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The Effect of Nutrition Education on Nutrition Knowledge in Low-Income Minority Adults

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Abstract

The availability of health and nutrition knowledge is disproportionately lower in minority populations compared to their majority counterparts despite minority populations at higher risk for health problems related to poor dietary habits from cultural and social influences. The purpose of this project was to determine if a weekly, culturally competent, group-delivered, nutrition education intervention affected nutrition knowledge in minority adults. The project was a smaller arm of the FABU study, which provided the education intervention. This study was guided by Bandura's Social Cognitive Theory and used a quantitative non-experimental design with a convenience sample of adults living in lower-income, minority adult housing. Data were collected at the beginning and end of the FABU project's 8-week nutrition intervention, and nutrition knowledge was measured with the Nutrition Knowledge questionnaire. T-tests were used to determine differences in pre and post-nutrition knowledge (N=19). The key finding was that there was no significant change in nutrition knowledge (p=0.53) after participation in an 8-week, weekly, culturally competent nutrition education intervention. However, data collection, sample size, and nutrition education intervention were disrupted due to the Covid-19 pandemic. Therefore, a larger sample, longer time for implementing the intervention, and increased data collection points may provide different results.

The Effect of Nutrition Education on Nutrition Knowledge in Low-Income Minority Adults

Low-income minorities have a higher risk and lower awareness of obesity, hemoglobin A1C (Hb A1C), low density lipids (LDL) cholesterol, as well as lower understanding of the effects of these conditions on health, thus contributing to higher rates of related health disparities (Hsueh et al., 2019). The limited awareness and understanding of Hb A1C values may potentiate increased risk for cardiovascular complications such as heart disease (Simacek et al., 2019). Further, higher levels of Hb A1C may indicate uncontrolled diabetes, which is associated with many other health problems beyond heart disease, such as neuropathy, retinopathy, and kidney disease (Simacek et al., 2019). Increased understanding of the significance of Hb A1C values on health may play a major role in patient adherence to not only medication but also to proper diet (Simacek et al., 2019). Thus, nutrition education may benefit this population to increase understanding about the effects of food consumption, food choices, and food portions on Hb A1C, which is the average blood sugar level over 3 months.

Populations of low socioeconomic status and minority ethnicity, such as African American, Asian and Hispanic, may also have lower education, a factor associated with increased risk of cardiovascular disease (Bell et al., 2018; Hamad et al., 2019). However, researchers have found that higher socioeconomic status or education in minorities did not reduce the risks for cardiovascular disease to the same degree as their Caucasian counterparts (Bell et al., 2018). This suggests that culture, along with other minority-specific stress and constraints, may have significant influence on dietary habits, another indication for culturally competent nutritional education. According to Thorpe et al. (2016), the weathering hypothesis describes racial health disparity in the United States of America (USA) where African Americans acquire age-related health deterioration prematurely as compared to Caucasians. This is due to long-term exposure to

social and environmental risk factors, such as the daily burden of stigma and prejudice, even when subtle. This accumulative effect increases the prevalence of stress-linked cardiovascular disease in African Americans (Thorpe et al., 2016). Thorpe et al. (2016) analyzed data from the 2000-2009 National Health Interviews Surveys and found that African Americans showed a higher prevalence of hypertension, diabetes, and stroke ten years earlier than their Caucasian counterparts. The accumulation of inadequate nutrition and social stress contributes to their increased risk for cardiovascular diseases. While changing the opinions of society is essential and complex, changing dietary habits in the shorter-term may have lifelong beneficial effects in reducing the risks of developing cardiovascular diseases in this population. Thorpe et al.'s (2016) findings supported the weathering hypothesis and demonstrate the need for culturally competent interventions for a population that is at higher and earlier risk for health disparities.

Many researchers have studied weight reduction, Hb A1C, and LDL cholesterol in Caucasian, higher-educated, and higher-income participants with nutritional education implemented by professional health educators (Mayer et al., 2019). However, the populations most at risk for health disparities associated with obesity, Hb A1C, and LDL cholesterol are those in lower-income, minority communities who tend to have limited access to health care professionals, lower health literacy, greater competing demands, poorer access to resources, and are generally under-served and under-represented in current research despite their risks for health disparities (Mayer et al., 2019). With this awareness, the purpose of this Honors research project was to determine if an 8-week, weekly, culturally competent nutrition intervention affected nutrition knowledge in lower-income, minority women and men. This research study is significant to nursing because heart disease is the number one cause of death in the United States, especially in the urban Midwest state where this project was conducted (Ohio Department of Health, 2016).

This Honors project was an arm of a larger interprofessional intervention study: Finding a Better U (FABU), that was funded at the state level. The parent study developed and implemented the nutrition intervention, and data from the parent study were used to provide preliminary findings about the effect of the nutrition intervention.

The independent variable in this Honors project was an 8-week, weekly, culturally competent nutrition intervention, provided by the larger study and which covered new topics each week. This project looked at two specific FABU sites, or cohorts: Site S and Site WT. The nutrition class instructors changed depending on which day of the week the intervention was offered. Varied intervention site and instructor may impact outcomes, regardless of the weekly intervention content. This was a noted limitation to the project. The dependent variable in this study was nutrition knowledge, which is the knowledge of concepts and methods about nutrition. These concepts include knowledge of diet and health, diet and disease, nutrients, and dietary guidelines. This Honors research study aimed to answer the following question: Does an 8-week, weekly, culturally competent nutrition intervention affect nutrition knowledge in lower-income, adult minority participants?

Integrated Review of Literature

Of the ten research articles in this integrated review, all concluded that nutrition education interventions have positive effects on nutrition-related outcomes (see Appendix A). Researchers of nine of the studies focused on the effects of nutrition education interventions which included topics such as unhealthy dietary habits and selection of healthy foods/menus (Downes et al., 2019; Fernández-Ruiz et al., 2020; Fish et al., 2015; Koniak-Griffin et al., 2015; Mayer et al., 2019; Monlezun et al., 2015; Sharma et al., 2014; Wagner et al., 2016; Walther et al., 2018). Researchers of one study used meal plans to implement nutrition education (Barnard

et al., 2018). Sites across studies were community-based or clinic-based. Community-based locations included churches, local universities, schools, community care centers and participant homes (Downes et al., 2019; Fernandez-Ruiz et al., 2020; Fish et al., 2015; Mayer et al.,2019; Melendrez & Balcázar, 2015; Sharma et al., 2014; Wagner et al., 2016; Walther et al., 2018). Clinic-based locations included physician offices and medical schools (Barnard et al., 2018; Monlezun et al., 2015).

Of the ten research studies, all used group delivered interventions. Those responsible for delivering nutrition health education interventions included nurses (Barnard et al., 2018; Fernandez-Ruiz et al., 2020) physicians (Barnard et al., 2018; Monlezun et al., 2015) trained peers (Fish et al., 2015; Koniak-Griffin et al., 2015; Mayer et al., 2015), and trained community professionals (Barnard et al., 2018; Sharma et al., 2014; Wagner et al., 2016; Walther et al., 2018). Three types of samples were examined across the ten studies: those who were obese or overweight (Downes et al., 2019; Fernandez-Ruiz et al., 2020; Koniak-Griffin et al., 2015; Mayer et al.,2019; Wagner et al., 2016), with lower-incomes (Fish et al., 2015; Monlezun et al., 2015; Sharma et al., 2014; Walther et al., 2018), and diagnosed with type II diabetes (Barnard et al., 2018; Monlezun et al., 2015). Many of these studies examined overlapping populations, e.g., samples of those who were both overweight or obese and lower-income. Samples ranged from 27 to 402 participants. Data collection methods also varied across studies. Some researchers used self-reported survey data (Sharma et al., 2014), researcher-conducted surveys (Fish et al., 2015; Wagner et al., 2016; Walther et al., 2018), or researcher-collected bio-measurements (Mayer et al., 2015). Others used both self-report surveys, researcher-collected surveys, and bio measurements to collect data (Barnard et al., 2018; Downes et al., 2019; Fernandez-Ruiz et al., 2020; Koniak-Griffin et al., 2015; Monlezun et al., 2015).

