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### Community Cooking Course to Combat Nutritional Knowledge Deficit

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Community Cooking Course to Combat Nutritional Knowledge Deficit

A Paper Submitted in Partial Fulfillment of the Requirements

For NURS 5382: Capstone

In the School of Nursing

The University of Texas at Tyler

by

Heather Bohman

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## Executive Summary

More than two-thirds of American adults and almost one-third of American children are overweight or obese. Not only are the statistics alarming, the cost of obesity is staggering. Obesity robs an individual of their quality of life and costs the U.S. healthcare system an estimated \$147 billion a year in obesity-related illness (Finkelstein, Trogon, Cohen, & Dietz, 2009). The need to find solutions to improve the health of Americans is clear and communities are called to respond. The Centers for Disease Control and Prevention (CDC, 2018) recommends partnership with local agencies to promote obesity prevention initiatives and create a healthier food environment for all. Evidence suggests that interventions, such as cooking classes, can be made to improve the overall health of a community and reduce the obesity epidemic (Ickes, McMullen, Haider, & Sharma, 2014). The PICOT question asks, in low-income families (P), how does participating in a community cooking course (I) compared to not participating in a cooking course (C) affect nutritional knowledge (O) after completion of the cooking course (T)? In partnership with Hill Country Family Services (HCFS) of Kendall County, Texas, this capstone project set out to provide family centered cooking classes featuring accessible, low cost, and nutritious foods with the aim to improve nutritional knowledge and boost self-efficacy to a vulnerable population. Cooking classes were designed around the United States Department of Agriculture's (USDA) *Choose My Plate* guidelines and the national Share Our Strength's *Cooking Matters for Families* campaign (USDA, n.d.; Share Our Strength, 2019). Classes geared toward children accompanied by an adult were planned to feature fun activities and hands on cooking experiences. Unfortunately, the project was frozen mid-implementation due to a global pandemic. This paper will discuss the project thus far and outline plans for future completion and evaluation.

## Community Cooking Course to Combat Nutritional Knowledge Deficit

### **1. Rationale for the Project**

The U.S. Department of Health and Human Services (USDHHS, 2018) reports that more than two-thirds of American adults and almost one-third of American children are overweight or obese which has led to the development of preventable chronic disease for nearly half of American adults. Children and adolescents from low-income families and ethnic minority groups are at an even greater risk of obesity, with Latinos identified as having the highest prevalence of obesity (Castro, Samuels, & Harman, 2013). In addition to increasing the risk for serious disease such as hypertension, diabetes, stroke, heart disease, and mental illness, obesity has tremendous economic consequences. The healthcare cost of obesity in the United States is estimated at \$147 billion a year (Finkelstein et al., 2009). Communities throughout the country are urged to identify barriers and seek strategies to combat the obesity epidemic and provide sustainable solutions for individuals and families. This project focuses on community cooking classes as one effective evidence-based strategy for promoting healthy habits. In low-income families (P), how does participating in a community cooking course (I) compared to not participating in a cooking course (C) affect nutritional knowledge (O) after completion of the cooking course (T)?

### **2. Literature Synthesis**

A literature search in CINAHL, ERIC, and MEDLINE was conducted with the key words “low income” and “cooking class” written in the last five years which produced 21 results. An additional literature search of these databases with the key words “cooking class” and “nutritional knowledge” produced three more relevant results. These searches produced twelve articles reflective of the PICOT question with a strong mix of evidence to support evidence-

based change (See Appendix A). All studies were feasible with no identified risks. Evidence received A/B grades with a moderate to high level of certainty for benefit. Participants of just one or two cooking classes had a significant improvement in behavior, self-efficacy, and attitudes toward fruit and vegetable consumption (Dannefer et al., 2015). A systematic review revealed similar improvements with an even greater effect when combined with a second intervention, such as gardening or exercise (Hasan et al., 2019).

Eleven of the twelve research articles studied the utilization of cooking classes as part of dietary education. Some cooking classes included the whole family, while others did not. When only children participated, plans were stated to include parents in the future for reinforcement in the home and continued parental involvement (Gatto, Martinez, Spruijt-Metz, & Davis, 2016). Conversely, when only parents cooked, children were encouraged to participate in the process to sustain healthy behaviors (Miller, Kaesberg, Thompson, & Wyand 2016). After noting significant raises in key health behaviors with family participation, one pilot study concluded parents and children should engage as equal partners in creating a change in family interactions surrounding food (Anderson, Newby, Kehm, Barland, & Hearst, 2014). A systematic review recommended including parents as a crucial element for success, reporting that 75% of studies that included parents had significant decreases in BMI and/or weight (Ickes et al., 2014). In addition to parental involvement, nutrition coaching led by adult role models such as the school nurse can also provide reinforcement for positive change (Tucker & Lanningham-Foster, 2015).

