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Research Article

Ripple Effect Mapping Outcomes of a Childhood Obesity Prevention Program From Youth and Adult Dyads Using a Qualitative Approach: *iCook 4-H*

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ABSTRACT

Objective: To describe the impact of the *iCook 4-H* intervention study based on data gathered through ripple effect mapping focus groups through an explorative approach.

Design: Youth−adult dyads responded about ways in which *iCook* had affected the individual, family, and community. Three questions were asked: (1) What were people doing differently as a result of *iCook?* (2) Who benefited from *iCook* and how? (3) Were there changes in the way community groups and institutions did things as a result of *iCook?*

Setting: Ripple effect mapping sessions took place across 5 states (Maine, Nebraska, South Dakota, Tennessee, and West Virginia).

Participants: Seventy dyad participants (n = 35 youth, n = 35 adults) from the *iCook 4-H* intervention.

Main Outcome Measure: Three core themes of *iCook 4-H* were assessed: cooking, eating, and playing together.

Analysis: Direct content analysis and word frequencies were used.

Results: Seven categories emerged: improved health, increased community involvement, increased knowledge, increased communication, changed motivation, financial mindfulness, and increased appreciation for family. An overarching theme that was determined was that learning new skills together through trying new things (cooking, eating, and playing) leads to positive individual family and community change.

Conclusions and Implications: Ripple effect mapping was effective in determining the perceived impact of *iCook 4-H* on oneself, family, and community.

Key Words: community, dyad, impact mapping, implementation and dissemination, ripple effect mapping (*J Nutr Educ Behav.* 2019; 51:S41−S51.)

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INTRODUCTION

Although childhood obesity rates were once thought to be plateauing, there is evidence that they are still increasing.[1,2] Because of the prevalence of childhood obesity and its well-studied consequences (eg, adulthood obesity, obesity-related comorbidities, self-esteem issues), childhood obesity prevention programs have increased.[3] These programs target many different facets of a child's lifestyle, such as school settings and homes, and behaviors such as cooking skills, gardening, healthy eating, and physical activity.[3−7] It is essential that these programs be effective to alleviate public health problems associated with childhood obesity.

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Program effectiveness is commonly measured using quantitative methods to show anthropometric change of obesity-related outcomes, including body mass index, skinfold, and waist circumference.[4] Although measuring these outcomes can show the direct impact of the obesity prevention program on individuals, many programs lack the ability to show complex, often more intangible changes made in participant behavior and environments, such as increased use of community parks or cooking more diverse meals. In addition, obesity prevention programs are often multifaceted and inconsistent in methodologies and outcome measures, which makes it hard to capture a clear picture of the effectiveness of programs.[8] Using qualitative methods to assess program effectiveness can overcome the limitations of quantitative research in social sciences by evaluating influences outside the structured study design.[9] For example, qualitative methods such as focus groups and interviews allow participants to have more freedom to expand on their perceptions of program effectiveness beyond the initial scope of the program. These data would be lost using only quantitative methods because behavioral and environmental surveys often are too structured according to the study design to allow participants to expand beyond the research questions.

Ripple effect mapping (REM) is a type of qualitative impact evaluation used to identify the perceived effectiveness of an intervention through participants' perceptions of the program's success in reaching its defined goals while visually capturing the intended and unintended changes produced by the program.[10] Through this focus group format, REM is designed to facilitate participants' ability to describe program impacts on themselves, peers, and communities using the Community Capitals Framework (CCF).[11,12] The CCF encompasses 7 capitals (natural, cultural, human, social, political, financial, and built) that are all part of a successful community.[13] When the CCF is combined with REM, program impacts on participants, stakeholders, and the surrounding community can be documented through visual mapping, expanding beyond typical quantitative outcomes.[14] Thus, REM is a feedback mechanism that provides impact of program outcomes and participant perceptions. In addition, it provides opportunities for researchers, community stakeholders, participants, and support staff to learn from these findings to govern quality improvements for further dissemination. Adoption of an evaluation tool such as REM can supplement quantitative outcome data with information about participants' perceptions of intervention programs and their reactions to them as well as their effectiveness before moving forward into program dissemination.

