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CITY OF PROVIDENCE COMMUNITY READINESS FOR AN OBESITY PREVENTION INTERVENTION

Jessie Boukarim
University of Rhode Island, jboukarim@my.uri.edu

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CITY OF PROVIDENCE COMMUNITY READINESS FOR
AN OBESITY PREVENTION INTERVENTION

BY

JESSIE PIERRE BOUKARIM

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE

IN

NUTRITION AND FOOD SCIENCES

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MASTER OF SCIENCE IN NUTRITION AND FOOD SCIENCES
OF
JESSIE PIERRE BOUKARIM

APPROVED:

Thesis Committee:

Major Professor Alison Tovar
 Kathleen Melanson
 Skye Leedahl

Nasser H. Zawia
DEAN OF THE GRADUATE SCHOOL

UNIVERSITY OF RHODE ISLAND
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ABSTRACT

In order to prevent early childhood obesity, community-wide interventions are needed. However, few studies have assessed a community's readiness to prevent childhood obesity among 0-5 year old children. Therefore, the aim of this study was to assess the level of readiness to prevent obesity among 0-5 year olds in Providence, RI.

Key informant interviews with local leaders of organizations that work with 0-5 year old children in Providence (n=12) were completed using the community readiness model (CRM). The CRM's level of readiness ranges from 1 (no awareness) to 9 (high level of community ownership). Furthermore, the CRM is comprised of dimensions: 1) community efforts, 2) community knowledge of the efforts, 3) leadership, 4) community climate, 5) community knowledge of the issues, and 6) resources available. Participants were interviewed for approximately 60 minutes about knowledge of health and wellness efforts in Providence for 0-5 year old children and completed a sociodemographic survey. Interviews were audio-recorded and transcribed. Descriptive statistics were reported for the sociodemographic survey, and mean and standard deviations from the CRM dimensions were run in SPSS.

Participants represented the following sectors: Department of Health, Blue Cross Blue Shield, Department of Education, Supplemental Nutrition Assistance Program, child care, Parks and Recreation, and Healthy Community's office. All key informant interviewees hold college degrees with 9-32 years of experience in the field. The overall community readiness to change score was 3.2, which corresponds to a vague awareness stage. Community knowledge of efforts and community climate both

received the lowest scores (2.7 ± 0.12) while leadership (4.0 ± 0.05) and resources (3.5 ± 0.04) ranked highest.

In Providence, efforts to increase the community's knowledge of the causes, symptoms, and prevalence of childhood obesity may be warranted. The city appears to already be supporting activities related to prevention through leadership but community members' level of knowledge and involvement could be improved. Given that childhood obesity continues to be a critical public health concern in the city, it will be important to capitalize on resources and leadership to further support collaborative efforts and sustainability. Overall, the CRM may be utilized in additional communities to inform of strengths, weaknesses, and available resources regarding public health concerns.

ACKNOWLEDGMENTS

Upon enrolling in Dr. Kathleen Melanson's course as an undergraduate, I was inspired to learn more. Since then the Nutrition Department has opened my perspectives, passions, and drive to positively impact the community. It has been an honor working under and learning from the wisdom of the entire department. Dr. Alison Tovar in particular supported me through this process. Growing academically under her wing has been an honor. Gratitude for those who invested time in me and mindfulness of our duty as community advocates will never be forgotten.

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CHAPTER 1

INTRODUCTION

Childhood obesity is a serious public health problem (Wang, 2012). Given that obesity is such a complex problem, which affects many different levels of society; a multi-level, community-wide approach is warranted. Such approach, has shown success with regards to obesity prevention in the international setting (Kesten et al., 2013). Prior to intervening in a community however, researchers must understand the context and a community's readiness to change. The Community Readiness Model (CRM) is a tool to assess a group of people's resources, community culture, and level of readiness to combat a public health issue (Plested et al., 2006). CRM results show that coordinated action between local organizations, health-care systems, and community members may be tailored to meet community needs. Defining the chosen community, or geographical area, and age group are key aspects when utilizing the model (Plested et al., 2006). Applying the CRM model to communities where rates of childhood obesity are high may be beneficial prior to developing a community-wide intervention.

Understanding prevention initiatives to create a healthy environment among young children (0-5 years) is critical for designing effective, community wide interventions (Coleman et al., 2005). Behaviors that impact childhood obesity such as eating a healthy diet, and being physical activity are established at a young age (Wang, 2012). Establishing healthy behaviors through community wide interventions from an early age is critical given that these habits track into later childhood, adolescence, and adulthood

(Powell et al., 2018). In Rhode Island, 18% of children (aged 3-5) were ranked as obese, according to Head Start, an early childhood program during the 2017 schoolyear (RI Kids Count, 2018). In comparison to their healthy weight peers, kindergartners are four times more likely to develop obesity throughout childhood (RI Kids Count, 2018).

Additionally, poverty has been shown to be associated with childhood obesity (RI Kids Count, 2018). The four communities, Providence, Woonsocket, Central Falls, and Pawtucket, are home to almost two-thirds of Rhode Island's children living in poverty (2012-2016) (RI Kids Count, 2018). Given that children living in Providence have high rates of childhood obesity understanding the community's level of readiness is important. Utilizing the leadership, resources available, and community climate through the CRM may help inform future public health efforts related to childhood obesity.

CHAPTER 2

REVIEW OF LITERATURE

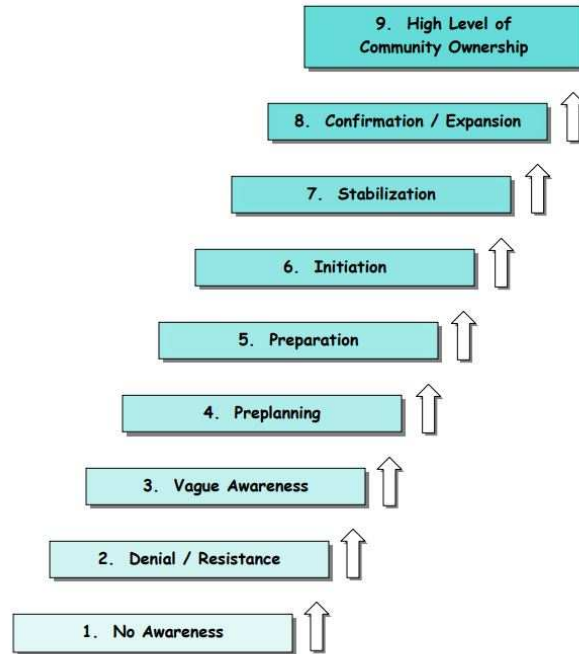
Childhood obesity is complex and involves multiple interacting factors. In order to shape children's healthy behaviors early in life, it is important to utilize a community wide approach and intervene at multiple levels (Economos et al., 2013). For example, collaboratively involving the school, family, and community organizations is key in prevention (Kesten et al, 2011). In order to effectively intervene however, community readiness must first be assessed (Plested et al., 2006). One way to assess a community's readiness is by applying the community readiness model (CRM). According to the CRM, matching a community's level of readiness is critical for success in implementing a community wide intervention (Plested et al., 2006). Readiness is defined as how well prepared individuals are to address a public health concern (Plested et al., 2006). Stages range from 'no awareness' to 'a high level of community ownership' (Plested et al., 2006). For example, a community ranking at stage 4 (preplanning) may not be receptive to an intervention or ready to sustain behavior change. If readiness is not assessed, it is possible that a community wide intervention may fail due to members not being ready to respond to change (Plested et al., 2006).