Developing positive skills and attitudes toward cooking at a young age brings lasting benefits. Overcash et al. (2018) found that individuals who learn to prepare vegetables in cooking class have increased confidence in preparing vegetables outside of class which is directly associated with higher vegetable consumption. In a randomized controlled trial, feelings

of self-efficacy after cooking classes continued to be observed at a six-month follow-up (Bernardo et al, 2018). Furthermore, a longitudinal study found that an individual's self-perceived cooking skills in adolescence was related to their adult health behavior. Those with high self-perceived cooking skills in adolescence displayed increased healthy behaviors ten years later (Utter, Larson, Laska, Winkler, & Neumark-Sztainer, 2018). Teaching children and youth cooking skills builds confidence that leads to healthier outcomes in adulthood.

Over half of the studies mentioned the vulnerability of low-income families, with emphasis on Hispanic/Latino families. In these studies, classes were taught in a dual language format and reading material was printed in English and Spanish. Multiple factors may explain why low-income families are at greater risk for obesity: limited resources to purchase healthy items, limited access to nutrient rich foods, limited time to purchase and prepare healthy foods, and limited nutritional knowledge (Miller et al., 2016). Formative research reveals that knowing how to purchase groceries on a budget and basic cooking skills are chief obstacles (Pettigrew, Moore, Pratt, & Jongenelis, 2015). In a quasi-experimental with control study low-income participants had positive immediate and long-term effects, past six months, when classes were designed around grocery store shopping and preparing healthy foods on a budget (Pooler, Morgan, Wong, Wilkin, & Blitstein, 2017). Results of these studies support cooking classes as an effective intervention and give recommendations for future research and practice.

### **3. Project Stakeholders**

Evidence shows that interventions, such as cooking classes, can be made to improve the overall health of a community and reduce the obesity epidemic (Ickes et al., 2014). As low-income families are particularly vulnerable to the threat of malnutrition and obesity, partnering with organizations that already work with low-income individuals is necessary (Pooler et al.,



2017). Hill Country Family Services (HCFS) is a non-profit organization located in Kendall County, Texas, that fosters wellness and provides various forms of assistance to families in crisis, including a mobile food bank and local food pantry, the Corner Cupboard. The Corner Cupboard was identified as a model site for conducting cooking classes and implementing this change project. The stakeholders include clients of the Corner Cupboard, the manager of the Corner Cupboard, volunteers and staff at HCFS, HCFS's board of directors, the CEO of HCFS, and most importantly, the community itself. The CEO of HCFS is a principal gatekeeper to this project and approved this change project as it aligns with the organization's mission to bridge urgent community needs with long-term solutions. An inter-professional team at HCFS was organized which includes a community health nurse educator, registered dietician, case manager, community outreach specialist, Spanish translator, the food and nutrition program manager, and additional volunteers recruited to facilitate classes.

Identifying and eliminating barriers caused by unfamiliarity, weak belief, and misconceptions is critical to successful implementation of evidence-based projects, which requires full engagement of staff and stakeholders. This will require active communication, led by the community health nurse educator. With greater familiarity, the stakeholder's belief in the project will increase and misconceptions will promptly be addressed and resolved. For example, with limited resources, some stakeholders may have the misconception that this project will create an economic burden to the non-profit organization and require excess effort to implement. However, this is not the case. Costs are minimized as the cooking classes utilize infrastructure already in place. The Corner Cupboard is equipped with a functional kitchen, volunteers to help set up classes, and food staples necessary to create nutritious recipes. HCFS provides a firm foundation necessary to successfully implement this change project. Denis & Forest (2012)

explain that real reform and meaningful change can be achieved without creating new organizations, rather by operating specific organizational levers, such as practice-based innovation, developing new capacities, and new systems of engagement.

This client-centered change project will be led by the community health nurse educator and the food and nutrition program manager at HCFS. These stakeholders understand that to meet the client's needs, personal respect and a deep understanding of client preferences and values needs to be paramount. Considering what the client wants to learn and focusing educational efforts in that direction will shift the power to the client, break down barriers, and facilitate engagement (Long, Gallagher-Ford, & Fineout-Overholt, 2015). Respect for autonomy is essential; allowing clients to choose their own foods from a variety of options provides an enjoyable and humanizing shopping experience. This example of empowering families to make healthy food choices with fewer economic barriers is supported by self-determination theory, a powerful and sustainable model highlighting intrinsic motivation (Anderson et al., 2014).