ICOOK 4-H OBESITY PREVENTION PROGRAM

iCook 4-H was a 2-year control-treatment intervention study conducted by a multistate team of researchers in 5 states (Maine, Nebraska, South Dakota, Tennessee, and West Virginia).[15–20] The aim was to prevent childhood obesity using a youth–adult dyad intervention, which was a 6-session curriculum taught over 12 weeks with a focus on families cooking, eating, and playing together. The curriculum was based on Social Cognitive Theory[21] and the 4-H experiential learning approach of learning by doing.[22] After the initial 12-week cooking sessions, treatment dyads engaged in an additional 1.5 years of activities that included quarterly seasonal booster sessions, monthly newsletters, and interactions on the study website (making and posting videos, status updates, pictures, and health-based challenges). Assessments were conducted over 2 years at months 0, 4, 12, and 24. Youth measurements included anthropometrics, Tanner stage of maturation, and blood pressure; adult measurements included blood pressure and self-reported height and weight. Whereas quantitative measures of individual outcomes were used to assess program effectiveness, the research team identified REM as an additional method to evaluate perceived program impacts in the community. The goal of REM was to investigate the impact that the *iCook 4-H* program had on youth–adult treatment dyads immediately after the 2-year intervention by investigating changes in participants as well as peer and community settings. The objective was to use the REM structure with youth–adult treatment dyads to allow them to reflect on program impacts and generate a visual map of the qualitative feedback gathered through small-group discussions. The objective of this article is to describe the perceived impact of the *iCook 4-H* intervention study based on data gathered through REM focus groups using an explorative approach.

METHODS

Ethics

The Institutional Review Board Committees for the Protection of Human Subjects at West Virginia University, University of Tennessee, South Dakota State University, University of Nebraska Lincoln, and University of Maine approved the study. This study was conducted in accordance with the Declaration of Helsinki; all facilitators and notetakers completed appropriate Collaborative Institutional Training Initiative courses before the sessions. Adult participants completed written informed consent and youth participants provided verbal assent.

Study Design

An evaluation of the program impacts on youth–adult dyads after the 2-year program was completed using the REM technique.[23] The process was a 90-minute structured group discussion with sequential questioning designed to elicit reflection from participants. A map, which was a visual representation of responses, was created by trained facilitators as the discussion ensued. Across the 5 states, 10 discussion groups were held. A consistent notetaking process occurred across all 10 REM sessions. States were given the option to video record REM sessions

to enhance data analysis further; only 5 were recorded, although consistent note-taking process occurred across all 10 REM sessions.

Training

Facilitators were identified within each state and trained using online videos with a manual created by 1 of the coauthors.[24,25] Training and guides helped to ensure homogeneity of REM session implementation across facilitators in the 5 states for optimal data comparison. Notetakers were identified for each discussion group. They were trained by facilitators to use report templates to record statements and denote whether statements came from youth or adults by placing a Y or A by the comment.

Participants

Treatment dyads were asked at the 24-month research assessment period whether they were interested in participating in a discussion group to be scheduled at a later date, to share opinions and experiences about the *iCook 4-H* program. Names of those interested were kept; within a month, they were called to schedule times for group discussions of 3–6 dyads. Youth and adults participated in the focus group together with ≤6 dyads in each focus group. The number of focus group participants was determined based on previously published recommendations for focus group data collection with ≤12 participants.[26] Treatment dyads that agreed to participate were contacted and scheduled for participation. The REM participants received $50/dyad for partaking in the research.