The CRM is based on the Transtheoretical Model of Stages of Change and Community Development, established in the Tri-Ethnic Center for Prevention Research at Colorado State University (Plested et al., 2006). The CRM followed

extensive research and testing, establishing reliability within multiple communities of differing issues (Plested et al., 2006). According to the CRM, community change should be led by the community rather than by certain individuals (Plested et al., 2006). To gather the required data, the CRM requires interviewing key informants from a specific community to assess dimensions of readiness. Dimensions include: 1) community efforts, 2) community knowledge of the efforts, 3) leadership, 4) community climate, 5) community knowledge of the issues, and 6) resources available (Plested et al., 2006). Key informants are those experienced in key areas of the community as it relates to childhood obesity prevention. By utilizing the CRM, efforts may conserve resources (i.e. time, money), improve efficiency, and create a vision for positive change, laying down the foundations for sustainability (Plested et al., 2006). Furthermore, a community categorized in the denial/resistance stage may not be aware of the current problem and lack preparation to take action, leading efforts to fail (referring to the stage of readiness in appendix 2) (Plested et al., 2006). In this scenario, efforts should be allotted towards increasing awareness to help build a stronger intervention for the future.

Figure 1: The nine stages of community readiness as adapted from the CRM handbook (Plested et al., 2006).

Stages Of Community Readiness



The CRM has been applied in multiple communities and as a result, successful community wide interventions have preceded. For example, Healthy Together Victoria (HTV) assessed the state of Victoria, Australia (5.8 million residents) prior to conducting a large scale, randomized-control trial intervention to reduce chronic disease risk among locals (Strugnell et al., 2016). This intervention was the first of its kind. HTV utilized a multilevel approach to impact the health and wellbeing of 7,200 children 9-16 years of age and their families (Strugnell et al., 2016). The intervention worked to change environments where children spent the most time, including the school, community and home (Strugnell et al., 2016). HTV was successful at increasing physical activity, improving diet, and decreasing body mass index (BMI)

through a multilevel approach (Strugnell et al., 2016). Results highlight the importance of incorporating a community assessment to tease out the particular needs of a district prior to engaging in a large community-wide intervention.

Similar to HTV, the Romp and Chomp community-wide intervention assessed readiness of a community impacting a younger age group in Australia (De Groot et al., 2010). The goal of Romp and Chomp was to evaluate whether the Geelong (Australia) community's key stakeholders were supportive of positive nutrition and physical activity behaviors (De Groot et al., 2010). After collecting preliminary information, the program was designed by key stakeholders themselves, encouraging community building with a multi-settings strategy (De Groot et al., 2010). As part of Romp and Chomp, they also assessed network partnerships to understand the relationships between organizations within the community network (De Groot et al., 2010).

Understanding the social network structure of stakeholders as it relates to their professional relationships helps inform future coalition building as well as potential interventions (De Groot et al., 2010). In general, Romp and Chomp highlights the importance of uniting key members across the community in order to improve sustainable relationships (De Groot et al., 2010). Typically, evidence shows the majority of positive outcomes in health promotion are not sustained; behavior change such as healthy nutrition and physical activity are difficult to sustain (De Groot et al., 2010). Therefore, forming connections within the community may improve chances of sustainability by placing responsibility on local members. Previous examples presented were conducted internationally, while Shape Up Somerville (SUS) took place in Somerville, Massachusetts (Economos et al., 2013).

SUS whose goal was to prevent obesity among school aged children is another example of a successful community wide intervention (Economos et al., 2013). This two year randomized control trial targeted both increases in physical activity and healthy food options in order to impact their BMI (body mass index) among 916 students (Economos et al., 2013). The researchers collaborated with local networks and organizations who shared concerns for decreasing pediatric obesity in their city (Economos et al., 2013). Working with local organizations, they were able to engage key members that either directly interacted with kids or impacted them through policy; this was done in order to target every aspect of a child's day (Economos et al., 2013).

Although SUS did not complete a formal CRM they performed a needs assessment, choosing a multi-level community approach (Economos et al., 2013). The success of SUS was in part attributable to the collaborative approach, which involved making changes to the different environments elementary children are exposed to (Economos et al., 2013). This multi-level intervention, engaging multiple groups who interact with children, has been well-supported through the literature as perhaps the most effective way to prevent obesity in children (Economos 2013, Coleman 2005, Glickman 2012, Taylor 2007). With the success of SUS and Romp and Chomp, it is important to further understand how these interventions can be replicated, implemented, and disseminated in other communities across the nation. Importantly, even when an intervention has proven successful in a district, prior to implementation in another community, the local residents must be prepared (Plested et al., 2006). For example, the CRM was applied in 10 communities throughout the United States, interviewing four stakeholders from each representative state in order to best tailor

intervention strategies (Silwa et al, 2011). Through utilizing the CRM model and understanding the social networks of key community stakeholders in Providence, we may potentially create an obesity prevention coalition in the future.

Gap in the Literature- Identified Community Need

While the CRM has been used elsewhere, a community readiness assessment as it relates to chronic disease prevention of young children in Providence had not been conducted. Currently, there are programs in place, a needs assessment and program evaluation are necessary in identifying community concerns. Additionally, there is little information available on social connectedness of key leaders and organizations that work with 0-5-year-old children in the community. Incorporating groups of community stakeholders to drive interventions has been shown to impact policy, systems, and biological change (Korn et al, 2018). Through collaborating with local stakeholders interventions may have broader impacts, therefore this study integrates social connectedness among key stakeholders (Korn et al, 2018). Nutritional intake during early childhood has been linked to preventing chronic disease and maintaining a healthy state throughout life (Agosti et al., 2017). Finally, in Providence, there is no chronic disease prevention coalition established for 0-5-year-old children. Therefore, this study worked to address three aims:

Aim 1: To perform a community assessment regarding resources available in Providence, RI related to establishing early, healthy lifestyle behaviors and chronic disease prevention.