#### **4. Implementation Plan**

Communities can be resistant to change, particularly if an outsider presents the idea (Hancock, Clarke, & Stevens, 2019). Fundamental to community health is the concept that change is most likely to be achieved if implemented from within the community. Therefore, the first step in this community health project involved building and strengthening community partnerships and collaboratively identifying family-centered cooking classes as a priority intervention for the HCFS community. These discussions primarily took place from March 2019 thru December 2019. The Iowa Model of Evidence-Based Practice to Promote Quality Care provided a suitable model to guide this project (Dang et al., 2015). This model contextualized the “trigger” issues of obesity, nutritional knowledge deficit, and chronic disease into a practical

framework for evidence-based change. These issues were identified as a shared priority in the partnership. Regular feedback loops supported effective communication with a diverse team through all four implementation phases of the pilot program. In addition, the piloting process will evaluate the community cooking class and its effect on nutritional knowledge, providing direction for the team moving forward. And finally, the dissemination process will allow the multidisciplinary team at Hill Country Family Services to share results with similar community organizations and food pantries. This pilot program was designed to be carried out in four implementation phases over the course of three months with regular opportunities for communication throughout the project.

Phase one was primarily organizational and occurred in January 2020. Approval was obtained, the team was formed, relevant research was shared, planning occurred, and tasks were delegated. The interprofessional team consisted of a community health nurse educator, the food pantry manager, a registered dietician, two Spanish interpreters, a case manager, an outreach specialist, and volunteers to manage the events. Classes utilized USDA's *Choose My Plate* guidelines and the national Share Our Strength's *Cooking Matters for Families* campaign (USDA, n.d.; Share Our Strength, 2019). *Choose My Plate* guidelines, such as portion size and variety, are posted throughout the Corner Cupboard food pantry and reinforced in cooking class curriculum. *Cooking Matters for Families* provided instructions with a guidebook for designing and implementing community cooking classes. The target audience was identified as children ages six to eleven accompanied by an adult. The date and theme for each cooking class was selected by the team. The menu planning strategy was threefold. First, the team wanted to utilize healthy ingredients. Second, the team wanted to feature kid-friendly foods. And third, the team wanted to use ingredients easily obtained from the Corner Cupboard, the San Antonio

Food Bank, or local discount grocers to encourage sustainability at home. The nurse and Spanish interpreter were assigned to create promotional materials which the food pantry manager agreed to display. The nurse and dietician would finalize the menu selections for each class and provide supply lists to the food pantry manager each Friday prior to the Monday afternoon class. The food pantry manager would order and insure delivery of all needed supplies for each class. Volunteers were recruited to setup, assist, and cleanup after each class.

Phase two began in late February 2020 and covered promotion, registration, and additional class preparation. Case management identified families served by HCFS with children ages 6-11 and text messaged invitations with electronic flyers. Attention-grabbing posters and colorful flyers were displayed at the Corner Cupboard, highlighting the new cooking class opportunity. Families were asked to RSVP. Due to space limitations, no more than ten child/parent pairs could register per class. Civic partners were notified of the new community offering and encouraged to support. Reusable water bottles were donated for each child participant. Colorful children's sized chef aprons were purchased for use during classes. After two weeks of promotion, the first class was filled and the second and third classes were 90% filled.

On March 16, 2020, one week prior to the first scheduled cooking class, the project was suspended by HCFS due to the unforeseen COVID-19 pandemic and the subsequent shelter-in-place order issued by the City of Boerne and Kendall County. Participants were immediately notified of the canceled classes. At the time of this writing, make-up dates are to be determined. A summer series of classes is being considered. When the program is reinstated, phase two will be repeated with priority registration given to families that had previously registered for March 2020 classes.

Phase three will be the presentation of cooking classes. Spanish translation will be available at each class. Prior to each class, necessary supplies and groceries will be gathered and set up according to the delegated tasks determined in the primary organizational phase. Participants will be welcomed at the door by a volunteer and asked to complete a pre-class survey for entry. Participants will then be led to a welcome activity, such as a scavenger hunt in the food pantry where children identify healthy and sneaky ingredients in popular foods. After the welcome activity, participants will move to the cooking portion of the class where they will learn hands on skills and nutritional knowledge in a fun and interactive way that focuses on increasing self-efficacy for healthy cooking. During class children will be given water bottles as take-home prizes for active participation. At the completion of each class, participants will enjoy a meal sampling, provide feedback, and take home a complimentary bag of groceries. Feedback will include post-class surveys and reflections. Feedback will be discussed as part of data collection later in this report.