Of the 90 *iCook 4-H* treatment participants, 35 youth–adult dyads (39%) agreed to participate in the REM sessions. Demographic data were previously collected at the *iCook 4-H* baseline assessment. Anthropometric data were collected for these participants at the 24-month research assessment, when they were recruited for the REM session. Physical anthropometric measures were completed by trained researchers in a private location, following the procedures from the National Health and Nutrition Examination Survey III.[27] Height was measured to the nearest 0.1 cm using a wall-mounted stadiometer (digital stadiometer, Heightonic, Issaquah, WA) with the participant standing facing forward, with shoes removed. Weight was measured to the nearest 0.1 kg using a calibrated digital scale (electronic scale, Tanita, Arlington Heights, IL). Both measures were completed twice for accuracy. No statistical differences in adult or youth gender, race, age, state of participation, or anthropometric measures were found between those who chose to participate and those who chose not to ($P > .05$).

Mapping Protocol

Participants completed a demographic questionnaire at the beginning of the mapping session. A standardized protocol including a structured leader guide was followed across all sites to assist in data management.[23] Participants were seated in a semicircle in front of mapping materials that were attached to the wall. The researchers reviewed guidelines for group discussions and asked participants to reflect on the 2-year study and the program impacts on cooking, eating, and playing together. Group dynamics such as participant placement around the sitting area were recorded. The facilitator led an appreciative inquiry activity, marking on the side of the map participants' responses about the most beneficial program aspects.[10] Adults were asked first to allow youth participants to respond to each question, with adults commenting after youth ideas were stated, per mapping methodology.[23] Community capitals were defined, as shown in Table 1, with directions given to reference the category most related to the responses of participants when they were asked the following questions: (1) What were people doing differently as a result of the *iCook 4-H* program? (2) Who benefited from the *iCook 4-H* program and how? (3) Were there changes in the way community groups and institutions did things as a result of the *iCook 4-H* program? With responses to each question, participants chose ≥1 community capital that was affected; the facilitator labeled these on the mapping area. At the end of the REM session, the facilitator had participants discuss the responses that participants thought were the most important or significant ideas and that most bridged and bonded new people (eg, new friends, community members). These were labeled on the map.

The facilitator coded participants' responses regarding how 1 event or outcome affected another to demonstrate the ripple effect taking place, using arrows, colors, etc, to capture data in the report template.[25,28] Pictures of the REM map were taken to assist with capturing the collected data. Facilitators and notetakers recorded the information created by participants from the visual map into a data report template. Each mapping image, data report template, and video-recorded session, when applicable, were sent to 1 research laboratory for consistent data analysis. Follow-up interviews with each facilitator were conducted to determine limitations among sessions and what had worked best, for future dissemination. Figure 1 shows an example of a completed mapping activity.

Analysis

Direct content analysis[29,30] was completed by 3 separate trained researchers to ensure homogeneity among results. Researchers completed REM data templates by agreeing on 100% of the themes and collectively deciding on themes if discrepancies arose.[31] The primary encoding process began by using directed content analysis from the data report templates completed by notetakers for each REM session. The primary researcher studied the report templates line by line after first making general field notes and themes. These notes were used to develop codes that encompassed the topics represented in the results. After coding was completed, the primary researcher reviewed each report template to ensure that no other codes were missed. During analysis, the researchers noted whether an adult or

Table 1. Community Capital Descriptions

Descriptions
Social: Connections among individuals and groups that help make things happen, including bonding with people you know and bridging to new people or seeing people in unfamiliar roles.
Natural: Natural resources and natural beauty such as rivers, parks, outdoor recreation, and farmland.
Cultural: Activities, foods, creativity (local traditions, art, and music), and ways of thinking that are familiar.
Human: Knowledge, skills, and abilities of people; includes leadership ability and health and wellness of people.
Political: Access to decision makers, such as student council, school board, and town councils. Power of individuals and groups to influence rules or budgets.
Financial: Money available to invest, including helping or starting businesses as well as giving away money and goods to those who need it.
Built: Structures and facilities that support a community, such as communications, roads, and buildings.