Aim 2: To assess the stage of community readiness regarding early childhood obesity prevention in the city of Providence. (1= no awareness, 2= denial/resistance,

3= vague awareness, 4=preplanning, 5=preparation, 6=initiation, 7=stabilization, 8=confirmation/expansion, 9=high level of community ownership).

Aim 3: To assess the network structure of community stakeholders' professional relationships related to childhood obesity prevention efforts.

CHAPTER 3

METHODOLOGY

Participant Recruitment & Study Design

Key informant interviews (n=12) were conducted with community members who work with or oversee programs/policies that impact the health and wellness of 0-5-year-old children in Providence, RI. Participants were identified through a prevention advisory board in Rhode Island, as well as through conversations with the Rhode Island Department of Health, University of Rhode Island professors, and other professionals in the field. Key informants were identified as having strong understanding of health and wellness in Providence, representing sectors of the community. Initially there was a list of 20 possible individuals, who were contacted via phone and email to inquire whether they would be interested in participating in this study. Those who expressed interest set up a date and time to complete the interview. Those who didn't respond were contacted two additional times via phone or email. In total, twelve participants were recruited and completed the interview. Consent was requested from participants to allow for audio recording of the approximately one hour face to face interview, conducted by the graduate student researcher, Jessie Boukarim.

Through purposive and snowball sampling the goal was to interview individuals who impact young children's daily lives through health and wellness. These individuals were intentionally selected given their influential role in government or a community based organization. This top-down approach was chosen

in order to connect with those individuals who may have the most profound impact on early childhood development health and wellness. Snowball sampling occurred through a participant reported survey where they were asked to report who they collaborate with regarding early childhood obesity prevention. If a new name appeared, they were contacted for this study.

While the CRM guidelines state 4-6 key informant interviews as sufficient, this study conducted 12 interviews in striving to reach theoretical saturation; this is the point at which conducting additional interviews would not render new beneficial information (Kesten et al., 2013). All twelve participants represented important government or community based organizations in Providence, RI.

Key Informant Interviews & Measures

Focusing on a young age group of 0-5 year olds was chosen in order to target early development before habits have been established. The hope is to implement healthy eating patterns and encourage physical activity from a young age, thus seeding positive lifestyle choices to be carried into later years of development. Through conducting interviews, common themes were identified among participants. The institutional review board at the University of Rhode Island approved this research project on October 16, 2017. Participants did not receive any monetary incentives for participating in the study.

Sociodemographic Questionnaire.

At the end of the interview, each key informant completed a short sociodemographic survey in addition to naming who they discuss issues related to childhood obesity prevention of young children. This served to assess the network

structure of stakeholders' professional relationships related to childhood obesity prevention efforts. Furthermore, the idea was that this would facilitate establishing potential members for a future coalition and served as a check to ensure no potential participants were missed. Participants were asked their age, department affiliation, level of education, and number of years working in this profession.

Aim 1: Community Assessment of Resources

In order to assess the city of Providence resources the following data were used: (1) questions from the key informant interviews (2) online reviews of existing programs and initiatives, and (3) in person visits to settings. Furthermore, resource assessment was categorized under the dimensions of readiness and a set of questions during the interview were allotted specifically to assessing current and future resource availability (according to the CRM's appendices A-F) (Plested et al., 2006). Using the transcripts from the interviews, thematic analysis was conducted to explore if there were themes pertaining to resource availability in the community that emerged.

Aim 2: Community Readiness Model

Within the CRM model six main factors are measured: 'community efforts, community knowledge of the efforts, leadership, community climate (attitude of members: helplessness, empowerment), community knowledge about the issue, and resources related to the issue' (refer to appendix A) (Plested et al., 2006). Community efforts are the current services offered to community members while community knowledge of those efforts gets at how aware locals are of the programs and whether or not they are accessing services. An understanding of the current leadership's support, priorities, and awareness of childhood obesity is the purpose of this

dimension. Community knowledge of the issue reveals how informed locals are of childhood obesity prevalence, prevention measures, and healthy lifestyle behaviors in general. The dimension regarding resources may range from indoor space such as recreation centers to outdoor parks, staffing, time, budgets, Furthermore, there are nine stages of community readiness ranging from stage one, members having no awareness of the problem to stage nine, a high level of community ownership (refer to appendix B (Plested et al., 2006). Assessing these dimensions occurred through interviews held with key informants. The interviews were comprised of 36 questions categorized by dimensions (Plested et al., 2006). The model allowed for tailoring questions to specifically address childhood obesity prevention within the Providence community.

Scores in leadership and community knowledge of efforts are strong indicators of the level of support key community members and decision makers may provide (Economos et al., 2013). For example, a low score (vague awareness) regarding community climate may render low community empowerment to address issues (Plested et al., 2006). Additionally, variability in leadership scores may indicate discrepancy in prioritizing childhood obesity among other issues in the community. Without strong leadership, sustainability may be difficult to achieve (Plested et al., 2006).

Scoring

The lead researcher and another research team member, both trained in the CRM scoring methodologies, independently coded transcripts (Plested et al., 2006). In accordance to protocol, the interviewees did not view the questions beforehand (Plested et al., 2006). Credibility of scoring was improved by having the principal

investigator score interviews randomly selected. This process serves to check findings and interpretations of the two assigned scorers (Lorelli et al., 2017). Initially, multiple readings of the transcribed interviews and audios of the recordings served to immerse researchers in the data. Through using nine anchored rating statements provided by the CRM, a guideline for scoring was followed. Researchers analyzed each interview to match the appropriate score for each dimension, one at a time, for every participant. Lastly, a mean was derived for each dimension and participant to determine the community readiness score.

Principles of the Model

Community readiness serves an important role in implementing community-wide programs (Plested et al., 2006). Similarly, to how a person may become driven to change behavior states, a community may do so as well (Plested et al. 2006; Keshmiri et al, 2017). Within the model the two levels, pre-planning and preparation, are the earliest at which an intervention may be initiated to be fully successful (Plested et al., 2006). The protocol for interviews provides 36 semi-structured questions, 21 of which are non-negotiable, while 15 may be changed to meet research needs (Plested et al., 2006). Therefore, the CRM was tailored to specifically address childhood obesity in Providence, RI. Throughout the interviews, the interviewer answered participant questions and asked them to clarify or elaborate upon responses when appropriate.