Across all ten studies, researchers measured nutrition knowledge and/or the effects of nutrition education intervention on their participants' health measurements. In general, nutrition education positively affected health bio measurements, such as weight, Hb A1C, and cholesterol, supporting the effectiveness of nutrition education interventions. For example, Fernández-Ruiz et al. (2020) and Barnard et al. (2018) studied the effects of healthy eating education on metabolic comorbidities and nutritional habits. The results of both studies showed improved metabolic parameters, such as body weight, Hb A1C, and LDL cholesterol, and nutritional habits, such as eating more fruits and vegetables. Cultural factors, such as food preferences, food preparation styles, and food access, influenced nutritional consumption, supporting the need for culturally competent nutritional education. This was taken into consideration in the studies that enlisted trained peers or trained community professionals to teach nutrition education (Fish et al., 2015; Koniak-Griffin et al., 2015; Mayer et al.,2019; Sharma et al., 2014; Wagner et al., 2016; Walther et al., 2018). Each research study aimed to influence their target population's health and nutrition knowledge through general nutrition education. However, insufficient findings and gaps in knowledge is evident about nutrition education effects in populations consisting of low-income and minority status.

Theoretical Framework

Albert Bandura's Social Cognitive Theory (SCT) proposes that behavior affects and is affected by environmental factors, which affect and are affected by personal factors, which are, in turn, affect and are affected by behavior (see Appendix B). Therefore, behavior, environmental factors, and personal factors are inter-related. Examples of behavior include expected outcomes such as improved dietary habits. Environmental factors include intervention education settings such as the intervention being conducted on-site at the housing complexes,

and delivered as a group. This allows for built in social support and decreases barriers, such as transportation, child care, and traveling through unsafe neighborhoods. Personal factors include individual nutrition knowledge and self-efficacy.

Social Cognition Theory also proposes that observational learning, self-performance, and physiological states influence self-efficacy. Self-efficacy is defined in this theory as "an individual's belief in his or her capacity to execute behaviors necessary to produce specific performance attainments" (Bandura, 1977, 1986, 1997). Further, Social Cognitive Theory proposes that an individual develops self-efficacy by achieving objectives and overcoming obstacles. The more they overcome, the more confidence they have in their abilities (Bandura, 1977, 1986, 1997). Another key proposition of the Social Cognitive Theory is that an individual can reproduce a behavior after observing others perform the same behavior. Therefore, self-efficacy may be achieved through observational learning and vicarious experiences, as well as by performance accomplishments, verbal persuasion, and physiological states.

This study was guided by Bandura's Social Cognitive Theory as it relates to the group delivery of nutrition education and demonstration in this Honors research study, and the influence that observational learning, vicarious experience, and verbal persuasion have learning, thinking, behaviors, and the development of self-efficacy. This Honors research study anticipated that observational learning, vicarious experience, and verbal persuasion would occur in the participants during instructor-led, peer-supported group nutrition information sessions and increase behavior accomplishment and positive outcomes. Group members would be able to further explain, encourage, and educate each other as they overcame personal factors such as individual nutritional knowledge. When individual group members implemented nutritional knowledge into their own dietary habits, they would reinforce this new knowledge by increasing

their nutrition knowledge while also influencing other group members to change their dietary habits. Although not measured in this Honors project, it is anticipated that self-efficacy would increase in the group members who were able to relay their nutrition knowledge to others and in those that applied this knowledge to change their dietary habits. Following this theory, the behaviors of increasing nutrition knowledge and implementing it to change dietary habits would be associated with self-efficacy. The expected outcome of these changed behaviors was a healthier diet. Environmental factors in this study included the low-income housing facilities, social support of fellow participants, and decreased barriers by having the intervention on-site. Finally, based on this theory, participants were expected to increase self-efficacy by increasing personal awareness of nutritional knowledge, applying this knowledge to their dietary habits, and ultimately obtaining a healthier diet.

Methods

Design

This Honors research project was a quantitative non-experimental study that used pretest-posttest data from a larger funded FABU intervention study. This research project used data from the larger parent study which provided the eight-week nutrition intervention course, therefore this Honors project team did not provide the intervention and used a non-experiment design. During FABU team-provided weekly intervention sessions, participants received nutrition education that included healthy eating and cooking, menu planning, and utilizing fresh produce. This intervention occurred for one hour, once a week, for eight weeks. Pretest data was collected for 2 weeks before the intervention, and posttest data was collected for 2 weeks after the intervention for a total of a 12 week quarter (3 months) The larger study was approved by the

university Institutional Review Board and members of this Honors project were listed as members of the research team.

Site and Sample

The larger multiple site study was conducted at five urban Metropolitan Housing Authority (AMHA) apartment complexes and three Alpha Phi Alpha Homes (APA), which house low and moderate-income families and the elderly. All locations were in the area codes of a larger city in a Midwest state. This Honors project analyzed data from two of the above eight sites.

The sample in this Honors project included low-income minority adults. Inclusion criteria consisted of men and women who self-identified as African American, Asian, Hispanic, and or biracial, ages of 35 years and up, possible physical disabilities, and able to give informed consent. No one was excluded based on sex, race, ethnicity, or age as long as they met the inclusion criteria. Exclusion criteria included unstable chronic health conditions, foot ulcers, refusing finger pricks for data collection, and not being able to provide a signed medical clearance waiver from a healthcare provider.

Sampling and Data Collection Procedures

A convenience sample of participants was recruited at community rooms in each housing complex, health fairs, and other events held at the research locations by the FABU team. The housing complexes were chosen by Dr. Carolyn Murrock, the Principal Investigator (PI) of FABU. During recruitment for the larger study, potential participants were informed of the study and were given the opportunity to ask questions. Once all questions were answered, the participants signed a consent form (see Appendix C) that described the study, which included an

explanation of the nutrition classes, as well as required medical clearance form (see Appendix D) that needed a physician's signature so the participant could enroll in the study. Informed consent was collected from each research participant prior to any data collection. Alexis Holt, Program Manager of FABU, met with potential participants individually to explain the project and collect informed consent. She answered the participants' questions and informed them that they could drop out of the project at any time without any undue consequences.

Data Collection

Data were collected for two weeks before and after the 8-week nutrition education sessions. Data collection included nutrition knowledge, which was measured with a pre-test and post-test using the Nutrition Knowledge questionnaire. Participants were asked to attend 60-minute nutrition classes once a week for 8 weeks and then data were collected. Alexis Holt, Program Manager for FABU, dietitians Pam and Maria, and Honors nursing students collected data at the end of the eight weeks. Participants' nutrition knowledge data were collected according to study protocol.