Descriptions of the 7 community capitals founded within the community capital framework.[12] Community capitals are described by the facilitators before the ripple effect mapping session and used by participants to relate program impact within the community. With each participant response, they chose ≥1 community capital that was affected in the community.

youth made the comment. After this, codes were merged and summarized, creating 7 categories and 11 subcategories. Prominent themes were used to justify the creation of each subcategory. Two additional researchers reviewed each report template and discussed the theme, categories, subcategories, and prominent themes. Two further subcategories were identified during this process. To ensure accuracy of data report templates, 2

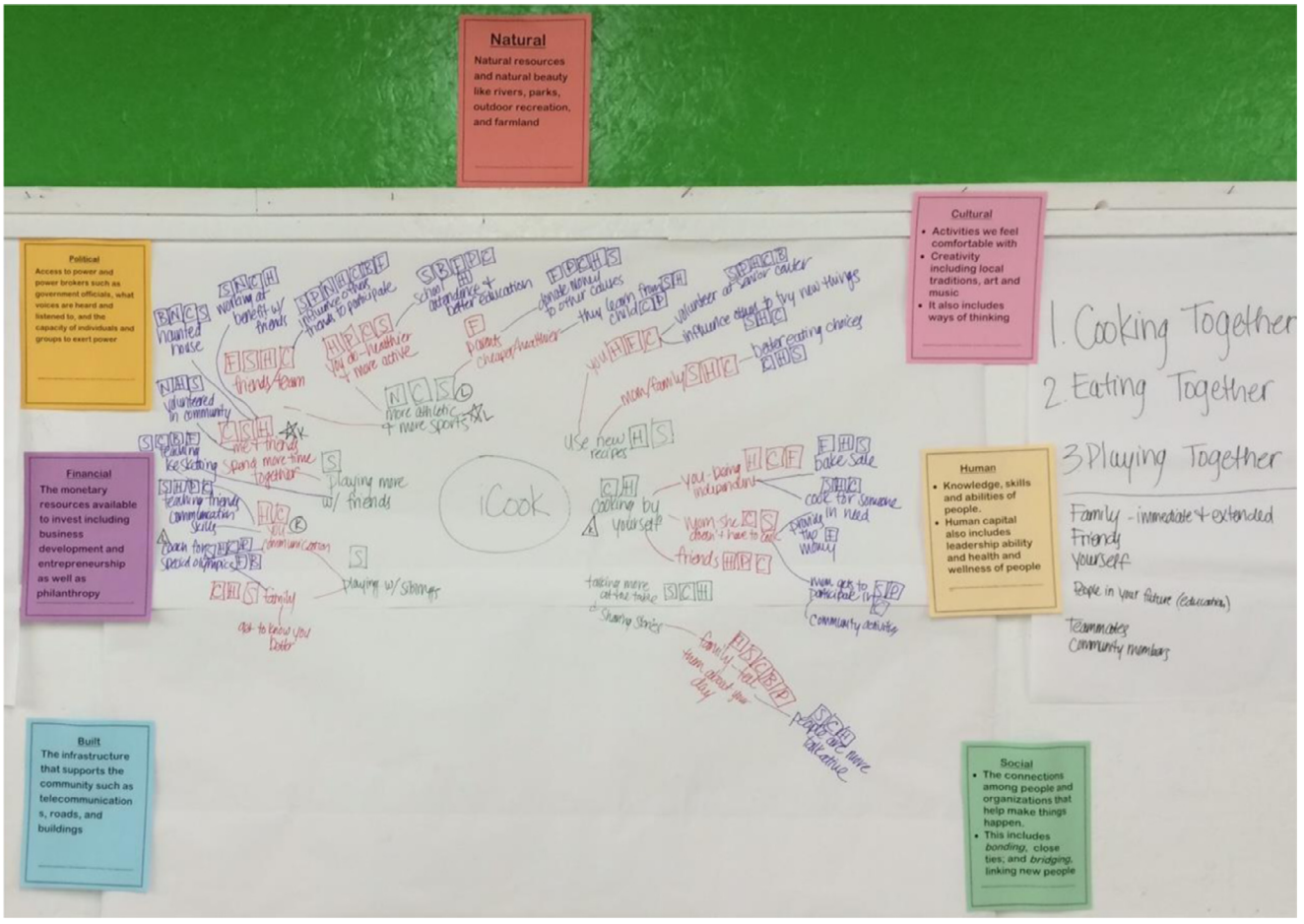

Figure 1. Finished sample of ripple effect mapping image.

videoed REM sessions were viewed and compared with the data report templates. The category creations and condensed themes were compared with word frequencies to determine the consistency of results.