Finally, in phase four, the pilot program will be evaluated for quality and potential adoption to practice. In addition to reviewing post-class surveys and reflections, team members will review individual roles in the project and share what went well and what may need improvement if adopted to practice. Total cost will be calculated and appraised for value. Communication among team members and examining class participant feedback will be critical in evaluating the project and determining success. In conclusion, a presentation will be created to review the project and disseminate information to interested colleagues and community partners.

## **5. Timetable/Flowchart**

In the Spring of 2019 community partnership and collaboration identified community cooking classes as a potential intervention to combat obesity for vulnerable low-income residents of Kendall County, Texas. The proposal to create a pilot program introducing cooking classes to the community was further developed in the Spring and Fall of 2019. The pilot program was formally submitted to HCFS and approved by their CEO in January of 2020. The project was scheduled to be delivered in four implementation phases over twelve weeks, with each phase taking three weeks. Each phase was discussed in the preceding section of this report. Please review the project flowchart found in Appendix B.

## **6. Data Collection Methods**

Evaluation is an important step in evidence-based practice. In this case, are cooking classes effective in improving nutritional knowledge as suggested by the evidence? Community cooking classes geared toward children and their caregivers will focus on key nutritional concepts. At the beginning of each class, participants will be given a brief pre-class survey related to a set of target concepts and at the end of class an identical post-class survey will be used to evaluate changes. Survey questions will be patterned after the Revised General Nutrition Knowledge Questionnaire (RGNKQ), a reliable and valid dietary knowledge assessment tool (Kliemann, Wardle, Johnson, & Croker, 2016). Surveys will be brief to maximize quality responses. By comparing answers from the pre- and post- surveys the impact of the cooking course can be measured in quantifiable terms. In addition, a post-class reflection geared toward adults will give attendees the opportunity to share something they learned and something they can incorporate into their family's regular diet after attending the cooking class. A post-class reflection geared toward children will ask children to write or draw one thing they learned in

class. Pre and post surveys will provide descriptive statistics. Reflections from participants will reveal qualitative outcomes and provide further support in determining the success of this project. A comprehensive evaluation of this project will help HCFS and its stakeholders determine the merit of offering future cooking classes. (See Appendix C for a step by step description of survey design, data collection, and evaluation.)

Descriptive statistics with a mixed methods approach will be used to evaluate this project. Descriptive statistics are commonly used in projects with survey designs such as this. Quantitative and qualitative data will measure program outcomes. Pre- and post-class survey questions will be patterned after the RGKNQ. The General Nutrition Knowledge Questionnaire (GNKQ) has been widely used and recognized since the 1990's as a reliable nutritional knowledge assessment tool and was recently updated to the RGKNQ to reflect current dietary knowledge and understanding (Parmenter & Wardle, 1999; Kliemann et al., 2016). The RGKNQ continues to show internal and external reliability and validity. The questionnaires are sensitive in detecting changes in knowledge over time and may be utilized in before-after designs where an intervention has taken place (Kliemann et al., 2016). To reduce guessing, a "not sure" option is available on RGKNQ questions. This option not only reduces anxiety, but also makes knowledge gains easier to recognize. All correct answers will receive one point. Answers can be analyzed to show change, or score improvement, between the two surveys. This will provide quantitative statistics for stakeholders to review. In addition to survey questions, reflections will be collected from participants which will provide qualitative feedback. If themes immerge from the reflections, qualitative statistics can be gathered and shared. If themes do not immerge due to a small sampling, stakeholders will be given a summary of individual reflections for review.

## 7. Cost/Benefit Discussion

The cost for community cooking classes is primarily based on human resources and supplies. The identified site, the Corner Cupboard at HCFS, is already equipped with a functional kitchen, volunteers to help set up classes, and food staples necessary to create nutritious recipes. HCFS has the people and the infrastructure necessary to implement this change project. Cooking classes will be offered to families free of charge. As part of their community outreach goals, HCFS will donate supplies for each class which includes the cost of paper goods, ingredients for cooking demonstration and sampling, one small gift per child, and one complimentary bag of groceries per family. The direct cost of this donation will be valued at approximately \$50 per participating family. Class size will be limited to 7-10 families.

Advertising costs and office supplies are estimated at \$20 per class and include the cost of posters displayed at the Corner Cupboard, flyers for distribution and signup sheets. Free advertising will be done through verbal invitations at checkout, targeted text messaging campaigns, and social media. Indirect operating expenses, such as rent and utilities will be paid by HCFS.