Data files were stored in a locked file cabinet in FABU primary investigator's university office, who had sole possession of the file cabinet key. The data were also entered into a password protected computer, and research team members Alexis Holt, Dr. Mary Jo MacCracken, and Dr. Judith A. Juvancic-Heltzel had access to the full dataset. Participant confidentiality and anonymity were protected and all data were reported in aggregate form. The Honors project students were part of the research team, included in data analysis, and had access to the data. Data will be destroyed according to the University of Akron protocol.

Measures

Nutrition Knowledge was measured with the Nutrition Knowledge questionnaire (see Appendix E). This 39-item questionnaire measures the ability to read and understand nutrition contexts and the capability to apply nutrition knowledge and skills (Gibbs et al., 2018). Participants were asked to respond to multiple-choice questions which included text-only and image-based options. Responses were summed correct versus incorrect with higher scores of correct answers indicating higher levels of nutrition knowledge. This tool has been found to be a valid and reliable tool for measuring nutrition literacy in adults (Gibbs et al., 2018).

Data Analysis Plan

All data were entered into a statistical analysis software program (SPSS) and examined to identify data entry errors and missing data. Outliers and missing data were identified and strategies to address each were determined by members of the research team. Descriptive statistics were used to describe the sample, using frequencies to describe nominal/ordinal level data and means and standard deviations to describe interval/ratio level data. Levels of statistical significance were set at p-value < .05. Dependent T-tests were used to determine pre-test and post-test differences in nutrition knowledge.

Results

Sample

The Honors research team used data from a sample of 19 participants. Changes in the FABU faculty research team resulted in barriers to getting demographic data for this small subsample. Therefore, data from the FABU sample (N=53) was described in this Honors paper with complete data coming from 44 to 53 participants. The majority of participants were African American, female, and between 65 to 75 years of age. According to analysis provided to the Honors team by the FABU team, approximately 32% (n=16) of the sample was African

American and 6% was White (n=6) with the remaining 57% (n=31) not reporting race. Of the 44 who provided data about sex, approximately 91% (n=40) of the sample was female with the remaining 9% (n=4) male. Approximately 45% (n=24) reported non-Hispanic as ethnicity with the remaining preferring not to report. Regarding age, 30% (n=16) were 65-75 years, 11% (n=6) were 55-64 years, 6% (n=3) were older than 75 years. The remaining participants either preferred not to say (45%; n=45%) or fell out these categories. Approximately 17% (n=9) reported annual household incomes of less than $9,000, 7.5% (n=4) reported annual household incomes of $10,000-$14,999, and remaining preferred not to say. Twenty-six percent (n=14) reported having public health insurance, with the remaining preferring not to say. Unfortunately, there is no way to compare the FABU sample of 54 to the subsample of 19 in this Honors project analysis.

Findings

The research question was: Does an 8 week, weekly, culturally competent nutrition intervention affect nutrition knowledge in lower-income, adult minority participants? Dependent T-tests were used to determine pre-test and post-test differences in nutrition knowledge. Originally, the intervention and data were to be delivered and collected on an ongoing basis over four quarters throughout the year with this Honors project analyzing data collected at the beginning of quarter 2 (January, 2020) and at the end of quarter 3 (July, 2020). Quarter 1 data was unable to be used due to the FABU project not having the clearance and paperwork from their grant resource. FABU was approved for quarter 2. Due to Covid 19 pandemic and FABU study shut-down, the intervention was only delivered from January, 2020 to March, 2020, and data were only collected for one quarter, pre-test data at the beginning of quarter 2 (January, 2020) and post-test data at the beginning of quarter 3 (March, 2020). Therefore, decreased time for intervention duration and disrupted data collection resulted in decreased time for participants

to establish healthy nutrition habits from the nutrition knowledge they were being taught. The nutrition knowledge mean score at the beginning of quarter 2 (Q2) was 18.84 (SD=13.85) and the mean score at the beginning of quarter 3 (Q3) was 18.05 (SD=14.25). There was no significant difference in nutrition knowledge mean scores (p = 0.53; see Appendix F). The t value was .65, and degrees of freedom was 18, indicating a sample of 19.

Discussion

The key finding for this Honors research project was that there was no significant change in nutrition knowledge after participation in an 8-week, weekly, culture competent sensitive nutrition education intervention. Findings that the group-delivered intervention did not affect nutrition knowledge were inconsistent with what was anticipated, based on Bandura's Social Cognitive Theory. Further, these findings were unexpected and inconsistent with those of previous studies finding that nutritional education interventions resulted in significant improvement in nutrition knowledge (Downes et al., 2019; Fernández-Ruiz et al., 2020; Fish et al., 2015; Mayer et al., 2019; Koniak-Griffin et al., 2015; Monlezun et al., 2015; Sharma et al., 2014; Wagner et al.,2016; Walther et al., 2018; Barnard et al., 2018). Perhaps findings of previous studies were due to longer intervention durations, compared to eight weeks in this study, as well as longer intervals between data collection, and larger samples. Sample size of 19, the 8-week intervention, and the pre- and post-data collection period of 2-weeks prior and after intervention, may have been too short to affect nutrition knowledge. Additional speculation about findings include disruption to the intervention delivery due to the Covid-19 pandemic. Nutrition education classes were suspended indefinitely, thus significantly shortening the data collection intervals and reducing the overall number of participants, affecting statistical conclusion validity. Another explanation may be problems with internal validity, which is the

degree to which a study results in a valid and reliable cause-and-effect between an intervention and an outcome (Slack & Douglas, 2001). There are eight threats to internal validity, and we found the threat of history to have an effect on the findings for our experiment. A threat of history occurs when other factors external to the study affect outcomes over time (Slack & Douglas, 2001). The threat of history that occurred during our study was the outbreak of the COVID-19 Pandemic. Due to the pandemic our two- quarter intervention delivery was shortened to one quarter, and further data collection was prevented. Future researchers should include longer durations of intervention delivery, control groups, multiple data collection points, and larger samples.

Conclusion

This Honors project aimed to answer the following research question: Does an 8-week, weekly, culturally competent nutrition intervention affect nutrition knowledge in lower-income, adult minority participants? Dependent T-tests were used to determine pre-test and post-test differences in nutrition knowledge with no significant difference found in nutrition knowledge ($p = 0.53$, which is greater than the level of statistical significance of $p < 0.05$.) The limitations of this study and findings include small sample, shortened duration of intervention due to Covid-19 Pandemic, and possible altered learning related to stress and worry from the pandemic. Data were to be collected over four Quarters; however, due to the Covid-19 Pandemic, data were collected for one quarter only. The findings do not support that an 8-week, weekly, culturally competent nutrition education improves nutrition knowledge; however, intervention delivery and data collection were disrupted by the Covid-19 Pandemic. Nursing practice in essence requires culturally competent care, thus culturally competent nutrition education. Future studies are

necessary due to the lack of current and relevant studies on nutrition education effects in low socioeconomic minority adults.