Analysis

Interviews were professionally conducted and recorded, which allowed interviews to be transcribed by a professional company (GoTranscript) and analyzed for themes. Following numerous readings, a readiness score on a nine-point scale was

determined by each scorer independently. Qualitative data gathered was assigned numerical values in accordance with the CRM scoring system for comparison (refer to appendix C). Regarding the six dimensions measured, mean and standard deviations were calculated. SPSS Statistics for Windows version 2.7 (IBM) was used for descriptive data gathered from participant surveys. From interviews, common themes were identified and reported; thematic analysis was done using hardcopies of the transcripts and different colored highlighters. Themes are presented based on the domains of the interview guide, with supporting quotes embedded within.

Aim 3:

The social connectedness of participants was assessed through a visual map, in addition to thematic analysis of the transcripts where themes of social connectivity were explored. The goal of the visual map was to depict which organizations are discussing and collaborating on childhood obesity prevention efforts.

Participants were asked to report whom they collaborate with regards to childhood obesity prevention efforts, in addition to how influential they believed this relationship is on a scale from 1 to 5 with 1 corresponding to non-influential and 5 with very influential. Based on these responses, an understanding of group collaboration and connectivity was established. The social connectivity of key organizations was visually mapped on Microsoft Publisher. Based on the interview transcripts, themes related to social connectivity and collaboration were explored.

CHAPTER 4

RESULTS

Table 1: Participant characteristics as reported on participant completed surveys

Participant Characteristics	n	%
Highest Level of Education		
Bachelors	7	58.3%
Masters	4	33.3 %
Doctorate	1	8.3%
Race		
White	11	91.7%
Other	1	8.3%
Age Range		
25-34	3	25.0%
35-44	2	16.7%
45-54	1	8.3%
55-64	6	50.0%
Years of Experience		
Less than or equal to 15 years	5	41.7%
More than 15 years	7	58.3%

Initially, 20 stakeholders were contacted to complete the interviews, 12 of which were recruited and completed interviews. The 8 remaining participants either had a time conflict from participating or did not reply. The 12 participants represented the following areas: Department of Health, Blue Cross Blue Shield, Department of Education, Supplemental Nutrition Assistance Program, Head Start, Ready to Learn, Parks and Recreation, the RI Healthy Schools Coalition, pediatrician, ob/gyn, and the Healthy Community's Office. All key informant interviewees hold college degrees with 9-32 years of experience in their respective fields. (See Table 1 for further details).

Aim 1: Resources

The city of Providence, RI is comprised of 178,680 people living within the 20.6 square mile city. The median annual income is \$37,501, with a family poverty rate of 29.1% (Census Bureau, 2016). The city offers many different resources and organizations related to health and wellness. Programs such as Head Start, Women Infants and Children (WIC), Ready to Learn, Supplemental Nutrition Assistance Program (SNAP), urban revitalization yoga (SHRI), Dorca's International Institute of Rhode Island, and Farm Fresh RI are available if community members choose to access them.

Children's Friend (Head Start) specifically serves low-income preschool children. This non-profit ensures they are up to date with immunizations, receive meals and snacks, and connects caretakers with local resources. The organization is in partnership with Head Start and currently has nine locations in Providence. To qualify, at least one of the following qualifications must be met: family qualifies as low-

income, child is homeless, and/or are 3-5 years old. Furthermore, Children's Friend provides childcare services and counseling to pregnant women who may not be familiar with nutritional requirements for childhood development. Additionally, Children's Friend adopted the Child and Adult Food Care Program, funded by the Department of Education, to supplement family care providers.

Like other states in the US, WIC and SNAP are federal programs which provide food benefits and nutrition education for mothers and children in Rhode Island. Ready to Learn trains caretakers and early childhood educators in best practices regarding health and wellness for the city's young children. SHRI serves as an urban outreach program bringing yoga for mind and body health to young children around the city. Dorca's Institute educates and empowers caretakers to help link them with better employment. Other services they provide include family literacy, refugee resettlement, translation, U.S. citizenship, and immigration services. Lastly, Farm Fresh RI connects families with farmer's markets to provide fresh produce at a more affordable price; SNAP benefits may also be used at farmer's markets.

Physical activity for those unable to afford a gym membership may take place in parks or recreation centers (Milstein, 2016). The City of Providence has 91 parks available to the public, however a fraction of these are merely open space bare fields. The quality of interactive playground equipment and neighborhood safety plays a role in park utilization. Overall, security (feeling safe outside) is a barrier preventing some community members from engaging in local parks, as reported through participant interviews. Although there appears to be many available parks and space they are limited by accessibility such as neighborhood safety.

Based on the qualitative results from the interviews, we found that most participants expressed difficulty solidifying long-term funding and fear of budget cuts in the future. Specifically, Children’s Friend, addressed the importance of allocating funds to ensure adequate staffing:

“Most of it is federal funding, so it is through the CDC (Center for Disease Control). We do get some state funding, but not a lot. We’re unsure if it could be sustainable...if you can’t support the agency to provide the staffing, then it will fall apart quickly.”

Similarly, additional participants advocated for the importance of ensuring long-term, sustainable funding. Many initiatives were able to receive short term, pilot funding; however, in order to keep staff employed they struggled to seek more reliable funding.

Aim 2: Community Readiness

Among study participants, knowledge of efforts ranked (2.7 ± 0.12) reflecting how aware community members were of existing programs they may access. While many opportunities are in place, additional communication may improve attendance. Leadership scored at (4.0 ± 0.05), supporting that leaders recognize childhood obesity as an issue. The community climate scored (2.7 ± 0.11) showing low empowerment to drive action. Themes revealed multiple barriers impeding access to resources. Lastly, resources received a score of (3.5 ± 0.04), further supported by participants through interview questions. Overall, local efforts seek sustainable funding to ensure long-term availability of services offered.

The community's level of readiness was: 3.2; this aligns with a vague awareness within the community (depicted on Table 2). Childhood obesity is recognized by the leadership but how to address the problem and community members' lack of knowledge remains an issue.

