DEVELOPING A FAMILY BASED PROGRAM TO REDUCE THE INCIDENCE OF

OBESITY IN AMERICAN INDIAN CHILDREN

by

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ABSTRACT

Childhood obesity is a significant health problem resulting in decreased lifespan related to chronic health problems. Prevalence of childhood obesity is experienced in American Indian (AI) children at greater rates than their non-native peers. Social determinants of health significantly impact AIs; socioeconomic status, geographic location of reservations, and family and community dynamics uniquely impact health outcomes and risk factors of AI families and communities. This scholarly project investigates the disparity of childhood obesity within the AI community and the potential of a culturally relevant and acceptable family-based program to reduce the prevalence. A community advisory board (CAB) and components of successful AI-specific programs will guide the development of a culturally relevant family-based program. This project aims to reduce the prevalence of childhood obesity in AI children by supporting nutritional knowledge and sovereignty, family engagement, and positive behavior support and coping mechanisms. A culturally relevant family-based program has the potential to reduce the prevalence of childhood obesity in AI children and improve health equity.

CHAPTER ONE

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<u>Introduction</u>

"Ultimately, the health of the baby was connected to the health of the community, and babies also brought communities together through the care that was required, and the joy and hope that they represented" (Anderson, 1964).

Childhood obesity presents a significant public health problem resulting in immediate and future health consequences. This scholarly paper investigates the development of a family-based program to reduce the incidence of obesity in American Indian (AI) children. Additionally, unique AI risk factors, family-based and other prevention and treatment programs, and elements of culturally acceptable programs will be presented.

Childhood obesity frequently results in both psychological and physical related health problems. Obesity is a significant risk factor and contributor to increased morbidity and mortality from cardiovascular disease, diabetes, chronic diseases such as liver and kidney disease, and cancer. Today, American Indians and Alaskan Natives (AI/AN) have a life expectancy of 5.5 years less than the United States all race population (Indian Health Services, 2019). Further, AI/ANs continue to die at higher rates across all health categories, including obesity and comorbidities. Unfortunately, high rates of obesity in AI/AN have contributed to higher prevalence and mortality rates from heart disease, cancer, diabetes, chronic liver disease, and chronic kidney disease.

Obesity can be multifactorial with genetic, epigenetic, biological, socioeconomic, and environmental risk factors. There is a reported link between low socioeconomic status and increased childhood obesity rates (Williams et al., 2018), an element commonly seen in AI communities. Further, AIs' obesity rates are affected by genetic and epigenetic factors as well as sociodemographic, early development, and family lifestyle variables. Environmental influences are identified as contributing risk factors of AI children, further contributing to higher health disparities (Healthy People, 2020). Environmental effects can include adverse childhood events, a history of exposure to adverse experiences (historical trauma), economic factors, educational impact, and access to healthy foods and healthcare. Historical trauma has resulted in generational exposures to multiple adverse experiences, resulting in a changed diet for AI persons and subsequent food insecurity.

Social determinants of health significantly impact population health. Healthy People 2020 has recognized that race or ethnicity, socioeconomic status, and geographic location all contribute to an individual's ability to achieve good health and have set a goal to eliminate health disparities to improve all people's health. Programs such as Montana's Tribal Health Improvement Program (THIP) further recognize that AIs have unique factors contributing to health disparities and have invested in improving Montana Tribes' health outcomes. Despite efforts to combat childhood obesity and the knowledge that AI children suffer from the highest prevalence rates of any other ethnic or racial group, few studies focus on interventions within the AI population. Comprehensive interventions that address prevention and treatment are needed.

Family-centered positive behavior support interventions in early childhood to prevent obesity, programs that improve parents' skills to create environments with healthy lifestyles

"have the potential to impact the obesity epidemic across ethnically and sociodemographically diverse populations of young children" (Smith et al., 2017, p. 433). A more thorough understanding of family and community-level factors influencing obesity is essential to obesity prevention and treatment in AI communities.

Interventions should respect and incorporate culture. Family, community, and cultural factors should be considered in interventions affecting AI culture and future outcomes. Addressing the prevalence of childhood obesity among AI/AN children can help protect culture through culturally relevant programs that improve health outcomes. Developing a family-focused program to reduce the prevalence of childhood obesity among AI children may be an initial step in successfully addressing persistent health disparities while protecting culture and tradition.