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Appendix A

APA formatted reference	Purpose statement. Research Question[1]	Theoretical Framework[2]	Design of study, Setting, Sampling Method, Sample Size[3]	Variables and measurement tools[4]	Findings, Conclusion[5]	Limitations of Findings[6]
1 Fernández-Ruiz, V. E., Ramos-Morcillo, A. J., Solé-Agustí, M., Paniagua-Urbano, J. A., & Armero-Barranco, D. (2020). Effectiveness of an Interdisciplinary Program Performed on Obese People Regarding Nutritional Habits and Metabolic Comorbidity: A Randomized Controlled Clinical Trial. *International Journal of Environmental Research and Public Health*, *17*(1), 336. doi: 10.3390/ijerph17010336	Purpose statement: "is to determine the effectiveness of a multidisciplinary program based on healthy eating, exercise, cognitive-behavioral therapy, and health education in improving metabolic comorbidity, Body Mass Index (BMI), and nutritional habits among obese adults, at short (12	Theoretical Framework No theoretical framework	Design: Randomized controlled clinical trial experimental Setting: Community care center in the city of Murcia (Spain) Sampling method: Convenience sample Participants were asked to join the study at visits with their primary care doctors Sample size: 74 subjects diagnosed with obesity	Variable and measurement instrument: Statistical analyses were performed with IBM SPSS® statistical software, 22.0 Variable and measurement instrument: Effectiveness of the intervention was analyzed by applying a partly repeated measures analysis of variance (ANOVA) (mixed-design analysis of variance),	Finding conclusions The interdisciplinary program improved all participants' metabolic parameters, BMI, and nutritional habits while maintaining the long-term effects	Limitations of findings -convenience sample -participants were from same community (groups may have shared information)

	months) and long term (24 months). Research question: How effective is a multidisciplinary program based on healthy eating, exercise, cognitive-behavioral therapy, and health education on improving metabolic comorbidity, Body Mass Index (BMI), and nutritional habits among obese adults?			Variable and measurement instrument		
2 Barnard, N. D., Levin, S. M., Gloede, L., & Flores, R. (2018). Turning the waiting room into a classroom: Weekly classes using a vegan or a portion-controlled eating plan improve diabetes control in a randomized translational Study. *Journal of the Academy of Nutrition and Dietetics*, *118*(6), 1072–1079. doi: 10.1016/j.jand.2017.11.017	Purpose statement: Research question: Can the benefits of dietary interventions for people with type 2 diabetes found	Theoretical framework No theoretical framework	Design: 20-week trial experimental Setting: Endocrinology practice in Washington D.C.	Variable and measurement instrument: Blood pressure was measured using a digital blood pressure monitor Variable and measurement instrument: Dietary	Finding Conclusions Both vegan and portion control plans significantly improved:	Limitations of findings - convenience sampling -glycemia and plasma lipids were already well-controlled at baseline, limiting

	in the research setting translate into similar benefits in a typical diabetes clinic, and, if so, does a vegan eating plan lead to greater improvements than a portion-controlled eating plan?		Sampling method: Convenience sampling: mail, waiting-room fliers Those appearing to meet participation criteria (diagnosis t2dm, hga1c 6.5-10.5%, 18 years +) were interviewed in person Sample size: 45 men and women with type 2 diabetes	intake was assessed with a 3-day food record Variable and measurement instrument: polymerase chain reaction (PCR) method to assess D2 dopamine receptor Taq 1A genotypes (A1A1, A1A2) Variable and measurement instrument: Body weight was measured to the nearest 0.1 kg, using a digital scale Variable and measurement instrument: height was measured without shoes with measuring tape to the nearest 0.5 cm Variable and measurement instrument: HbA1c, plasma glucose, plasma cholesterol and triglyceride concentrations, and urinary albumin concentrations were	- body weight (6.3 kg vegan, 4.4 kg portion-controlled), -glycemic control (HbA1c 0.40 percentage point in both groups) -lipid concentrations (LDL cholesterol 11.9 mg/dL vegan, 12.7 mg/dL portion controlled), - no significant differences between the two eating plans.	potential for further reductions - changes in medication -recruitment fell short of the numbers called for by the power analysis -alterations in physical activity may have influenced HbA1c or other variables

				measured, using standard methods, at Quest Diagnostics, Secaucus		
3. Fish, C. A., Brown, J. R., & Quandt, S. A. (2015). African American and Latino low-income families' food shopping behaviors: promoting fruit and vegetable consumption and use of alternative healthy food options. *Journal of immigrant and minority health*, *17*(2), 498–505. https://doi.org/10.1007/s10903-013-9956-8	Purpose statement: To identify factors that influence the consumption of fresh fruits and vegetables, to evaluate food shopping habits, and to compare attitudes towards alternative sources of fresh fruits and vegetables among two groups of minority women Research question: What factors influence the consumption of fruits and vegetables among	Theoretical Framework No theoretical framework	Design: One face-to-face, semi-structured, in-depth interview Research interview Setting: Women's homes or in a community setting, Forsyth County, North Carolina Sampling method: recruited with the assistance of community organizations, including WIC clinics, health care facilities, neighborhood associations, and community development organizations. Sampling size: 48 minority women with children	Variable and measurement instrument: A multi-stage inductive interpretive process was used to analyze the transcripts and identify key themes and patterns. Variable and measurement instrument: Transcriptions were managed using ATLAS.ti version 6	Finding Conclusions: Improving cooking skills and perceptions of acceptable foods may be as important as increased access to promote greater consumption of fruits and vegetables.	Limitations of findings -no control group -small sample size -no evaluation of diet quality -Latinas were first generation immigrants from Mexico, experiences may not apply to Hispanic women from other countries or those born in the U.S.

	African American and Latina women?					
4 Monlezun, D. J., Kasprowicz, E., Tosh, K. W., Nix, J., Urday, P., Tice, D., … Harlan, T. S. (2015). Medical school-based teaching kitchen improves HbA1c, blood pressure, and cholesterol for patients with type 2 diabetes: Results from a novel randomized controlled trial. *Diabetes Research and Clinical Practice*, *109*(2), 420–426. doi: 10.1016/j.diabres.2015.05.007	Purpose statement: To determine the effects of a hands-on Mediterranean diet-based cooking and nutrition curriculum on patients with type 2 diabetes Research question: What effects does a hands-on Mediterranean diet-based cooking and nutrition curriculum have on patients with type 2 diabetes	Theoretical Framework No theoretical framework	Design: pilot randomized controlled trial experimental Setting: The Goldring center for culinary medicine at Tulane University Sampling size: 27 men and women of low-income with T2DM	Variable and measurement instrument: Biometric data were collected through chart reviews from baseline to 6 months Variable and measurement instrument: Psychometric data were collected through a survey developed from validated tools [1,2,20] at baseline and again at 1.5months following the MNT session for control patients or the last GCCM class for intervention patients Variable and measurement instrument: STATA 12.0	Finding Conclusions Compared to the control group, the GCCM group had superior HbA1c reduction (0.4% vs. 0.3%, p = 0.575) that was not statistically significant. There were significantly greater reductions in the GCCM vs. control group for DBP (4 vs. 7 mmHg, p = 0.037) and total cholesterol (14 vs. 17 mg/dL, p = 0.044 “These results suggest subsequent clinical trials are warranted on the grounds of documented feasibility and clinical efficacy.”	Limitations of findings -single-site for data collection -lower number of control subjects compared to treatment subjects