The interprofessional team that has been organized for this project includes four employees of HCFS and seven community volunteers. The four employees of HCFS will collectively clock approximately 10 hours per class, for an approximate cost of \$300 per class. The registered dietician, registered nurse, and translators were obtained through volunteer recruitment. The use of volunteers on the interprofessional team has kept costs down for this project. Non-profit organizations often secure pro bono professional services from within the community to keep costs down. If this was a fully funded grant project with paid professional services, the approximate additional cost for staffing would be \$1475 per class. This would



include a community health nurse educator for \$1000 (20 hours of work at \$50 per hour), a dietician for \$100 (3 hours of work at \$33 per hour), translator services for \$75 (3 hours of work at \$25 per hour), and class facilitators for \$300 (20 hours of work at \$15 per hour). A sample class with only paid staff and no volunteers will cost approximately \$2195. This is the maximum estimated cost. See Table 1 for direct costs of a sample class.

Calculating the benefit of this project necessitates a brief discussion of the costs associated with poor nutrition and obesity. The CDC (2020) reports on the high costs of obesity to the U.S. healthcare system as well as indirect societal costs such as lack of productivity. The CDC currently refers to a seminal study in 2009 tasked to quantify the cost of obesity. This report performed a comprehensive analysis of medical expenditures between 1998 and 2006 estimating the cost of obesity to the U.S. healthcare system to be \$147 billion dollars in 2008 with medical costs \$1,429 higher for obese individuals compared to non-obese individuals (Finkelstein et al., 2009). The average sized cooking class will host eight children with eight adult caregivers, for a total of 16 participants. Recognizing approximately half of adults and almost one third of children are obese, approximately four adults and two children in each

Table 1  
*Direct Costs for Sample Class*

<b>Sample of Direct Costs for Class Size of 16 (8 children and 8 adults)</b>	<b>With Volunteers</b>	<b>Without Volunteers</b>
Supplies (paper goods, ingredients, gift, & groceries)	\$400 (8 x \$50)	\$400
Advertising and office supplies	\$20	\$20
HCFS staff payroll	\$300	\$300
Additional payroll as needed	n/a	\$1475
<b>Total Cost</b>	\$720	\$2195 <i>(maximum estimated cost)</i>

cooking class will be obese. With this assumption, the extra medical costs for these six individuals can be estimated at \$8,574 per year. An investment in these individuals to reduce their annual healthcare costs is warranted. The cost to conduct one cooking class for eight children and eight adults is estimated to be between \$720 and \$2195. HCFS would like to offer multiple classes to reinforce new concepts and strengthen nutritional understanding. A series of three child-parent cooking classes for sixteen individuals is estimated to cost between \$2,160 and \$6,585, indicating cooking classes are a relatively inexpensive intervention in comparison to just one year of extra medical expenses associated with obesity, not to mention the cost of obesity over a lifetime. These classes are also intended to inspire multigenerational changes that reach beyond the individuals attending the classes and to the extended family. The expense of obesity in the United States demands attention. Investments in health promotion are both practical and necessary. Successful health promotion interventions such as cooking classes are relatively inexpensive and have the potential to significantly reduce healthcare costs in the long run.

### **8. Discussion of Results**

This change project was submitted and approved by their CEO in January of 2020. A multidisciplinary team was formed. In February of 2020 HCFS began advertising for three different “Cooking with Kids” classes scheduled for March. Advertising was done in English and Spanish through direct text messaging to HCFS clients, social media, posters displayed at the Corner Cupboard, and flyers given at check out. Funding was secured and supplies were purchased. Community partners were notified of the pilot program and offered support. Staff collected RSVPs and classes were filled for all three dates. However, the classes were indefinitely postponed due to the unanticipated COVID-19 pandemic. Participants were notified

of the canceled classes. At the time of this publication new dates for holding classes have not been confirmed.

Although a comprehensive evaluation of this project cannot be presented at this time, a discussion of the project to this point is merited. Perhaps the greatest strength of this project was the support provided by its stakeholders. Organizational support was constant as HCFS fully funded the project and enthusiastically shared the opportunity with community partners. Public support was revealed as volunteers willingly offered to staff cooking classes, assist where needed, and provide pro bono professional services as necessary. Participant support was apparent by how quickly the classes filled. Prior to implementation a chief concern was whether individuals would choose to participate. Would the classes ultimately connect with and identify a client preference? Would there be interest? Phase two answered this concern by indicating a positive response toward participation.