The rigor of data analysis within this study was gained though credibility, dependability, transferability, and confirmability.[32,33] Credibility is similar to the validity of the quantitative data and assesses the truthfulness of the results.[34] This was achieved through long-term investigation of subject matter, maps, data templates, and testimonials given by each site's facilitators. Member checking, also termed expert reviewer debriefing, also took place through facilitator discussions with participants openly checking the accuracy of what was written, to ensure the accurate depiction of participant perceptions during each REM session. Dependability is the reliability of the data and the notion that using the same methodology would produce similar participant results; it was maintained within this study because all REM sites followed the same methodology.[34] Furthermore, multiple trained researchers examined the codes to make sure both reliability and validity of results occurred. Transferability, the ability to produce results that can be compared with others, was achieved through the completion of participant demographic questionnaires to ensure the representativeness of participants for applicability in future dissemination.[34] Confirmability ensures the accuracy of the results; it took place in the establishment of credibility, transferability, and dependability as well as research reflection during analysis to confirm that minimal bias had occurred.[32,34] These components ensured the study's rigor and allow the current findings to be applied to a larger scope of study within the dissemination and implementation of obesity prevention research.

RESULTS

Demographics

Participant demographic characteristics are presented in Table 2 for youth and Table 3 for adults. A total of 35 dyads, youth (mean age, 11.4 ± 0.7 years) and adults (mean age, 41.9 ± 6.3 years) participated across the 5 states. Ten REM sessions were conducted with participants, who were primarily Caucasian (71%); 59% of adults had earned at least a bachelor's degree.

Table 2. Youth Ripple Effect Mapping Participant Demographics (n = 35)

Variable	n (%)
Youth Gender	
Male	51 (18)
Female	49 (17)
Youth race	
Caucasian	71 (25)
Hispanic	17 (6)
African American	6 (2)
Other	6 (2)
Youths' current grade	
5	11 (4)
6	66 (23)
7	23 (8)
Youth age, y (mean ± SD)	11.4 (0.7)
Youth weight, lb (mean ± SD)	102.3 (29.3)
Youth height, in (mean ± SD)	59.0 (3.91)

Direct Content Analysis

After direct content analysis, the main overarching theme of participant perceptions of *iCook 4-H* emerged: Learning new skills together through trying new things (cooking, eating, and playing together) leads to positive individual, family, and community change. Within this overarching theme, 7 categories with 13 subcategories and 41 prominent themes were identified (Table 4). The impact on all community capitals was expressed throughout mapping sessions.

As seen in Table 4, the first major category was improved health. Participants expressed ways in which completing the *iCook* program led to changes within their lives that reflected improved lifestyles and subsequently improved health. Youth and adults expressed the impact of the program on their cooking, eating, and playing together. An adult indicated that "there are decreased medical expenses due to better health" relating to the financial and human community capitals. A youth stated that "increased physical activity and being more active causes more energy."

The second major category was increased community involvement. This category was formed with 2 subcategories: increased community involvement with friends and peer groups and increased community involvement through organizational groups. Participants voiced perceptions of the need for improved local businesses to provide fresh local produce and increased cultural awareness by trying different cuisines. For example, 1 adult stated, "As we culturally try new foods, that makes more/different variety of restaurants begin to pop up in our community." Perceptions of increased volunteering within the community were present as well as becoming a role model to the community, because community members become more active and engaged. These subcategories were reinforced by 8 prominent themes found in Table 4.