5 Sharma, S. V., Hedberg, A. M., Skala, K. A., Chuang, R.-J., & Lewis, T. (2014). Feasibility and acceptability of a gardening-based nutrition education program in preschoolers from low-income, minority populations. *Journal of Early Childhood Research*, *13*(1), 93–110. doi: 10.1177/1476718x14538598	Purpose statement: "Is to (a) present the development, theory, and design of PLANT Gardens (Preschoolers Learn About Nutrition Through Gardens), a preschool-based gardening curriculum for nutrition education and (b) provide the results of the feasibility testing of PLANT Gardens among 3- to 5-year-old children enrolled in Head Start centers in Harris County." Research question: What effects	Theoretical framework: Social Cognitive Theory	Design: Pre-post self-reported surveys -quasi-experimental Setting: Two Head Start centers in Harris County, Texas Sampling method: Convenience sample Recruitment packets containing invitation letter and consent form Sampling size: 103 preschoolers, 27 parents, 9 teachers	Variable and measurement instrument: SPSS 17.0 (Chicago) was used to calculate the baseline characteristics of the study population.	Finding Conclusions This pilot test revealed strong acceptability and feasibility of the PLANT Gardens program in this Head Start population	Limitations of findings - Convenience sample -no control group

	does a pre-school based gardening curriculum for nutrition education have on children 3 to 5 years old?					
6 Wagner, M. G., Rhee, Y., Honrath, K., Salafia, E. H. B., & Terbizan, D. (2016). Nutrition education effective in increasing fruit and vegetable consumption among overweight and obese adults. *Appetite*, *100*, 94–101. doi: 10.1016/j.appet.2016.02.002	Purpose statement: "to evaluate fruit and vegetable consumption patterns, including intake of antioxidant-rich fruits and vegetables, provide education about benefits of consuming fruits and vegetables, expose participants to different varieties of fruits and vegetables, and ultimately improve fruit and vegetable consumption	Theoretical framework No theoretical framework	Design: pre-testing and post-testing experimental Setting: local university Sampling method: convenience sample Sampling size: 54 overweight/obese male and female adults	Variable and measurement instrument: The Food Processor® (ESHA Research, Salam, OR) Variable and measurement instrument: PASW version 18.0 (SPSS Inc., Chicago, IL)	Finding Conclusions -Nutrition education was helpful in improving the consumption frequency of fruits and vegetables, including those rich in antioxidants. -Despite being readily available, the majority of participants failed to consume the recommended number of servings of fruits and vegetables per day, which suggests they chose other foods over fruits and vegetables.	Limitations of findings - convenience sample -participant awareness of the studies purpose - number of participants in control group was below required sample size - follow-up data was not collected after the conclusion of the study to see if improvements were maintained

	among participants." Research question: What effects does nutrition education on fruits and vegetables have on overweight and obese adults?					
7 Downes, L. S., Buchholz, S. W., Bruster, B., Girimurugan, S. B., Fogg, L. F., & Frock, M. S. (2019). Delivery of a community-based nutrition education program for minority adults. *Journal of the American Association of Nurse Practitioners*, *31*(4), 269–277. doi: 10.1097/jxx.0000000000000144	Purpose Statement: "The purpose of this research study was to explore the impact of a nutrition education program on health behaviors, lifestyle barriers, emotional eating, and body mass index (BMI) in a community-based setting with a	Theoretical framework A modified Motivators and Barriers of Health Behaviors Model	Design: Quasi Experimental study with pre and post data analysis Setting: Group 1 - conference room of a local church Group 2 - Multipurpose meeting room at senior living center Sampling method: convenience sample Sampling size: 47 primarily African American adults	Variables - # of sessions - participant self-reporting - location measurement tools Statistical analysis and qualitative analysis	Finding Conclusions - significant increase in intake of fruits and vegetables and decreased fat intake. - No significant differences were found in physical activity, healthy lifestyle barriers, emotional eating, or BMI after the intervention	Limitation of findings - exclusion criteria: anyone who answered no to an interest in a program to lose weight or an interest in eating a healthier plant-based diet were not included in the study - no control group - small sample size - different number of sessions

	minority sample" Research Question: What effect does a community-based nutrition education program have on health behaviors, lifestyles barriers, emotional eating and body mass index in adult minorities.					- potential for inaccurate/incomplete responses about weight and BMI
8 Mayer, V. L., Vangeepuram, N., Fei, K., Hanlen-Rosado, E. A., Arniella, G., Negron, R., … Horowitz, C. R. (2019). Outcomes of a weight loss intervention to prevent diabetes among low-income residents of East Harlem, New York. *Health Education & Behavior*, *46*(6), 1073–1082. doi:	Purpose Statement: "The aim of the current study was to examine the impact of peer-led diabetes prevention workshops on weight and diabetes risk among a low-income, largely Black and Latino	Theoretical Framework: No theoretical Framework	Design: Experimental with Pre-assessment (baseline), post-assessment & control group Setting: English or Spanish community sites lead by pairs of peer leaders who were trained for 4 days and who held similar socioeconomic and	Variables - Differing peer leaders - location Measurement tools: Oral glucose test HgA1c Lipid levels Blood pressure Weight BMI	Finding Conclusions: - culturally tailored interventions give significant results for specific target - an effective low-resource program can be created by incorporating strategies to engage and affect our priority population. - significant weight loss of intervention group to control group	Limitations of findings: - single oral glucose test instead of recommended two tests - overrepresentation of women

10.1177/1090198119868232	population in East Harlem, New York City" Research Question: Can a low-resource and less intensive program be effective in decreasing the probability of developing diabetes by incorporating strategies to engage and affect our priority population		health problems as the participants Sampling method: Inclusion criteria: adult, Spanish- or English-speaking residents of East Harlem, who were overweight or obese (body mass index [BMI] ≥25 kg/m2) with no reported diabetes diagnosis, use of hypoglycemic mediations, pregnancy, cognitive or physical impairment that would preclude them from communicating or participating in a group, or contraindications to losing weight Sampling size: 402 participants who were mainly female (85%), Latino (73%) or Black (23%), foreign born (64%), and non-		- significant drop of BMI on intervention group to control group - significantly greater drop in probability of developing diabetes over the next 7.5 years in intervention group than control group	

			English speaking (58%)			
9 Koniak-Griffin, D., Brecht, M.-L., Takayanagi, S., Villegas, J., Melendrez, M., & Balcázar, H. (2015). A community health worker-led lifestyle behavior intervention for Latina (Hispanic) women: Feasibility and outcomes of a randomized controlled trial. *International Journal of Nursing Studies*, *52*(1), 75–87. doi: 10.1016/j.ijnurstu.2014.09.005	Purpose statement: "to evaluate the effects of a lifestyle behavior intervention delivered by specially-trained promotors to low-income, overweight, immigrant Latinas residing in Southern California." Research question: What are the effects of a lifestyle behavior intervention delivered by specially-trained promotors on low-income, overweight immigrant Latinas	Theoretical Framework: no theoretical framework	Design: A randomized controlled trial Setting: Two adjacent cities in Los Angeles Sample Method: Participants were recruited in four consecutive intervention cycles from parent education centers, churches, laundromats, and organizations providing basic services to children and families Sample size: 233 Latina women ages 35- 64	Variable and measurement instrument: SPSS Version 19. Variable and measurement instrument: t-tests for continuous variables and chi-square analysis for categorical variables were con-ducted.	Conclusion of Findings: Our findings demonstrate that lifestyle behaviors and other risk factors of overweight Latina women may be improved through a promotor-led lifestyle behavior intervention. Feasibility of implementing this intervention in community settings and engaging promotors as facilitators is supported.	Limitations of findings: -multi-component design of this study prevents determine-nation of specific intervention elements (e.g., key messages and activities) that may have significantly influenced participants' behavior and study outcomes. -the potential effects of drugs on outcomes could not be evaluated.