CHAPTER TWO

REVIEW OF LITERATURE

Review of Literature

American Indian (AI) families may have unique risk factors and family dynamics contributing to high childhood obesity rates. Understanding the relationship between culture and family dynamics is critical to the development of effective disease management. It has been well established that health-related behaviors are often formed early and influenced by family and environment (Tomayko et al., 2016). Current evidence regarding childhood obesity, effective health promotion interventions within the AI community, and Bowen's Family Systems Theory (BFST) (1978) will be used to guide the development of this program.

This chapter presents a review of the literature specific to childhood obesity and family-based interventions in minority populations, with a detailed focus on successful AI programs. Topics include childhood obesity, the prevalence of childhood obesity in AI children, similarities of prevalence rates of childhood obesity in AI children and other ethnic minorities, and family-based programs as an obesity intervention and prevention technique. A prevalent barrier to successful program implementation is that the vast majority of existing programs have been developed by traditional western medicine without considering ethnic and cultural differences prevalent with AI communities; their efficacy within these unique populations is limited (Jennings et al., 2018).

Definition of Childhood Obesity

Currently, the challenge of childhood obesity presents significant public health concerns. Defined as a body mass index (BMI) equal to or greater than the 95th percentile for children nationally, over 18.5% of our nation's children are obese (Centers for Disease Control and Prevention [CDC], 2021); within the AI communities, these statistics are even grimmer with over 18.5% being overweight and 29.7% being obese (State of Childhood Obesity, 2018).

Theoretical Framework

Bowen's Family Systems Theory (BFST) will provide the theoretical foundation for this scholarly project (Bowen, 1978). The BFST theory posits that complex interactions between family members influence thoughts, feelings, and actions (Kerr, 2000); this occurs throughout the complex family structure and is multigenerational in nature. Cultural considerations of ethnicity and race, family history, and values made BFST concepts and clinical application more diverse over the decades (Erdem & Safi, 2018) and an ideal fit for this project.

Review of Literature

The literature search strategy used focused on childhood obesity in AI children and family-based programs. Scholarly articles were identified using Montana State University Library, CINHAL, and PubMed databases. Organizational websites, including Centers for Disease Control and Prevention, Indian Health Services, Healthy People 2020, and First Nations Development Institute, were also utilized as information sources. Key search terms included "childhood obesity," "American Indian," and "family-based programs." The literature search resulted in 361 peer-reviewed articles. Criteria for literature selection included a date of delimitations from 2016 to 2021, a combination of keywords, or literature containing information

on the subject of childhood obesity. Review of abstracts to identify literature referring to the prevalence of obesity, impact of obesity on health outcomes, and family-based obesity interventions in AI children guided final selection of 21 articles.

American Indian children represent the highest rate of obesity among all races and ethnicities (Adams et al., 2019). Childhood obesity has been both well-defined and well documented within the scholarly literature. One troubling finding is the disproportionate rate of childhood obesity among children of racial or ethnic minorities compared to that of their non-native peers (Isong et al., 2017). One critical component of effective interventions would recognize that the perceptions of healthy body weight and image among ethnic groups differ and are greatly influenced by culture. For example, culture influences the idea of a healthy body and attitudes, behaviors, and beliefs toward food and its association to health (Kumanyika, 2008).

Culture, demographic, and environmental influences must also be considered when addressing obesity prevalence within ethnic minority groups (Isong et al., 2017; Adams et al., 2019). Despite the knowledge of ethnic differences in obesity and culture being readily available, few culturally acceptable and relevant intervention programs meet these at-risk children and families' needs. Socioeconomic and behavioral risk factors also contribute to the sustained racial and ethnic disparities in weight, as they significantly impact maternal, infancy, and early childhood risk factors (Isong et al., 2017). It has been recognized that a discrepancy exists between Indigenous health beliefs and Western health interventions, revealing that the focus on the individual rather than the family unit does not align with AI culture (Jennings et al., 2018).

There is an interaction of multiple factors that influence childhood obesity in AI, including complicated family and environmental variables and historical variables (Adams et al.,

2019; Isong et al., 2017). Risk factors can be related to family, community, and social determinants of health. Both Isong et al. (2017) and Adams et al. (2019) identify family and environmental variables as prevalent risk factors for AI children to develop obesity and highlight intervention development areas. Family-related obesity predictors included sociodemographic, genetic, early development, and family lifestyle variables (Adams et al., 2019). While childhood obesity disparities have been linked to racial and ethnic disparities and socioeconomic status, Smith et al. (2018) further look at social determinants of health and its role in childhood obesity. Specific social determinants associated with obesity include lower incomes, lower graduation rates, poorer nutrition, and limited access to healthcare (Alian et al., 2018; Adams et al., 2019).