The third major category was increased participant knowledge because of the *iCook* program. Two subcategories within this area were

Table 3. Adult Ripple Effect Mapping Participant Demographics (n = 35)

Variable	n (%)
Adult race	
Caucasian	71 (25)
African American	17 (6)
Hispanic	6 (2)
Other	6 (2)
State of participation	
Maine	29 (10)
South Dakota	20 (7)
West Virginia	20 (7)
Nebraska	17 (6)
Tennessee	14 (5)
Children in household, n	
1	11 (4)
2	37 (13)
3	40 (14)
≥4	11 (4)
Adult highest education level (n = 35)	
Elementary	9 (3)
High school	17 (6)
Some college	6 (2)
Associate's degree	9 (3)
Bachelor's degree	34 (12)
Graduate or professional degree	23 (8)
No response	3 (1)
Adult's marital status	
Married	86 (30)
Committed relationship	9 (3)
Single	6 (2)
Adult's age, y (mean ± SD)	41.9 (6.3)
Adult's weight, lb (mean ± SD)	157.8 (35.1)
Adult's height, in (mean ± SD)	64.8 (2.9)

formed with 7 prominent themes. The first subcategory, increased knowledge by trying new things, contained participant perceptions regarding trying new recipes, flavors, and spices, and "trying new ethnic and cultural foods, that help us be willing to do this [try new things] later in life." Furthermore, increased friendships through learning new games together with "older youth engage younger youth to pass on knowledge." The second subcategory, increased knowledge through education and new experiences, was filled with new experiences by *iCook* participants regarding learning how to read food labels, knowledge of family members' likes and dislikes through more time spent together, and the benefits of trying new foods with an open mind. Participant perceptions of increased cultural awareness and acceptance through trying different cuisines proved beneficial.

The fourth major category was increased communication. This category was formed by 2 subcategories and 8 prominent themes. The first subcategory, increased communication during mealtimes, was discussed as having a positive effect on family dynamics that builds harmony within family. Participants felt that conversation starter cards improved connections and communication; 1 youth stated that "[Conversation starter booklets] started funny conversations about superheroes." In addition, participants felt more connected during mealtimes because of the decreased use of electronic devices. The second subcategory of increased communication among friends and family led to an open line of communication. A participant stated that "talking to parents can improve self-esteem and boost confidence." Participants felt that this improved communication and could potentially stop bullying, increase trust, and decrease stress owing to more time spent communicating together, and expressed the human and social capital changes.

The fifth major category was changed motivation. This category was formed by 1 subcategory, motivation for better health, and 4 prominent themes. A participant thought that better eating choices were being made and that this change was taking place because of the motivation to improve health. Likewise, participants felt that they were happier and that happiness is contagious, creating the motivation to spread happiness. Furthermore, 1 youth stated, "People learn that TV doesn't matter ... they are motivated to get away from candy and TV."

The sixth major category was financial mindfulness. This category included 2 subcategories: shopping smarter and health costs. Participants thought that when they were healthier (referring to being healthier after the *iCook* program), they would have a decrease in insurance costs and taxes from health-related issues. Youth noticed the financial benefits of using the recipes learned in *iCook 4-H*, stating that "You are saving money by staying in and eating instead of going out." Similarly, participants believed that finances

Table 4. Categories and Subcategories of Participant Perceptions With *iCook* Program