Table 2: Dimensions of Readiness Scores

Scorer 1													
Dimensions	Participant E	Participant C	Participant B	Participant D	Participant H	Participant G	Participant J	Participant I	Participant A	Participant F	Participant K	Participant L	
Knowledge of Efforts	2.0	3.0	3.0	2.0	3.0	2.0	4.0	4.0	2.0	2.0	3.0	2.0	
Leadership	4.0	4.0	4.0	4.0	3.0	4.0	3.0	4.0	5.5	4.0	4.0	4.0	
Community climate	1.0	1.0	4.0	3.0	4.0	1.0	3.5	4.0	3.0	2.0	4.0	4.0	
Knowledge of Issue	2.0	2.0	3.0	3.0	3.0	2.0	4.0	5.0	5.0	3.0	2.0	3.0	
Resources	3.0	4.0	3.0	4.0	3.5	3.5	3.0	4.0	5.0	3.0	3.0	3.0	
Scorer 2													
Dimensions	Participant E	Participant C	Participant B	Participant D	Participant H	Participant G	Participant J	Participant I	Participant A	Participant F	Participant K	Participant L	
Knowledge of Efforts	2.0	4.0	3.0	3.0	3.0	2.0	3.0	4.0	2.0	2.0	3.0	2.5	
Leadership	4.0	5.0	6.0	5.0	2.5	3.5	2.5	4.0	4.5	3.5	4.0	3.5	
Community climate	2.0	1.0	2.0	3.0	3.0	1.0	3.5	3.5	3.0	2.0	3.5	3.5	
Knowledge of Issue	2.0	2.0	2.0	2.0	2.5	2.0	3.5	4.5	4.5	2.5	2.0	3.0	
Resources	3.0	4.0	4.0	4.0	3.5	3.0	3.0	4.0	4.5	3.0	2.5	3.5	
Scorer 3													
Consensus Scores	Participant E	Participant C	Participant B	Participant D	Participant H	Participant G	Participant J	Participant I	Participant A	Participant F	Participant K	Participant L	Average
Knowledge of Efforts	2.0	3.5	3.0	2.5	3.0	2.0	3.5	4.0	2.0	2.0	3.0	2.3	2.7
Leadership	4.0	4.5	5.0	4.5	2.8	3.8	2.8	4.0	5.0	3.8	4.0	3.8	4.0
Community climate	1.5	1.0	3.0	3.0	3.5	1.0	3.5	3.8	3.0	2.0	3.8	3.8	2.7
Knowledge of Issue	2.0	2.0	2.5	2.5	2.8	2.0	3.8	4.8	4.8	2.8	2.0	3.0	2.9
Resources	3.0	4.0	3.5	4.0	3.5	3.3	3.0	4.0	4.8	3.0	2.8	3.3	3.5

Overall Community Readiness Score 3.2

Caption: Interviews were independently coded by two scorers for each dimension. Scoring followed the CRM guidelines.

Other themes that emerged in analyzing the data revealed community members are struggling to provide the basics for their families: housing, food access, neighborhood safety, and transportation. Falling short to meet the social determinants of health resonated as a theme from almost all participants. For example, a pediatrician interviewed stated:

“Most families are quite poor, many are single-parent families raising kids in a stress environment...putting out a healthy, mindful diet is expensive and requires some degree of organization.”

His experience with countless families in the area painted a picture of the barriers and reality of circumstances. Addressing these barriers may be imperative prior to expecting positive behavior change in the community.

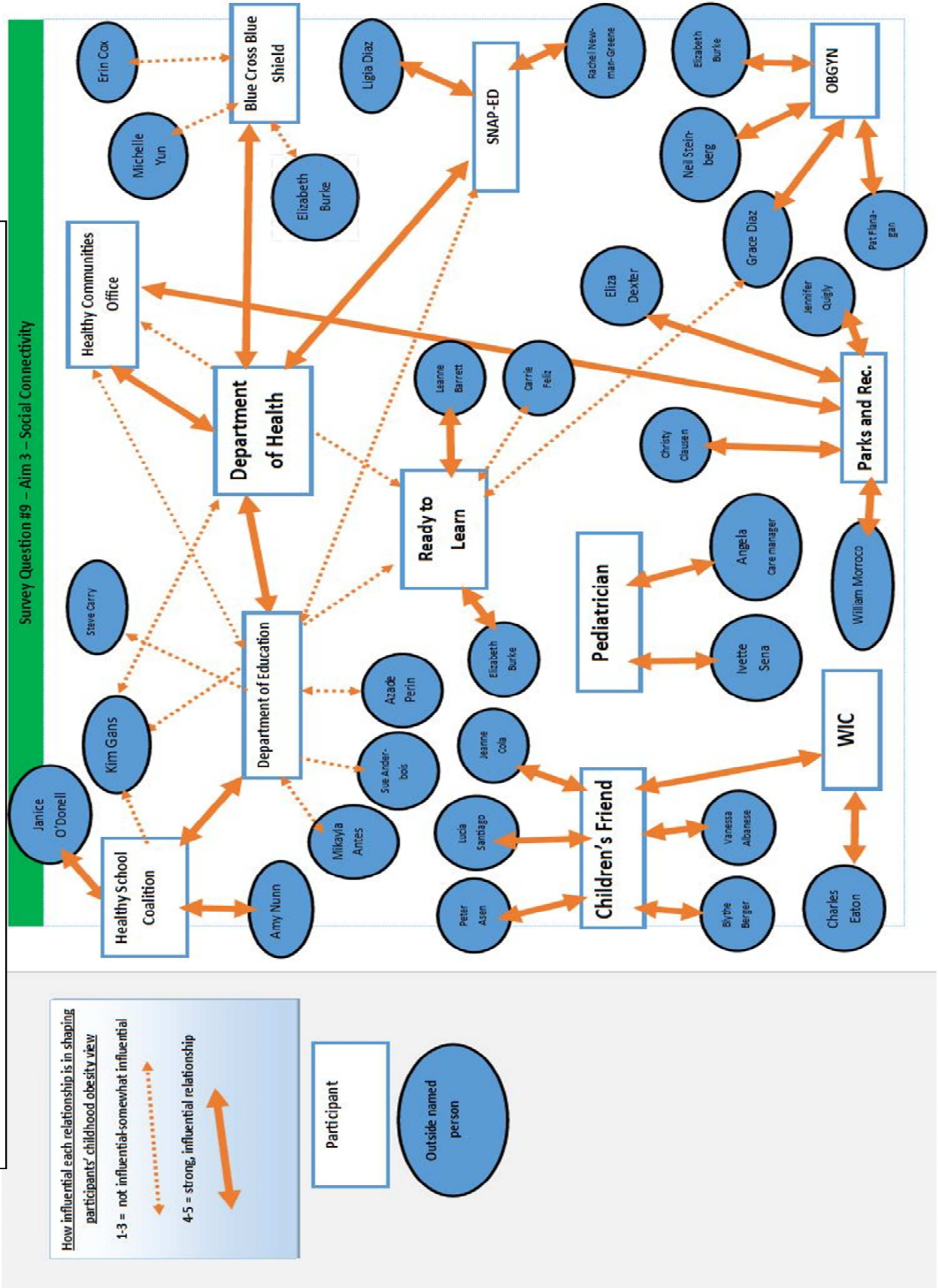
Neighborhood safety serves as an additional barrier preventing families from accessing local resources. For example, families may avoid physical activity at a local park if they feel there is a presence of gangs. Furthermore, gun violence was reported as a prioritized issue in the community, impeding safety. Families lacking transportation or monetary means, may not access additional resources for physical activity such as hiking grounds or recreation facilities.