Within traditional obesity prevention programs, patterns of low familial motivation to change and poor adherence to recommendations for lifestyle change have been found to influence the program's success (Smith et al., 2017). Conversely, family-centered positive behavior support interventions in early childhood are most likely to be accepted and have a meaningful impact on participation (Adams et al., 2019). Shared benefits to both child and parent regarding improved dietary behaviors and health outcomes are evident in these programs. When parents are involved in the intervention strategies, provided education in making healthy life choices, and supported lifestyle modifications, programs are more likely to be accepted and effective (Smith et al., 2018; Tomayko et al., 2016). A strong relationship between parent and child weight has been established; moreover, it was found that multiple household factors influence early childhood obesity in AI children (Adams et al., 2019). These findings support the need for interventions that incorporate family influence and participation.

Parental styles have been identified as a contributing factor to childhood obesity among AI (Hughes et al., 2017). Examination of the AI family unit revealed that family dynamics differ substantively from the mainstream culture. One unique characteristic identified was a higher parental reliance on extended family and elders for parenting information and childcare. Inconsistency regarding cultural differences and parenting styles is prevalent in the literature, signifying a gap in research regarding family dynamics in childhood obesity.

Many, if not most, reservations have limited access to nutritious, affordable foods; as such, they are defined as food deserts (Cardel & Donahoo, 2019). Food deserts may vary by socioeconomic status and racial composition of their community, but all have been positively linked to obesity (Cardel & Donahoo, 2019). Availability, quality, type, amount, and price of food all impact nutritional status and are relevant to any obesity program within the AI community.

Evidence suggests a strong predictive relationship between family lifestyle variables (physical activity, low vegetable intake, high consumption of sugar-sweetened beverages) and a child's BMI score. Further, genetics, maternal gestational diabetes, and high birth weight have been connected to increased risk for childhood obesity (Adams et al., 2019). Understanding the complex role of food within the family unit and required nutritional information is necessary to address obesity (Adams et al., 2019; Cardel & Donahoo, 2019).

Various programs developing interventions specific to childhood obesity exist (National Institute of Health, 2016). While there is evidence to support the overall benefit of family-based programs within other populations, few have been designed explicitly for AI families. The Healthy Children, Strong Families (Tomayko et al., 2016) and Family Check-Up 4 Health (Smith

et al., 2018) programs offer the potential to impact childhood obesity by addressing low levels of family functioning and motivation and adherence to diet and activity recommendations. Further, both programs highlight the disparity of obesity among AI children and adapting prevention strategies through cultural frameworks to effectively reach, engage, and retain families, especially those of ethnic minorities (Tomayko et al., 2016; Smith et al., 2018). Programs that improve family's positive behavior strategies, specifically those that address environmental and healthy lifestyle behaviors, have been found to have a more significant impact on childhood obesity across ethnic and sociodemographically diverse populations.

In this section, current successful programs will be presented. The Family Spirit Nurture was designed by the Center for American Indian Health to improve maternal and child outcomes for AI families (Johns Hopkins University, 2020). An association between excessive infant weight gain and childhood obesity was identified; in addition, children from low-socioeconomic backgrounds were also at increased risk of obesity (Isong et al., 2017). This program aims to reduce obesity by creating positive infant feeding and growth in the first year of life through education and support for the mother through culturally relevant and acceptable teaching and practices. Targeting early life risk factors can help reduce childhood obesity, as the first 24 months of life have been identified as a critical time frame for interventions (Isong et al., 2017; Johns Hopkins University, 2020).

Bright Start is another program that addresses obesity in AI children by encouraging healthy eating and physical activity. Again, parental motivation and participation were recognized as significant factors influencing children's weight loss (Story et al., 2012). Also of significance were community connections in creating opportunities for healthy eating, safe

physical activity, and removing barriers for families and children to make healthy choices. One limitation of this program is that little empirical knowledge could be identified beyond the initial program testing to determine applicability within diverse AI populations.

