NASH a mean rating of 4.40 (SD = 1.03), and the Talking Tips a mean of 4.63 (SD = .69).

#### *E. Additional Activities Related to the GHT Project*

Due to the presence of the GHT project in New Mexico, the Project Director and ILSI RF representative were able to successfully compete for a \$5,000 *Healthy Kids Healthy New Mexico* Mini-Grant in 2009. This grant, sponsored by NM Department of Health, was used to provide training on pediatric overweight to 36 health care providers in the First Choice Health System (a WIC provider) in Albuquerque, New Mexico. This training was similar to the skills training provided to WIC staff as part of GHT. Twenty nurses and physicians attended the training along with other clinicians. Post-training survey responses suggest a shift in confidence of attendees to use MI and to counsel WIC clients about obesity-related behaviors. Post-training comments also indicated that attendees can use the counseling tools in an effective manner in their clinics.

Additional funding was also secured from General Mills to be able to support incentives for staff wellness component, training materials and tools for all clinics and dissemination of the results at scientific meetings. A total of \$6,800 was spent on dissemination of GHT findings at the following national meetings:

- National Initiative for Children's Healthcare Quality Childhood Obesity Conference, March 2010, Atlanta, GA;
- National WIC Association Conference, May 2010, Milwaukee WI;

- New Mexico Public Health Association, May 2010, Albuquerque NM;
- USDA Grantee's Meeting, May 2010, Alexandria, VA;
- Southwest Region Auditors Meeting, June 2010, Santa Fe NM;
- Society for Nutrition Education, July 2010, Reno NV; and
- WIC Nutrition Education & Breastfeeding Conference, September 2010, San Diego CA.

The collaboration of the University of New Mexico faculty on this project resulted in more student participation than outlined in the original proposal. A total of six graduate students were involved in data collection, analysis, and interpretation. These students were able to gain skills that will improve the future public health work force in New Mexico. The student projects are briefly described in Appendix S.

One peer reviewed manuscript using data from the on-line staff survey has been published in *Journal of Nutrition Education and Behavior*. This a copy of this article in provided in Appendix T.

#### *F. Sustainability*

The sustainability of the GHT project will be enhanced with additional training and tool adoption. First, the tools introduced to staff in intervention clinics as part of the GHT project are now disseminated to all WIC clinics in New Mexico. Control clinic staff who did not receive the skills training as part of the GHT intervention received regional trainings in August, 2010. Further, the state WIC office will be conducting periodic staff training events in 2011-2012 to review GHT tool application in the clinic. Second, the GHT wellness program materials and model have been provided to the New Mexico Department of Health Wellness Committee. The

GHT wellness program will be available to all clinics in support of the state's employee wellness program. This collaboration was acknowledged in the report resulting from a fall 2010 southwest USDA regional review; "The State agency is commended for materials developed as part of the 'Get Healthy Together' project targeting WIC staff and participants. The State agency's collaborative efforts with other agencies to prevent obesity and hunger in NM are also worth mentioning." Finally, at least five of the GHT Wellness Champions have volunteered to remain in that role for their clinics as part of the state wellness initiative and will lead the GHT fruit and vegetable challenge beginning in March, 2011.

#### *G. Recommendations for the Future*

The positive rating of the counseling tools such as the Nutrition and Activity Self-assessment Form (NASH), Talking Tips and the Report Card warrants use of these tools in all WIC educational sessions. The NASH, in particular, is recommended as a replacement for the food frequency questionnaire formerly used to identify dietary intake and nutritional risk. Further research is warranted on the usefulness of these and other obesity prevention counseling tools in different populations and clinical settings.

More training on obesity prevention and management should be provided to WIC staff to help them understand and communicate the serious health risks associated with pediatric overweight and obesity. Results from the GHT survey of WIC staff indicate that skills training was well received. More specifically, training topics cited as most useful included: 1) Additional discussion of barriers and solutions to pediatric overweight; (2) Additional information about WIC materials and resources to address pediatric overweight; (3) Review of procedures for using tools; and (4) More in-depth review of obesity trends, causes, and prevention. Finally,

when WIC staff were asked about the type of further training or support they would like to receive, 72.3% wanted group meetings or workshops and 70.2% indicated wanting to receive e-mail tips, while only 14.9% wanted one-on-one training, and 8.5% requested telephone conference call support. These insights into staff preferences for training topics and formats may be useful in planning future WIC staff trainings.

Fit WIC 1 recommendations and anecdotal reports from this study suggest more research is needed to explore both WIC staff and maternal perceptions of pediatric overweight, in particular with Hispanic mothers. (24,25) Further, while not within the scope of this project, a logical follow-up study might replicate the GHT pediatric overweight tools and training but also follow a cohort of WIC mothers to see if and how they can best achieve behavioral goals with limited visits to the WIC clinic on an annual basis.

Lastly, a program for staff personal wellness should be available for those clinics that express an interest in experiencing this form of staff development and personal improvement. Early in the GHT project, it was clear that WIC staff who had been allowed staff paid time for physical activity, once permitted by the NM Department of Health, took advantage of this policy. With budget and liability concerns, this benefit was taken away making it even more difficult to support the GHT voluntary wellness initiative. While objective assessment of behavior change is challenging, subjectively many participants in the wellness intervention felt they had made progress in achieving personal behavioral goals.