Aim 3:-Social connectedness

Each stakeholder reported approximately five other names. There were five participants who listed the Department of Health, showing strong connection to that department. However, other organizations, Children’s Friend for example, primarily listed employees from within their organization, with minimal outside connectedness. Similarly, healthcare providers, pediatrician, ob/gyn, Blue Cross Blue Shield, do not

appear to be collaborating with outside organizations. When visually mapped there appeared to be a lack of connection between groups (Figure 2). While some departments such as the Department of Health, Healthy Communities Office, and Department of Education were socially connected, they did not appear to be collaborating with additional local efforts. Opportunities to join similar goals with Children's Friend, Ready to Learn, WIC, and SNAP may result in a community-wide based approach to prevent childhood obesity.

Figure 2. Social connectivity between participants and additional individuals in the city



Additional Themes

In reviewing the transcripts additional themes emerged related to social connectedness; this refers to how well networked community organizations are and whether they are collaborating. One theme was lack of collaboration. For example, participants expressed efforts addressing childhood obesity overlapped but there was not enough collaboration among organizations. Participants stated that although initiatives share similar goals, resources could be maximized through joint, coordinated efforts. Resonating this theme, the individual from the Department of Education stated:

“While the Healthy Communities Office holds a monthly meeting of stakeholders...if they collaborated better, so they were capitalizing on their resources, I think that’s a big issue as far as the whole state is concerned is that there are a bunch of people doing this work but not a lot of people that talk to each other about not duplicating efforts.”

Participant feedback from interviews supported the lack of collaboration depicted in Aim 3.

Another theme that emerged was the need for better communication. Stakeholders felt that communication was a key area for improvement. Multiple departments reported services could be better disseminated to community members for them to access. While there are current efforts, resources, and programs for families, improving communication may increase attendance. Stakeholders suggested that information for community members should be provided in multiple languages and services accessible by bus route, thus minimizing language and transportation barriers.

Another theme that emerged, consistent with a low knowledge score, was community members' lack of knowledge regarding childhood obesity prevalence, risk factors, methods of prevention, and current efforts in the community to address it. The low knowledge score of 2.9 reflects community members' lack of understanding in health and wellness strategies to prevent their children from developing obesity. This correlates with the denial/resistance stage. Community members may not recognize childhood obesity as a concern in Providence.

CHAPTER 5

CONCLUSION

Given the complexity of childhood obesity a community-wide, multi-level approach for prevention is needed. Through assessing readiness, researchers may tailor efforts to best suit the needs of the community. The purpose of this study was to assess the level of readiness of community members and leaders in the city of Providence. We found there are several resources available to the community of Providence, ranging from federal, state and local wellness programs to availability of several recreational settings for children. Although these resources appear to be available, Providence's level of readiness corresponds to a score of 3.2; this may be interpreted as a lack of preparation for change in reducing childhood obesity. However, themes revealed multiple barriers impeding access to resources. Finally, we found that although there appears to be communication between and within certain organizations, there is a lack of social connectedness among key stakeholders in the city of Providence. These results may help inform a future community wide intervention with focus on increasing knowledge and community climate, while harnessing the strong leadership and resources available in the city.

Overall, there are several resources available in the city of Providence. These resources ranged from federal to local programs. Interestingly, participants reported sufficient outdoor space (i.e. playgrounds, parks) available as outdoor resources to hold recreational activities and community events. However, in accordance to the

CRM model, the score of 3.5 for resources represents room for improvement. In comparison, resources received one of the higher scores as compared to the other dimensions. While physical resources are present, future efforts may work on increasing long term funding for current intervention and prevention initiatives. Other communities have faced similar challenges in allocating long term, sustainable funding (Hildebrand, 2018; Strugnell, 2016). Each community will differ in the resources available, and thus determining strategies to increase funds will depend on each district's budget and grant opportunities.

With regards to the CRM findings, we found that the two lowest dimensions were knowledge of efforts and community climate. Overall, those interviewed felt there was a lack of knowledge among community members regarding appropriate health and wellness strategies. Participants expressed families lack knowledge of healthy nutrition, adequate physical activity time, effects of screen time, and in some cases access to healthcare. These low scores are similar to what other studies found using the CRM (Findholt, 2007; Kesten, 2013; Silwa at al., 2011). Additionally, community climate was another score that was low compared to other dimensions. Stakeholders felt low community empowerment to take action in improving health outcomes, similarly to what other studies have found (Kesten, 2013). Future research efforts may consider targeting health and wellness education with caretakers and providers. In theory, educating these community members will empower them to provide balanced nutrition and physical activity opportunities for young children.

We found that although key stakeholders appear to communicate with the Department of Health and Education primarily, there is a lack of overall social

connectivity. Through collaboration with diverse partners, community based organizations may impact public health initiatives (Schoen et al, 2014). One previous social network analyses, completed with 23 health programs in Missouri, found enhanced collaboration among programs that prioritized partnerships (Schoen et al, 2014). A more profound impact on childhood obesity prevention may result from partnerships and shared resources (Cheadle et al., 2011).

Many of the interviewed organizations/leaders are working with similar age groups, sharing common health and wellness goals. Social connectivity may be addressed through forming a childhood obesity prevention coalition in the future. This group may include members from key departments around the city. For example, representatives from the Departments of Education, Health, Parks and Recreation, as well as local healthcare providers, non-profits, and child care centers may meet to combine resources. These organizations may serve common goals of preserving the health and wellness of the Providence community. Working together, they may be able to pool resources and maximize impact. Although there is a chance organizations may feel competitive applying for the same pockets of funding, through collaboration, both parties may benefit. The goal is for the local community and government based organizations to brainstorm strategies for addressing their community's needs. While currently there is a Healthy Schools Coalition, it only pertains to schools and there is a lack of unity bridging aforementioned departments together. Therefore, the creation of a childhood obesity prevention coalition may bridge organizations, meeting periodically to brainstorm strategies for reducing childhood obesity prevalence.

Network connectivity through multi-level systems approaches has been applied in addressing community health concerns. Through involving numerous individuals from different sectors (i.e. education, policy, health services) obesity may be reduced or prevented. Previous health services research found that social connectedness was critical to organizations working together in order to impact change (Wholey et al., 2009). Key pertinent conclusions include: “Interconnectedness is important because it facilitates implementation through organizations working together. Organizational centrality is important for coordinating and focusing network actions,” (Wholey et al., 2009).