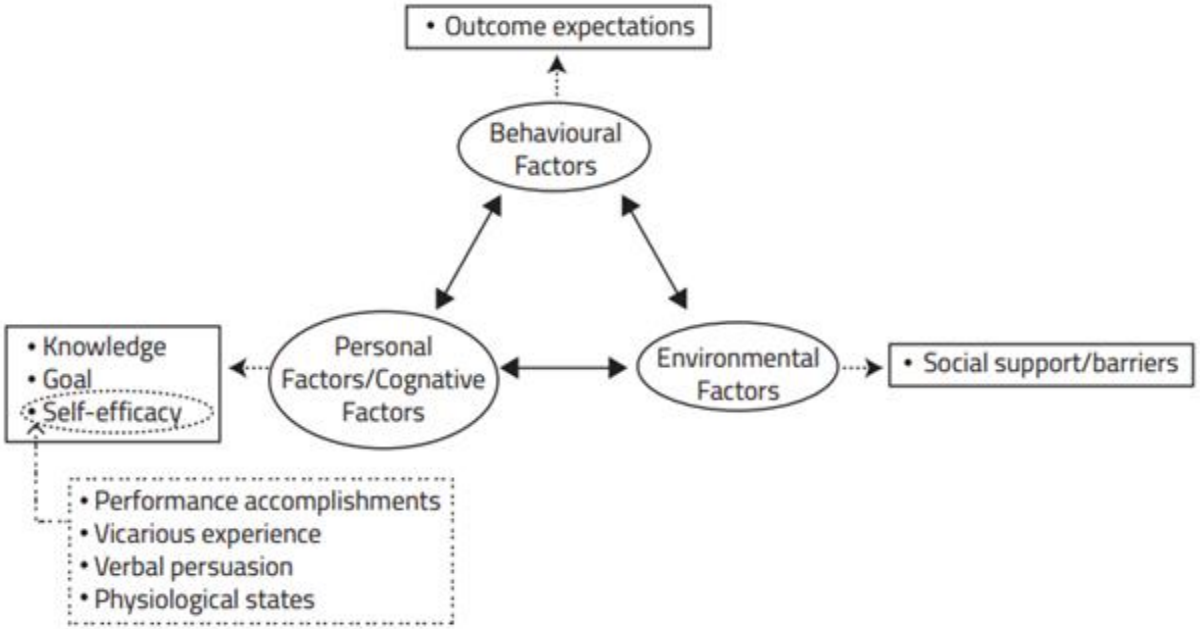
	residing in Southern California.					-rates of type 2 diabetes and hypertension are based on self-report and clinical screening evaluations without medical record verifications . -The sample size did not allow detailed examination of differential outcomes for small subgroups of participants with unique combinations of characteristics (e.g., high diastolic blood pressure but normal systolic levels)

10 Walther, A., Chai, W., Dunker, T., Franzen-Castle, L., & Kraybill, M. (2018). A new way to assess nutrition knowledge: The healthy plate photo method. *Afterschool Matters*, *28*, 3–9.	Purpose Statement: The purpose of this study was to address the gap in ability to assess youth nutritional knowledge by the novel tool called the Healthy Plate Photo (HPP) method, based on the U.S. Department of Agriculture (USDA) MyPlate guidelines (USDA, 2017). Research Question: Will a nutrition assessment that is time-efficient, developmentally appropriate, and user-friendly address the gap in youth nutritional knowledge?	Theoretical Framework No theoretical framework	Design: - 50 minute sessions twice a week, one day food preparation, second day nutrition and physical activity, - three family meal nights where participants prepared a meal for themself and their family. - lessons on USDA MyPlate guidelines, recommended fruit and vegetable intakes, the benefits of breakfast, and optimal food and drink choices Setting: Community learning centers in elementary schools Sampling method: Standard consent protocol? Sample size: 69 4th and 5th graders	Variables and Measurement instrument: pre- and post-intervention scores of We Cook participants for both the HPP assessment and the Healthy Habit Survey knowledge items	Conclusion of findings: - HPP is well suited for the needs of OST programs because it takes little time to administer, is developmentally appropriate, and is easy for both children and adult staff to understand and use - HPP method can be a practical and useful tool to assess youth nutrition knowledge in OST settings. Afterschool programs that implement healthy lifestyle curricula like We Cook are likely to be interested in such a simple method for measuring changes in children's nutrition knowledge - After participation, fourth and fifth graders significantly increased their ability to create a healthy plate according to USDA MyPlate guidelines, as shown in their HPP results. - - They	Limitation of findings: - small sample size - no randomized control group - only three nutrition knowledge items on paper survey; limits capability to validate the HPP method.

					also showed better knowledge of the benefits of breakfast and of healthy snack options, according to the Healthy Habits survey items	

Appendix B

Bandura's Social Cognition Theory



Appendix C

Informed Consent

Informed Consent for Participation in FABU

Title of Study: Finding A Better U (FABU)

Introduction: You are invited to participate in a research project being conducted by Carolyn J. Murrock, PhD, RN, Mary Jo MacCracken, PhD, and Judith A. Juvancic-Heltzel, PhD, faculty from the College of Health Professions in the School of Nursing and School of Sport Science and Wellness at The University of Akron.

Purpose: The purpose of the FABU project is to show that culturally competent exercise and nutrition programs can reduce risk factors for heart disease and diabetes in minority populations.

Procedures: The FABU project will consist of culturally competent exercise and nutrition education programs at two times per week for 8 weeks over 2 years, meaning that this study is a 2-year commitment. The exercise programs will be one day a week and nutrition programs another day the same week. A list of weekly activities for both exercise and nutrition classes has been included at the end of this consent form. The exercise classes will consist of line dancing, chair exercises, low-impact aerobics that will include a 5-minute warm-up, 30-minutes of exercise, and 10-minute cool-down. For those with physical limitations, such as pain, arthritis, or hip/knee discomfort, the exercise routines will be modified. For those in a wheelchair, exercise routines will be accommodated for sitting, including non-weight bearing lower leg movements, upper body movements, clapping, etc. For the nutrition classes, they will consist of nutrition information about reducing risk factors for heart disease, diabetes, obesity, and blood sugar management. Cooking demonstrations will also be part of the nutrition education classes and will also be held in the community room. Food for the cooking demonstrations will be prepared following sanitation guidelines of handwashing, clean utensils, and proper disposal of food waste products. Exercise and nutrition classes will be held in the community room that is large enough to accommodate group activities and has been inspected and approved by local governing boards for safety and sanitation.

Prior to participating in the study, you must provide a written medical clearance waiver from your healthcare provider to ensure you are safely able to participate in the exercise classes. If not able to provide written medical clearance from your healthcare provider, you will not be able to participate in the study. A member of the research team will give you the medical clearance waiver. After you have provided a written medical clearance waiver from your health care provider, you will meet with the research team members for data collection: (1) at the beginning of the study for weight, height, blood pressure (BP), body mass index (BMI), waist circumference, cholesterol, and hemoglobin A1c, physical activity levels, diabetes and nutrition awareness questionnaires, (2) quarterly for weight, height, BP, BMI, waist circumference, cholesterol and hemoglobin A1c, (3) and quarterly for physical activity levels, diabetes and nutrition awareness questionnaires. Attendance for all exercise and nutrition classes will be recorded.