Category	Subcategory	Prominent Themes
1. Improved health	1.1. Playing with peers and family through exercise leads to better health	1.1a. Decreased electronic use with increased physical activity 1.1b. More fit, healthier, sleeping better, and laughing more 1.1c. Decreased medical expenses owing to better health and increased activity 1.1d. Increased physical activity and being active, causing more energy
	1.2. Better disease management leading to improved overall health	1.2a. Cooking with more fruits and vegetables, less salt, and more spices affects health positively 1.2b. New cooking methods can positively influence disease management and condition
2. Increased community involvement	2.1. Increased community involvement with friends and peer groups	2.1a. Friends spend more time together 2.1b. Influence other friends to participate and try new things 2.1c. Teach friends communication skills
	2.2. Increased community involvement through organizational groups	2.2a. More communication at home can stop bullying, and schools benefit 2.2b. Support local businesses more, which improves local production 2.2c. Create more jobs by spending more time in the community 2.2d. Role models at the community center for the kids 2.2e. Volunteer more in the community
3. Increased knowledge	3.1. Increased knowledge by trying new things	3.1a. Try new recipes and different flavors 3.1b. Role model now in the community as people see me trying new exercises 3.1c. Increased friendships and encourage friends to learn new games to play
	3.2. Increased knowledge through education and new experiences	3.2a. More cultural awareness and acceptance by trying different cuisines 3.2b. Look at food labels more 3.2c. Prepare own meals 3.2d. Learned to cook independently
4. Increased communication	4.1. Increased communication during mealtimes	4.1a. More fun at the table sharing joys and concerns 4.1b. No electronics now while eating 4.1c. Talk at the table more

(*continued*)

Table 4. (*Continued*)

Category	Subcategory	Prominent Themes
		4.1d. Use conversation starters during dinner and learn more about each other
	4.2. Increased communication among friends and family	4.2a. Family line of communication is open more 4.2b. Family now hears what is going on throughout day—can help if needed 4.2c. Learn what the family thinks is fun and play together more 4.2d. Enhanced social skills enhances self-esteem, and boosts confidence
5. Changed motivation	5.1. Motivation for better health	5.1a Make better eating choices because it will affect health 5.1b. Television does not matter and am motivated to get away from the television more 5.1c. Happier, and happiness is contagious (better mental health) 5.1d. Looking into the future to be healthier and cook better
6. Financial mindfulness	6.1. Shopping smarter	6.1a. Save money and can donate money to other causes 6.1b. Family finances improve because use of shopping lists saves money 6.1c. Financially mindful of budget and now know how to include fruits and vegetables
	6.2. Health costs	6.2a. Being healthier will decrease medical expenses and insurance costs
7. Increased appreciation for family	7.1. Family connections	7.1a. Parents learn from child and child learns from parents (connection) 7.1b. Improved family member harmony leading to decrease in stress
	7.2. Responsibilities	7.2a. Increased child dependence and trust leads to child cooking dinner (appreciation expressed) 7.2b. Taking better care of pets and animals now

improved through creating shopping lists and budgeting funds to incorporate more fruits and vegetables.

Finally, the seventh major category was increased appreciation for family members leading to a better understanding of one another. Two subcategories were found within this category. The first, family connections, included discussion that *iCook 4-H* had increased harmony in the family unit, leading to a less stressful family environment. One adult participant stated, "We have great conversations, and using the joys and concerns makes things less stressful." The second subcategory was responsibilities, in which both youth and parents acknowledged the independence gained by youth. This trust led to youth cooking by themselves or taking initiative for household responsibilities and helping before meals by "learn[ing] how to set the table." Adults echoed the responsibility gained by youth; 1 stated, "He can do things by himself

Figure 2. Word cloud from word frequencies data.

now." Four prominent themes were found within this category.

To examine qualitative responses further, word frequencies were used to represent which statements participants mentioned most often during the REM session. These included *family*, *benefits*, *people*, *cook*, and *new*, as represented in the word cloud image shown in Figure 2. These words corresponded with all of the major themes and showed that participants continually mentioned benefits for family and people (community) through this culinary program. This aligned with the *iCook* themes of trying new things through cooking, eating, and playing together.