Additionally, improving the built environment has been advocated for by the National Academies of Sciences, Engineering, and Medicine, for the impact the environment has on community members’ health. The infrastructure in which people live in influences access to healthy food and physical activity (National Academies of Sciences, Engineering, and Medicine, 2009). Importantly, changing the built environment is complex, requiring collaboration among multiple disciplines and organizations for positive change. Similarly, Providence has potential to change the built environment in preventing childhood obesity.

Previous literature has demonstrated the CRM’s application in multiple differing communities both nationally (Findholt 2007, Sliwa et al., 2011, and Ehlers et al., 2013) and internationally (Millar et al., 2013). We have presented the CRM’s applicability in Providence, RI, a densely populated city. Future research efforts may apply the model to their specific community. Flexibility of the model allows researchers to tailor questions to address their specific issue and community

addressed. In conclusion, community and government based organizations exist for the primary purpose of serving their community to meet public health needs. Through collaborative efforts these services may meet needs, diminish barriers, and reach a broader, sustainable impact.

Strengths and Limitations

This study is not without limitations. First, these results may not be extrapolated to address other communities, as it aimed to specifically address the readiness of Providence, RI for an obesity-prevention intervention. Communities vary in leadership, resources available, infrastructure, and priorities. Data from participant interviews is only pertinent to Providence, RI. Nevertheless, the CRM reiterates the individuality of each community and thus the importance in tailoring initiatives to meet needs.

Strengths include the number of interviews conducted, groundwork for establishing a future coalition, and networking with key organizations involved in childhood obesity prevention. In total, the research team conducted twice the number of interviews (n=12) the CRM protocol mandated. Serving to near theoretical saturation, additional interviews were conducted to collect as much data on the community as feasible. Finally, this study laid down the foundation for establishing a future childhood obesity prevention coalition. Working together, the key organizations interviewed may foster sustainable initiatives and maximize impact.

In conclusion, the CRM serves as an effective tool for understanding the strengths, weaknesses, and level of readiness a community has in combatting public health concerns. It has served research goals both domestically and internationally in a

diversity of communities. While the data collected in this study is specific to Providence, RI, implementing similar strategies may benefit multiple communities. Applying the model allows for individualized, tailored approaches in preventing chronic disease. Utilizing the CRM is expected to result in effective, sustainable behavior change (Oetting et al., 1995, and Plested et al., 2006).

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Competing Interests

The authors declare that they have no competing interests.

APPENDICES

Appendix A

Dimensions of Readiness²

- A. Community Efforts: To what extent are there efforts, programs, and policies that address the issue?
- B. Community Knowledge of the Efforts: To what extent do community members know about local efforts and their effectiveness, and are the efforts accessible to all segments of the community?
- C. Leadership: To what extent are appointed leaders and influential community members supportive of the issue?
- D. Community Climate: What is the prevailing attitude of the community toward the issue? Is it one of helplessness or one of responsibility and empowerment?
- E. Community Knowledge about the Issue: To what extent do community members know about the causes of the problem, consequences, and how it impacts your community?
- F. Resources Related to the Issue: To what extent are local resources – people, time, money, space, etc. – available to support efforts?

Appendix B

Stage Description

1. **No Awareness-** Issue is not generally recognized by the community or leaders as a problem (or it may truly not be an issue).
2. **Denial / Resistance-** At least some community members recognize that it is a concern, but there is little recognition that it might be occurring locally.
3. **Vague Awareness-** Most feel that there is a local concern, but there is no immediate motivation to do anything about it.
4. **Preplanning-** there is clear recognition that something must be done, and there may even be a group addressing it. However, efforts are not focused or detailed.
5. **Preparation-** Active leaders begin planning in earnest. Community offers modest support of efforts.
6. **Initiation-** Enough information is available to justify efforts. Activities are underway.
7. **Stabilization-** Activities are supported by administrators or community decision makers. Staff are trained and experienced.
8. **Confirmation/ Expansion-** Efforts are in place. Community members feel comfortable using services, and they support expansions. Local data are regularly obtained.
9. **High Level of Community Ownership-** Detailed and sophisticated knowledge exists about prevalence, causes, and consequences. Effective evaluation guides new directions. Model is applied to other issues.

Appendix C: Email to recruit participants:

To whom this may concern,

On behalf of the childhood obesity prevention and community nutrition research lab at the University of Rhode Island we are conducting a **community readiness assessment** regarding the city of Providence's level of preparation to combat childhood obesity. In our current society obesity has been a major problem, affecting every organ, skyrocketing hospital bills, and impacting all families in our state. Through prevention efforts we may work together as a community to build environments that promote healthy lifestyles for children. This will in turn carry throughout growth and development into adulthood. However, prior to initiating prevention efforts a community readiness assessment must be conducted in order to maximize use of resources, best tailor the program to the needs of locals, and have the highest impact. Providence is a small city booming with many opportunities to collaborate and work together towards a common goal: **childhood obesity prevention.**

The **purpose** of this research is to assess the city's level of readiness in order to tailor future obesity prevention programs and best utilize available resources. You have been identified as a key stakeholder in this matter (the only eligibility requirement), and your participation is imperative in further understanding the city of Providence. This would include a **single (up to 1 hour) face to face interview at a location of your preference**, during which, Alison Tovar or Jessie Boukarim, will go over your rights as a participant, ask you a series of questions, and fill out a brief survey. The risk to participating is minimal, all of your responses will remain confidential, and you reserve the right to not answer any questions of your choice. Furthermore, with your consent, the interview will be audio recorded in order to allow for data analysis at a later point. This study will help us understand the city's resources, barriers, and preparation in combatting childhood obesity and healthy lifestyle behaviors in general. Utilizing this information may drive future prevention programs and open windows for potential local support. Thank you for your time and consideration. **Please let us know if you are interested in participating and if so some good times/days that might work to complete the interview.** If it is easier for us to call you to schedule please let us know and we would be happy to do so. We will then send you an email confirming the date and time as well as the consent form that you may review it prior to our meeting. Also, please feel free to email or call us back with any questions, comments, or concerns you may have.

Thank you for aiding URI research.

(Graduate Student) Jessie Pierre Boukarim

Jboukarim@uri.edu (401) 261-8501

(Principal Investigator) Alison Tovar

Atovar@uri.edu (401) 874-9855

The analysis of the data will occur at the childhood obesity prevention and community nutrition research lab in Fogarty Lab 107, Kingston RI 02881

***This research has been approved by The University of Rhode Island
Institutional Review Board***

Appendix D: Interview guide with notes

Step 1 define your issue: Childhood Obesity

Step 2 identify your community: Providence, RI

Step 3 **Ensure the consent form** has been read, questions answered, and signed.