The comprehensive evaluation of this project will include a thorough review of the data collected from the pre- and post-class surveys. Statistics will inform decision making and play a valuable role in determining the success of the project. Nonprofit organizations such as HCFS use statistics to measure program outcomes and justify funding to continue programming. In addition, the data collection and evaluation from the classes, a comprehensive evaluation will also analyze costs, effort, and perceived benefits of the program.

### **Conclusions/Recommendations**

The goal of this project is to improve nutritional knowledge and give families an opportunity to enjoy learning to cook and eat healthy together. Studies suggest early health and wellness interventions targeted at vulnerable low-income families can help prevent poor health outcomes across generations. Cooking classes offered by HCFS is an evidence-based

intervention to target the obesity crisis that afflicts America, particularly low-income America. This pilot program successfully secured stakeholder support at all levels, suggesting a promising opportunity for complete implementation at a future date. When this project resumes, the following recommendations should be considered. This pilot program only offered classes on Mondays from 4:30-6pm, consider different scheduling options to include weekend or summer opportunities. This pilot program offered English classes with Spanish translation. When collecting RSVPs in the future, determine preferred language of the participants. Consider holding an exclusively English or exclusively Spanish class if merited. Expansion plans may include providing childcare for younger siblings, offering classes tailored to younger or older children, and/or conducting additional classes offsite within the community. Some communities have found success working through public schools in collaboration with school nurses.

Unhealthy diets have driven Americans along the dangerous and costly roads of disease; obese patients become the cardiac patients, diabetic patients, and chronic disease patients that fill healthcare systems. Lack of nutritional knowledge has been identified as one factor contributing to poor diets, particularly in low-income families. Arming individuals with the knowledge necessary to create change for themselves and their families is essential. Evidence-based interventions at community food banks and food pantry locations can equip clients with both necessary food and nutritional knowledge to create change. Partnering with Hill Country Family Services and conducting cooking classes at the Corner Cupboard is an evidence-based change project with low risk, high feasibility, and high certainty for net benefits. Providing early health and wellness interventions to vulnerable low-income families can combat devastating health outcomes that span generations.

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## Appendix A

**Synthesis Table**

<b>Study</b>	<b>Conceptual Framework</b>	<b>Design/ Framework</b>	<b>Sample/Setting</b>	<b>Intervention</b>	<b>Outcome</b>
<b>A</b>	Bandura social cognitive theory	Qualitative, focus group analysis	<i>N</i> = 15 Head Start participants divided into two groups of 7 and 8. Age Group= CG/C Region= Midwest Income level= Low	“What’s Cooking” program participation	Increased NK; increased SH  (Four themes: Child asking behavior, care giver comfort in cooking, family connection, and childhood attitude, knowledge and skills)
<b>B</b>	Bandura’s self-efficacy	RCT	<i>N</i> = 409 assessed for eligibility <i>n</i> = 204 intervention <i>n</i> = 171 control Age Group= 3 <sup>rd</sup> -5 <sup>th</sup> graders Region= Los Angeles Income level= Low	“LA Sprouts” program participation	Decreased BMI; decreased WC; increased NK
<b>C</b>	Self-determination theory	Descriptive, pretest and posttest	<i>N</i> = 95 from park & rec centers Age Group= CG/C Region= Minneapolis, MN Income level= Low	“Taking Steps Together” program participation	Increased KN; increased EX
<b>D</b>	Social cognitive theory	Quasi-experimental with comparison groups	<i>N</i> = 668 Age Group= Adults Region= Six states (CA, CO, ME, MA, MI, & OR) Income level= Low	“Cooking Matters” program participation	Increased NK; increased SH

<b>E</b>	N/A	Systematic review	<i>N</i> = 20 Age Group= Youth & CG/C Region= U.S. & International Income level= NR	Multiple obesity prevention interventions	Decreased BMI; decreased WC; increased NK; increased EX; increased SH
<b>F</b>	Grounded theory	Mixed methods: Quasi-experimental with comparison groups	<i>N</i> = 2063 <i>n</i> = 656 intervention 1 class <i>n</i> = 736 intervention >1 <i>n</i> = 671 control Age Group= Adults Region= New York City Income level= Low	SNAP-Ed Farmers' market-based nutrition education program	Increased NK; increased SH; increased SE  (Themes: increased knowledge of nutrition, produce, food prep; changes in attitudes toward cooking and eating healthy; improvements in shopping, cooking, and eating.)
<b>G</b>	N/A	Descriptive pretest and posttest	<i>N</i> = 927 Age Group= Adults Region= Western Australia Income level= Low	FOODcents course	Increased NK; increased SH
<b>H</b>	N/A	Descriptive pretest and posttest	<i>N</i> = 927 Age Group= 5 <sup>th</sup> grade students Region= Maine Income level= NR	Nurse led Let's Go 5-2-1-0 obesity prevention program	Increased NK; increased EX
<b>I</b>	N/A	Systematic Review	<i>N</i> = 30 (Studies) <i>n</i> =7381 Age Group= All ages Region= English language Income level= NR	Cooking classes	Increased SE; no significance BMI; statistical improvement with additional intervention (gardening, physical activity, goal setting, grocery store tours)
<b>J</b>	Social cognitive theory	Descriptive pre-course and post-course survey	<i>N</i> =89 Parent-Child Pairs Age Group= CG/C Region= St. Paul-Minneapolis Income level= Low & Med	Vegetable-focused cooking skills and nutrition program	Increased NK; increased SH; increased SE