All data collection throughout the study will occur in a private area of the community room. For the first data collection time point at the beginning of the study, you will complete paper and pencil questionnaires about: demographic information, medical history, physical activity levels, diabetes and nutrition awareness questionnaires. We will also collect your weight, height, BP, BMI, waist circumference, cholesterol and hemoglobin A1c. Your weight will be collected in light street clothes without shoes. If you are in a wheelchair and unable to stand safely on a scale, you will self-report your weight. Your cholesterol and hemoglobin A1c levels will be obtained via a fingerprick using a sterile fingerprick disposable lancet and will be disposed of.

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IRB Full Board
Date 7-30-19
The University of Akron
KW for Board

Appendix C Continued

according to sanitation guidelines, in a sharps container. The cholesterol will take approximately 5-6 minutes and the hemoglobin A1c will take approximately 2-3 minutes. For all quarterly data collections, we will measure your weight, height, BP, BMI, waist circumference, cholesterol and hemoglobin A1c using the same procedures. In addition, we will measure physical activity levels, diabetes and nutrition awareness via questionnaires quarterly. By consenting to be in the study, you must participate in all data collection activities, including the fingerpricks for cholesterol and A1c levels. If you don't want your fingerpricked, then you cannot participate in the study. By signing this consent form, you agree that the resarch team members and the University of Akron are not responsible for any adverse events or other types of injuries.

Inclusion: (1) 35 years and older, (3) ability to read and write English, and (4) provide a written medical clearance waiver from your healthcare providers.
Exclusion: Exclusion criteria are: (1) unstable chronic health conditions (unstable angina, uncontrolled hypertension, etc.), (2) foot ulcers, (3) refusing to have a fingerprick during data collection, and (4) not able to provide a written medical clearance waiver from your healthcare provider.

Risks and Discomforts: For exercise classes, you will be informed of the potential risk of injury such as muscle strains, sprains, and other musculoskeletal injuries associated with exercising. Members of the research team and the exercise instructors are trained in first aid will carry cell phones for immediate access to 911. Every effort will be made to reduce the risk for injury by incorporating a warm-up and cool-down segment in each exercise class as well as modifications when indicated. In addition, the participants will be encouraged to report any injury to the co-investigators who will record it on a safety-monitoring sheet and follow up to assure that the participants get medical treatment if needed. The data monitoring sheets will be reviewed on a regular basis. All adverse events will be immediately reported to the IRB. If other concerns or problems are noted, they also will be reported to the IRB according to policy. For nutrition classes, participants will be informed of any potential food allergens and participants will be asked to identify any food allergies at the beginning of class. Nut and wheat products will not be part of any cooking demonstrations. As a safety precaution, the food and products to be used for the cooking demonstrations will be posted and reviewed at the beginning of the class. If an adverse event is noted, research team members and the dietitian will carry cell phones for immediate access to 911. All adverse events will be immediately reported to the IRB. Research team members and the University of Akron are not responsible for any adverse events or other types of injuries.

Benefits: A possible benefit of attending the exercise and nutrition classes is to reduce risk factors for heart disease and diabetes. Exercising and healthy eating may also help manage chronic health conditions, such as diabetes, high blood pressure, and assist with weight management. You may also receive no direct benefit from your participation in this study, but your participation may give health professionals and others a better understanding of how exercise and nutrition influence heart disease, diabetes, obesity, and high blood pressure in older adults.

Payments to Participants: There is no direct financial reimbursement for participating in this study.

Right to refuse or withdraw: Participation in this study is voluntary and each person has the right to withdraw without any penalty at any time throughout the study. The decision to withdraw will not influence the quantity or quality of services you receive.

Anonymous and Confidential Data Collection: Data collection forms will be identified by sequential participant research numbers and no names will appear on the data collection forms. An index of participants' names and research identification numbers will be written in a log that will be kept in a locked file in Dr. Murrock's office. All data will remain confidential and will be kept in a locked file separate from the written log in Dr. Murrock's office. Only members of the research team will have access to the data and the log. Your signed consent form will be kept separate from your data, and nobody will be able to link your responses to you. Participants will not be individually identified in any publication or presentation of the research results. Only aggregate data will be used. At completion of the study, the log linking the participant's name and corresponding sequential number will be destroyed according The University of Akron's policy.

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IRB
Date 7-30-14
The University of Akron
KW for Board

Appendix C Continued

Confidentiality of records: The data files will be kept in a locked file cabinet in Dr. Murrock's research office. Only members of the research team will have access to this information and only Dr. Murrock will have the key to the locked file cabinet.

Who to contact with questions: If you have any questions about this study, you may call Carolyn J. Murrock, PhD, RN, at 330-972-8077 or Mary Jo MacCracken, PhD, at 330-972 6485. This project has been reviewed and approved by The University of Akron Institutional Review Board. If you have any questions about your rights as a research participant, you may call the IRB at (330) 972-7666.

Acceptance & signature: Your signature below means that you have read or been read the information regarding this study and have had an opportunity to ask questions and have them answered. Your signature also means that you have been told the requirements of the study and voluntarily consent to participate in it. Your consent is effective from this date to the end of the study unless you withdraw this consent earlier. If you want a signed copy of this consent, please ask and you will receive a copy.

I have read the information provided above and all of my questions have been answered. I voluntarily agree to participate in this study. I will receive a copy of this consent form for my information.

_____ _____

Participant Signature **Date**

Consent for pictures: We are asking for your permission to take pictures during the exercise and nutrition classes. You may request a copy of the pictures. You name will not be on the pictures and only the research team will be allowed to use it. The pictures will only be used when we present the study results at professional conferences to show that the exercise and nutrition classes were fun, enjoyable, and easy to do. If you agree to have your picture taken, please sign on the line provided below. If you do not want your picture taken, do not sign on the line below. You can still participate in the study even if you don't want your picture taken. Photos will be stored in a locked cabinet and identity protected in the same manner as the research data. All photographs will be destroyed according to the policy at the University of Akron.

_____ _____

Participant Signature **Date**

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Date 7-30-19
The University of Akron
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Appendix D

Medical Waiver

MEDICAL WAIVER FORM

Please have your primary care physician/healthcare provider complete this form and return it to the research team prior to beginning the FABU program.

Name:_____

Date:_____

Your patient wishes to participate in low impact, exercise programs that will include a 5-minute warm-up, 30 minutes of simple, easy, low impact exercise moves, and a 5-minute cool-down. Exercises will be accommodated for those in wheelchairs. Research team members are trained in first aid and will be present during each exercise class. Participation in the low impact, exercise programs requires approval from the primary care physician/healthcare provider.

BASED ON THE PATIENT'S HEALTH STATUS, YOU:

____ Find no contraindication and recommend participation in the exercise programs

____ Find contraindication and do NOT recommend participation in the exercise programs

PRIMARY CARE PHYSICIAN/HEALTHCARE PROVIDER SIGNATURE

_____

SIGNED DATE

_____

PRINT NAME

_____

PHONE NUMBER

Appendix E

Participant ID: _____ Date: _____

Tech: _____

FABU Quarterly Report Data Consent and Results Form

CONSENT AND RELEASE: The undersigned, hereby consents to participate in this biometric screening which may include the drawing of a blood sample as well as any of the parameters listed below. No guarantee has been made regarding the results of these tests. I understand that the results of these tests are preliminary and do not constitute diagnosis of any health conditions or diseases such as, but not limited to, hypercholesterolemia, diabetes and hypertension. I also understand that the responsibility for initiating follow-up examination to confirm the results of these tests or obtaining professional medical assistance is mine alone. I release the Finding A Better U Grant and its subsidiaries and affiliates associated with this biometric from any and all liability arising from or in connection with the services provided.