SCRIPT: (intro)

Hello, my name is Jessie Boukarim from the nutrition department at URI. Thank you so much for agreeing to be interviewed for this project. We are contacting key people to ask about childhood obesity and prevention efforts within the community of Providence, RI. The entire process, including individual names, will be kept confidential. Just to be clear, when I refer to childhood obesity, I specifically am addressing children under five years old. However you may address health and wellness for this age group, for these are related. In addition, I would like you to answer specifically about the community of Providence, RI. Please feel free to ask me to repeat any questions. Lastly, given your permission, I would like to record our interview, so that we can get an accurate representation of what you've said. The recording will be erased once we transcribe it and have analyzed data. Would that be okay with you?

YES → Ok, thank you so much. Let's get started then.

COMMUNITY KNOWLEDGE OF EFFORTS

- I'm going to ask you about current community efforts to address childhood obesity. By efforts, I mean any programs, activities, or services in your community geared towards preventing obesity.

1. On a scale of 1-10, how much of a concern is childhood obesity to Providence, RI?
1-not at all, 10= major concern

2. Are there efforts in Providence that address specifically obesity for the age group five and under?

*If Yes, continue to question 3;
if No, skip to question 16.*

3. Can you briefly describe each of these?

...Interviewer: Write down names of efforts so that you can refer to them in #4-5 below.

Probe: How long have each of these efforts been going on?

Probe for each program/activity.

Could you please elaborate about _____ program/activity?

Probe: Who do each of these efforts serve (a certain age group, ethnicity, etc.)?

6. About how many community members are aware of each of the following aspects of the efforts -*none, a few, some, many, or most?*

--How many community members would you say have heard of efforts?

--Are they able to name efforts and know their purpose?

7. Thinking back to your answers, why do you think members of your community have this amount of knowledge?

8. Are there misconceptions or incorrect information among community members about the current efforts?

If yes: What are these?

9. How do community members learn about the current efforts?

Probe: Can you tell me a little about how community members view these efforts (strengths, weaknesses, obstacles, etc.)

Only ask #16 if the respondent answered "No" to #2 or was unsure.

16. Is anyone in Providence trying to get something started to address childhood obesity?

...would you mind telling me more about that?

LEADERSHIP

- I'm going to ask you how the leadership in Providence perceives obesity for this age group. By leadership, we are referring to those who could affect the outcome of this issue and those who have influence in the community and/or who lead the community in helping it achieve its goals.

17. Using a scale from 1-10, how much of a concern is childhood obesity to the leadership of Providence, with 1 being "not a concern at all" and 10 being "a very major concern"? Can you tell me why you chose that?

17a. How much of a priority is addressing this issue to leadership? Can you explain why you say this?

18. *I'm going to read a list of ways that leadership might show its support or lack of support for efforts to address obesity for this age group...*

...Can you please tell me whether none, a few, some, many or most leaders would or do show support in this way? Also, feel free to explain your responses as we move through the list. How many leaders...

--At least passively support efforts without necessarily being active in that support?

-- Participate in developing, improving or implementing efforts, for example by being a member of a group that is working toward these efforts?

--Support allocating resources to fund community efforts?

--Play a key role as a leader or driving force in planning, developing or implementing efforts? **Probe: How do they do that?**

-- Play a key role in ensuring the long-term viability of community efforts, for example by allocating long-term funding?

19. Does the leadership support expanded efforts in the community to address obesity with this age group?

If yes: How do they show this support? For example, by passively supporting, by being involved in developing the efforts, or by being a driving force or key player in achieving these expanded efforts?

20. Who are leaders that are supportive of addressing this issue in your community?

21. Are there leaders who might oppose addressing obesity?

-- How do they show their opposition?

COMMUNITY CLIMATE

- For the following questions, again please answer keeping in mind your perspective of what community members believe and not what you personally believe.

22. How much of a priority is addressing this issue to community members?

Can you explain your answer?

23. I'm going to read a list of ways that community members might show their support or their lack of support for community efforts to address obesity.

--Can you please tell me whether none, a few, some, many or most community members would or do show their support in this way?

--Also, feel free to explain your responses as we move through the list. How many community members...

- At least passively support community efforts without being active in that support?
- Participate in developing, improving or implementing efforts, for example by attending group meetings that are working toward these efforts?
- Play a key role as a leader or driving force in planning, developing or implementing efforts? **prompt:** How do they do that?
- Are willing to pay more (for example, in taxes) to help fund community efforts?

24. About how many community members would support expanding efforts in the community to address obesity? Would you say none, a few, some, many or most?

If more how might they show this support? For example, by passively supporting or by being actively involved in developing the efforts?

KNOWLEDGE ABOUT THE ISSUE

28. On a scale of 1 to 10 where a 1 is no knowledge and a 10 is detailed knowledge, how much do community members know about childhood obesity?

Why do you say it's a ____?

29. Would you say that community members know nothing, a little, some or a lot about each of the following as they pertain to the issue at hand...

...After each item, have them answer.)

...Prompt as needed with "nothing, a little, some or a lot

- the signs and symptoms
- the causes
- the consequences
- how often childhood obesity occurs locally (or the number of people living with (issue) in your community)
 - what can be done to prevent or treat children from becoming obese
 - the effects of obesity on family and friends?

30. What are the misconceptions among community members about this, why it occurs, how much it occurs locally, or what the consequences are?

Probe: is there information provided via brochures, newspapers, media, etc?

RESOURCES FOR EFFORTS (time, money, people, space, etc.)

- If there are efforts to address the issue locally, begin with question 33. If there are no efforts, go to question 33.

32. How are current efforts funded? Is this funding likely to continue into the future?

33. I'm now going to read you a list of resources that could be used to address childhood obesity in your community. For each of these, please indicate whether there is none, a little, some or a lot of that resource available in your community that could be used to address (issue)?

- Volunteers?
- Financial donations from organizations and/or businesses?
- Grant funding?
- Experts?
- Space?

34. Would community members and leadership support using these resources to address our issue at hand? Please explain.

35. On a scale of 1 to 5, where 1 is no effort and 5 is a great effort, how much effort are community members and/or leadership putting into doing each of the following things to increase the resources going toward addressing obesity in your community?

- Seeking volunteers for current or future efforts to address (issue) in the community.
- Soliciting donations from businesses or other organizations to fund current or expanded community efforts.
- Writing grant proposals to obtain funding
- Training community members to become experts.
- Recruiting experts to the community.

36. Are you aware of any proposals or action plans that have been submitted for funding to address childhood obesity in Providence?

... *If Yes:* Please explain.

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