<b>K</b>	N/A	Descriptive Cohort Study	N= 1158 from 31 schools Age Group= Adolescence-adult cohort Region= Minneapolis-St. Paul Income level= NR	Self-perceived cooking skills at adolescence	Increased NK; increased SE; increased healthy behaviors ten years later in life
<b>L</b>	Bandura's self-efficacy	RCT	N= 78 individuals n= 39 intervention n= 39 control Age Group= 1 <sup>st</sup> year university students Region= Brazil Income level= NR	"NCK" program participation	Increased NK; increased SH; increased SE; increased healthy behaviors six months later

**Outcomes Table**

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>I</b>	<b>J</b>	<b>K</b>	<b>L</b>
<b>BMI</b>	NR	↓	NC	NR	↓	NR	NR	↓↑	↓↑	NR	↓↑	NR
<b>WC</b>	NR	↓	NR	NR	↓	NR	NR	NR	NR	NR	NR	NR
<b>NK</b>	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
<b>EX</b>	NR	NR	↑	NR	↑	NR	NR	↑	NR	NR	NR	NR
<b>SH</b>	↑	NR	NR	↑	↑	↑	↑	NR	NR	↑	NR	↑
<b>SE</b>	↑	NR	NR	↑	↑	↑	NR	NR	↑	↑	↑	↑

**Legend:**

CG/C: Caregiver and Child	A. Miller, Kaesburg, Thompson & Wyand (2016)
NR: No Results Provided	B. Gatto, Martinez, Spruijt-Metz & Davis (2017)
BMI: Body Mass Index	C. Anderson, Newby, Kehm, Barland & Hearst (2014)
WC: Waist Circumference	D. Pooler, Morgan, Wong, Wilkin & Blitstein (2017)
NK: Nutritional Knowledge	E. Ickes, McMullen, Haider & Sharma (2014)
EX: Exercise	F. Dannefer, Abrami, Rapoport, Sriphanlop, Sacks & Johns (2015).
SH: Shopping Knowledge	G. Pettigrew, Moore, Pratt & Jongenelis (2015).
NC: No Change	H. Tucker & Lanningham-Foster (2015)
SE: Self-efficacy for Healthy Behavior	I. Hasan et al. (2019)
	J. Overcash et al. (2018)
	K. Utter, Larson, Laska, Winkler, & Neumark-Sztainer (2018)
	L. Bernardo et al. (2018)