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## REFERENCES

1. Ogden CL, Carroll M. Prevalence of Overweight, Obesity, and Extreme Obesity Among Adults: United States, Trends 1976–1980 Through 2007–2008. Centers for Disease Control and Prevention Division of Health and Nutrition Examination Surveys. June 2010. Accessed on-line at 11/01/10:  
[http://www.cdc.gov/nchs/data/hestat/obesity\\_adult\\_07\\_08/obesity\\_adult\\_07\\_08.htm](http://www.cdc.gov/nchs/data/hestat/obesity_adult_07_08/obesity_adult_07_08.htm).
2. Ogden C, Carroll M. Prevalence of Obesity Among Children and Adolescents: United States, Trends 1963–1965 Through 2007–2008. Centers for Disease Control and Prevention Division of Health and Nutrition Examination Surveys. June 2010. Accessed on-line at:  
[http://www.cdc.gov/nchs/data/hestat/obesity\\_child\\_07\\_08/obesity\\_child\\_07\\_08.htm](http://www.cdc.gov/nchs/data/hestat/obesity_child_07_08/obesity_child_07_08.htm).
3. Sharma AJ, Grummer-Strawn LM, et al. Obesity Prevalence Among Low-Income, Preschool-Aged Children --- United States, 1998—2008. Morbidity and Mortality Weekly Report. Centers for Disease Control and Prevention. July 24, 2009 / 58(28);769-773. Accessed on-line 11/2/10:  
[http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5828a1.htm?s\\_cid=mm5828a1\\_e](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5828a1.htm?s_cid=mm5828a1_e)
4. “Fit WIC: Programs to Prevent Childhood Overweight in Your Community,” Special Nutrition Program Report Series, No. WIC-05-FW, Project Officer: Ed Herzog. U.S. Department of Agriculture, Food and Nutrition Service, Office of Analysis, Nutrition, and Evaluation, Alexandria, VA:2005.
5. United States Department of Agriculture Food and Nutrition Service. Office of Research and Analysis. 2007 WIC Special Project Grants. Accessed on-line 11/01/10:  
<http://www.fns.usda.gov/ORR/menu/DemoProjects/WICSPG/FY2007/Grants07.htm>
6. United States Department of Agriculture Food and Nutrition Service. 2007 WIC Special Project Grants. Accessed on-line 11/01/10:  
<http://www.fns.usda.gov/wic/benefitsandservices/specialprojects2007.htm>.
7. Perrin EM, Finkle JP, Benjamin JT. Obesity prevention and the primary care pediatrician's office. *Curr Opin Pediatr*. 2007 Jun;19(3):354-61.

8. Serrano E, Gresock E, Suttle D, Keller A, McGarvey E. Fit WIC: attitudes, perceptions and practices of WIC staff toward addressing childhood overweight. *J Nutr Educ Behav.* 2006 May-Jun;38(3):151-6.
9. Crawford PB, Gosliner W, Strode P, Samuels SE, Burnett C, Craypo L, Yancey AK. Walking the talk: Fit WIC wellness programs improve self-efficacy in pediatric obesity prevention counseling. *Am J Public Health.* 2004 Sep;94(9):1480-5.
10. Whitaker RC, Sherman SN, Chamberlin LA, Powers SW. Altering the perceptions of WIC health professionals about childhood obesity using video with facilitated group discussion. *J Am Diet Assoc.* 2004 Mar;104(3):379-86.
11. Hinchman J, Beno L, Dennison D, Trowbridge F. Evaluation of a training to improve management of pediatric overweight. *J Contin Educ Health Prof.* 2005 Fall;25(4):259-67.
12. Beno L, Hinchman J, Kibbe D, Trowbridge F. Design and implementation of training to improve management of pediatric overweight. *J Contin Educ Health Prof.* 2005 Fall;25(4):248-58.
13. Dunlop AL, Leroy Z, et. al. Improving providers' assessment and management of childhood overweight: results of an intervention. *Ambul Pediatr.* 2007 Nov-Dec;7(6):453-7.
14. Dennison DA, Yin Z, et. al. Training health care professionals to manage overweight adolescents: experience in rural Georgia communities. *J Rural Health.* 2008 Winter;24(1):55-9.
15. Fitts WH, Warren WL Tennessee Self-Concept Scale TSCS: 2. Los Angeles, CA: Western Psychological Services; 1996:118.
16. Ware JE, Sherbourne CD. The MOS 36-Item Short-Form Health Survey (SF-36®): I. conceptual framework and item selection. *Med Care* 1992; 30(6):473-83.
17. Ware JE, Snow KK, Kosinski M, Gandek B. SF-36® Health Survey Manual and Interpretation Guide. Boston, MA: New England Medical Center, The Health Institute, 1993.
18. Marcus BH, Selby VC, Niaura RS, Rossi JS. Self-efficacy and the stages of exercise behavior change. *Res Q Exerc Sport.* 1992 Mar;63(1):60-6.

19. Cash TF, Wood KC, Phelps KD, Boyd K. New assessments of weight-related body image derived from extant instruments. *Percept Mot Skills*. 1991 Aug;73(1):235-41.
20. Marley SC, Carbonneau K, Lockner D, Kibbe D, Trowbridge F. Motivational interviewing skills are positively associated with nutritionist self-efficacy. *J Nutr Educ Behav*. 2010 Oct 8. [Epub ahead of print].
21. Landis JR, Koch GG. The measurement of observer agreement for categorical data. *Biometrics*. 1977 Mar;33(1):159-74.
22. Rubin DB. *Multiple Imputation for Nonresponse in Surveys*. New York, NY: J. Wiley & Sons; 1987.
23. Cohen J. *Statistical Power Analysis for the Behavioral Sciences*. 2<sup>nd</sup> edition. New York, NY: Academic Press; 1988.
24. Hackie M, Bowles CL. Maternal perception of their overweight children. *Public Health Nurs*. 2007 Nov-Dec;24(6):538-46.
25. Chamberlin LA, Sherman SN, Jain A, Powers SW, Whitaker RC. The challenge of preventing and treating obesity in low-income, preschool children: perceptions of WIC health care professionals. *Arch Pediatr Adolesc Med*. 2002 Jul;156(7):662-8.