DISCUSSION

A childhood obesity prevention program, *iCook 4-H*, was evaluated through REM qualitative exploration. Using REM as part of an obesity prevention program's evaluation process provided a method for identifying various outcomes of the *iCook* program. An overarching theme that resonated with participants was *Learning new skills together through trying new things leads to positive individual, family, and community change.* This aligns with the quantitative outcomes from *iCook 4-H*, because results showed improvements in cooking, eating, and playing together measures.[35] Within this theme, 7 categories were developed showing that *iCook 4-H* led to improved health, community involvement, participant knowledge, communication, motivation, financial mindfulness, and family appreciation among participants. These categories depict themes commonly associated with obesity prevention programming. For example, increased communication, specifically mealtime communication, is associated with healthier youth and more family value.[36,37] Furthermore, promotion of behaviors that can aid in obesity prevention, such as increased motivation, knowledge, and finances, are all positive factors in sustaining obesity prevention.[38–40]

In addition, the categories encompassed all of the capitals within the CCF, showing that the *iCook 4-H* impact rippled into different aspects within the community. This process allowed researchers, participants, and community stakeholders to see intervention effectiveness beyond quantitative and weight-related outcomes. This aligned with what was previously suggested, that it is important to adopt a framework to evaluate interventions for effectiveness across all levels of the community;[41,42] it made REM with CCF a good fit to combine with quantitative research and evaluate program outcomes.

Ripple effect mapping has been used within businesses,[43] and community programing[44] with the ability to show positive program effectiveness. Those studies followed the same methodology and 3-ring questioning focused on self, peers, and community with relation to CFF. For example, *Turning the Tide on Poverty*, a civic dialog process to explore poverty in the community, was able to use REM to incorporate community members into the changes they saw in the community and use community-based insight to move programming forward.[44] That study was able to highlight REM as a tool well-suited for diverse populations that could be easily understood and show connections from programming to community capitals.[44] Whereas other studies such as *Turning the Tide on Poverty* have used this REM methodology with positive outcomes, to the best of the authors' knowledge, no documentation of REM in a childhood obesity prevention intervention with detailed content analysis has not taken place. Understanding the effects of positive behavior change through an obesity prevention program such as *iCook 4-H* will assist future researchers in determining ways to address obesity in youth. To understand program effects and outcomes, evaluation tools such as REM can be used to benefit participants, community members, and researchers by providing visual imaging or maps through the ripple effects of program impacts in an understandable way.

Some noted limitations to this study include the lack of demographic variability; this means that generalization of REM findings for the program must be translated only to that direct community and location. Fidelity of implementation was not measured for these REM sessions but might be done in the future to indicate variability of application. Comprehending the community capital definitions was challenging for some youth and adults, although youth were still able to respond before adults with facilitator guidance regarding the capital definitions. Providing youth-friendly terms with numerous examples would improve clarity and comprehension and reduce facilitator burden. Finally, more than half of the original intervention participants chose not to participate in the REM session. The researchers did not assess those individuals' reasons for not participating; however, no statistical differences occurred between those who participated and those who did not.

IMPLICATIONS FOR RESEARCH AND PRACTICE

Youth and adults in the *iCook 4-H* program expressed the positive impact the program had on themselves, their families, and the community. Nevertheless, additional research is needed to verify the use of REM as an appropriate evaluation tool within community-based obesity prevention research to support dissemination and implementation better. Using REM with CCF to evaluate community-based programs qualitatively provides an understanding of program effectiveness directly through the voice of participants. This can aid nutrition practitioners

in assessing the effectiveness of community-based programming beyond quantitative outcomes focused solely on the research question, to show the perceived positive program impact that can aid in obtaining and sustaining funding for obesity prevention programs. Thus, participants are able to provide rich data that elaborate on what they mean and feel. Furthermore, presenting results in a visual, participant-focused way can make it easier for research professionals to engage community partners and stakeholders. Replicating this REM process and evaluating the impact of REM on participants, stakeholders, and communities using an experimental research design would provide support for its use in other obesity prevention research programs and establish this tool's effectiveness as an impact evaluation tool. Furthermore, REM used within community-based childhood obesity prevention programs could benefit program dissemination efforts because modifications to the program format and tailoring for specific community demographics needs would be possible using REM outputs.

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