AUTHORIZATION FOR RELEASE OF INFORMATION: FABU Grant, conducting this screening/testing, may disclose my results to any person which may be liable for all or part of Finding A Better U Grant charges, including but not limited to participants doctor on file with medical clearance, hospital or medical service companies, utilization or professional standards review companies, or any other person who assists in administering a contract or program under which benefits are claimed by or on behalf of patient. Finding A Better U Grant may also disclose such information to its agents, including external legal counsel, engaged to assist Finding A Better U providing services to patient, in securing payment for services. Further such persons may re-disclose these records within legal limits. Finding A Better U Grant may disclose such information to any other hospital or health care provider from which patient may receive services.

Please fill out this portion acknowledging that you have read and understand this information.

Print Name: _____ Age: _____ DOB: ___/___/___

☐ **Male** ☐ **Female** ☐ **Quarter 1** ☐ **Quarter 2** ☐ **Quarter 3** ☐ **Quarter 4**

Height_____**feet**_____**inches** 1/4 1/2 3/4 Even ***BMI** _____

Weight_____pounds (rounded to nearest half pound) **Waist Circumference** _____

Total Cholesterol _____ **HDL** _____ **LDL** _____ **Ratio** _____

Glucose _____ **Triglycerides** _____ **A1C** _____

Resting HR_____ **Blood Pressure #1**_____/_____ **#2**_____/_____

*Measurements are not outcomes determining prizes

You are entitled to your privacy! No Staff member should be reading your numbers out loud – they may point out your results or allow you to take a picture of them, if you are interested in your Pre or Post assessment results contact your building coordinator to request a copy.

National Cholesterol Education Program, National Heart, Lung and Blood Institute. NIH Publication No. 01-3670, May 2001.

Gallagher D. et al. American Journal of Clinical Nutrition; 2000, 72:694-701. "Healthy percentage body fat ranges: An approach for developing guidelines based on body mass index."

Diabetes Care, American Diabetes Association. Volume 37
Supplement 1, January 2014

Appendix E Continued

	Questions	Yes	No
1	Has your doctor ever said that you have a heart condition and that you should only perform physical activity recommended by a doctor?		
2	Do you feel pain in your chest when you perform physical activity?		
3	In the past month, have you had chest pain when you were not performing any physical activity?		
4	Do you lose your balance because of dizziness or do you ever lose consciousness?		
5	Do you have a bone or joint problem that could be made worse by a change in your physical activity?		
6	Is your doctor currently prescribing any medication for your blood pressure or for a heart condition?		
7	Do you know of any other reason why you should not engage in physical activity?		

If you have answered "Yes" to one or more of the above questions, consult your physician before engaging in physical activity. Tell your physician which questions you answered "Yes" to. After a medical evaluation, seek advice from your physician on what type of activity is suitable for your current condition.

Appendix E Continued

Participant ID:
Interview:

Section 1: ABCD Risk Questionnaire

	True	False
1. Eating a lot of red meat increases heart attack and stroke risk.		
2. Most people can tell whether or not they have high blood pressure.		
3. You can reduce your risk of heart attack or stroke by being physically active.		
4. One of the main causes of heart attack and stroke is stress.		
5. Walking and gardening are considered types of exercise that can lower the risk of having a heart attack or stroke.		
6. You can reduce your chance of developing a heart attack or stroke by eating at least five portions of fruit and vegetables a day.		
7. Moderate intensity activity of 2 ½ hours a week will reduce your chances of developing a heart attack or stroke.		
8. People who have diabetes are at higher risk of having a heart attack or stroke.		
9. Managing your stress levels will help you to manage your blood pressure.		
10. The healthiest exercise for the heart involves rapid breathing for 10 minutes or more.		
11. Many vegetables are high in cholesterol.		
12. You are more likely to have a heart attack or stroke if you're overweight or obese.		
13. Drinking high levels of alcohol can increase your cholesterol and triglyceride levels.		
14. HDL refers to "good" cholesterol, and LDL refers to "bad" cholesterol.		
15. Family history of heart disease is not a risk factor for high blood pressure.		
Percent Correct		

Appendix E Continued

Section 2: BRFSS Section 12 Fruits and Vegetables

	Number per Week	Don't Know	Refused
1. In the last 30 days not including juices, how often did you eat fruit per week?			
2. In the past 30 days, not including fruit-flavored drinks or fruit juices with added sugar, how often did you drink 100% fruit juice such as apple or orange juice per week?			
3. In the past 30 days, how often did you eat a green leafy or lettuce salad with or without other vegetables per week?			
3. In the past 30 days, how often did you eat any kind of potatoes or sweet potatoes such as baked, boiled, mashed potatoes or potato salad per week?			
4. In the past 30 days, not including lettuce salads and potatoes, how often did you eat other vegetables per week?			
Total per week			

Section 3: Nutrition knowledge

Q1. Circle which food groups **DON'T** belong on MyPlate?

Grains Sugar Fruits Protein Dairy

Fats vegetables Fish

True or False – Circle One

Q2. Jumpstart your day with breakfast.

True or False

Appendix E Continued

Q3. Drink fluids throughout the day even though you may feel less thirsty as you age.

True or False

Q.4 Limit drinks and foods with fats and added sugars.

True or False

Q5. If something is listed as one of the first three ingredients on a Nutrition Facts food label, it means the food probably contains a lot of it.

True or False

Q6. Put down the salt shaker: Cut salt to 2/3 teaspoon a day.

True or False

Circle the item you believe has more sodium

Q7. Which food has more sodium?

- Raisin Bread (1 large slice, 32g)
- French Bread (1 small slice, 32g)

Q8. Which food has more sodium?

- 2 tbsp Reduced-fat Italian dressing (30g)
- 2 tbsp Reduced-fat Ranch dressing (30g)

Appendix E Continued

Q9. Which food has more sodium?

- Lunch meat Ham (2 slices, 56g)
- Oven Roasted lunch meat turkey (2 slices, 56g)

Q10. Carbohydrates provide the major source of our energy intake. Which of the following are rich in carbohydrates?

A) Bread and rice C) eggs and cheese

B) Beef and pork D) chicken and turkey

Q11. One 3-ounce serving of meat is about the same size as

A) a deck of cards B) a bar of soap

C) a match box D) a thin paperback book

Q12. What do the words "reduced fat" mean on the food label?

A) no calories

B) at least 25% less fat per serving when compared with a similar food

C) contains trace amounts of fat

Q. 13 Which of the following counts as a vegetable serving?

A) 1 medium-sized tomato B) 1 cup leafy vegetables

C) 7 or 8 baby carrots D) all of the above

Appendix F

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Q2_BL_Nutrit_Decisons	18.8421	19	13.85345	3.17820
	Q3_BL_Nutrit_Decisons	18.0526	19	14.25745	3.27088

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Q2_BL_Nutrit_Decisons - Q3_BL_Nutrit_Decisons	.78947	5.33936	1.22493	-1.78402	3.36296	.645	18	.527