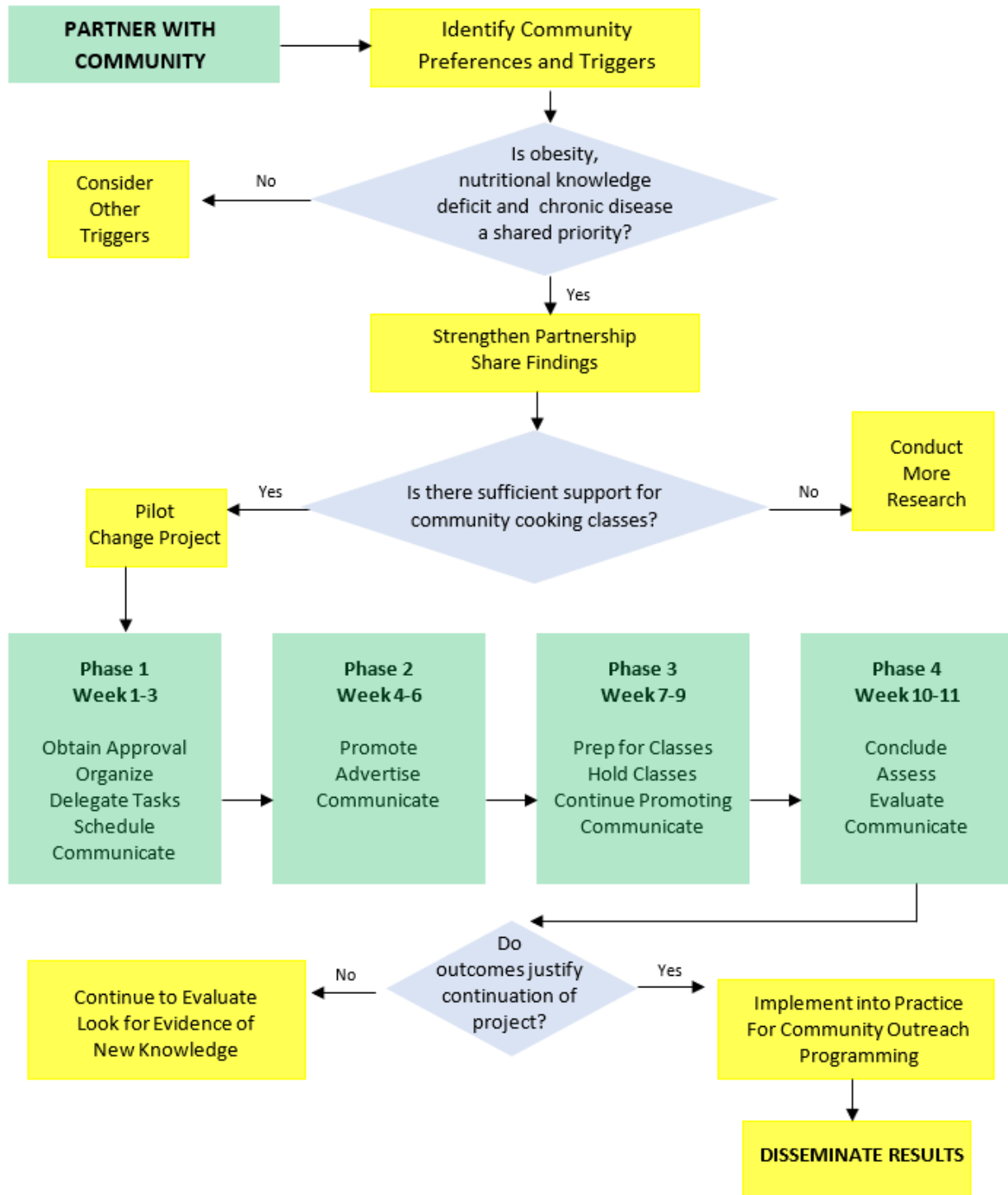
**PICOT:** In low-income families (P), how does participating in a community cooking course (I) compared to not participating in a cooking course (C) affect nutritional knowledge (O) after completion of the cooking course (T)?

**Recommendations for Practice:**

1. Cooking and nutrition courses should include both caregiver and child to reinforce dietary teaching in the home environment (Gatto et al., 2016).
2. Communities and primary care providers should work together to identify at-risk households and prescribe cooking and nutrition classes to combat nutritional knowledge deficits (Anderson et al., 2014).
3. Strategies to identify and purchase healthy foods within a budget should be taught to communities at risk (Pooler et al., 2017).

Appendix B

Community Cooking Class Flowchart



## Appendix C

**Survey Design, Data Collection, and Evaluation**

<b>Survey Design and Data Collection</b>
1. Identify nutritional knowledge objectives prior to each class
2. Create a brief one- to three-question survey addressing nutritional knowledge objectives and patterned after the RGNKQ. Survey questions should be written in English and Spanish. Each participant will complete this survey twice, prior to class and at the completion of class.
3. Participants will complete a pre-class survey to enter class. Participants should note that this is not a test, but a survey. If the answer is unknown, mark “not sure” rather than guess.
4. Participants will complete an identical post-class survey at the end of class. At the end of this survey, adults and children will be asked reflection questions. Adults will identify one thing learned in class and one new thing to incorporate into their family’s diet. Children will write or draw one thing learned in class. Surveys must be completed to receive a take home gift.
<b>Evaluation</b>
1. Score pre- and post-class surveys. RGNKQ based questions will receive 1 point per correct answer. Results for these questions are measurable.
2. Compare pre- and post-class scores and analyze differences.
3. Review open-ended reflection questions. Look for themes that may reveal qualitative outcomes.
4. Organize quantitative and qualitative results and present to stakeholders for review. Be prepared to discuss factors that may have affected results.