The incidence of food insecurity within the AI families is 61%, significantly impacting nutritional habits (Tomayko et al., 2017). Food sovereignty programs offer an opportunity to bridge a respectful relationship with Western medicine while promoting health and healing historical trauma (Jennings et al., 2018). A developing trend is recognizing that incorporating traditional foods fosters a deep connection with Earth within the AI community. Through efforts to reclaim traditional food systems to combat hunger, increase access to healthy and traditional foods, and enhance community health, food sovereignty offers a possible solution to the Western diet's impact (First Nations Development Institute, n.d.). Additional research specific to food sovereignty may provide critical insight into food insecurity within AI households while simultaneously addressing obesity.

The concept of food sovereignty is complex. Both environmental and cultural factors are reflected in food sovereignty and its relationship with obesity prevalence. The decreased ability to respect and live off the land through traditional hunting, gathering, and gardening has contributed to the obesity epidemic in AI communities (Jennings et al., 2018). Critical components of a successful childhood obesity program must include both food sovereignty and traditional methods to access nutritional resources.

Successful traits of these three programs were developed specifically to meet the needs of AI children and families. Commonalities of content include family engagement and mentoring within the AI community and a focus on creating healthy lifestyles for all family members.

While the Family Spirit Nurture program is specific to infants and young children, the Bright Star focused on school-age and older children; utilizing content from these programs will inform the early development of the proposed project. The Food Sovereignty program, while not specific to children, addresses health across all members of any given tribe.

Minority children living in poverty are at much greater risk of developing chronic diseases as adults (Tomayko et al. 2016). The prevalence of obesity in AI children is far greater than that for Caucasian and Asian children (Isong et al., 2017), with an incidence rate approximately double that of their peers. American Indians are a population with the only increase in prevalence rates since 2003 (Isong et al. 2017); this powerful statement shows a lack of adequate program development and public health action. Insufficient research exploring the unique dynamics of multigeneration family homes dominant in AI populations and cultural influence contributes to the knowledge gap.

In summary, few studies address the potential benefit of family-based childhood obesity programs in AI communities, despite the established connection between home environment and obesity health outcomes. Interventions that contain content specific to supporting family-based programs within other populations have demonstrated positive, evidence-based prevention and treatment options for childhood obesity. However, the lack of interventions specific to the unique individual, family, and cultural dynamics within the AI community remains a public health priority. Further, common barriers such as low participation rates and non-adherence to programs remain unstudied. Using this knowledge to inform program development is vital for success. Interventions that address modifiable factors of early life influences, home environments, and health behaviors are urgently needed.

CHAPTER THREE

METHODS

Methods

Responding to the concern of high prevalence rates of childhood obesity, this scholarly project aims to reduce childhood obesity by addressing known barriers and unique risk factors of food insecurity, low familial participation and motivation, and historical trauma. The lack of programs highlights a significant gap in care, as programs developed to meet the needs of one tribe may or may not be relevant to the needs of another. As the obesity crisis continues to grow with these communities, critical action is needed to ensure our children's health. To obtain reduced obesity rates in AI children, a culturally informed family-based program that addresses nutritional knowledge and sovereignty, family engagement, and positive behavior support and coping mechanisms will be developed.

Purpose

The aim of this scholarly project is to develop, and pilot test a family-based program to reduce the prevalence of obesity in AI children of the Chippewa Cree Tribe residing in a rural western state. To ensure the development of a relevant and acceptable program, a community-engaged research model will be utilized to guide the development, pilot testing, and evaluation. To meet this goal, a community advisory board (CAB) will be assembled. Tenets of this program will include leveraging the relationship between food and AI culture, elder leadership, and parental involvement.

Project Development

Family based programs have shown success within other populations (Tomayko et al., 2016). American Indian-focused programs such as Family Spirit Nurture have experienced anecdotal success within the tribes of New Mexico, but success within Chippewa Cree tribes has been limited. Building upon the strengths of programs such as Family Spirit Nurture that include family involvement will help guide the development of this culturally acceptable program. Further, a CAB will ensure program content will enhance acceptance and relevance within the population served. The proposed program will focus on culturally relevant parent education and support, youth mentorship, a community collaboration to develop safe places for play and exercise, and improved access to nutritious foods.

The CAB will provide project oversight. Community stakeholders will guide a multidisciplinary team and ensure that this family-based program's development is culturally respectful and relevant. The CAB will comprise of a tribal elder representative, a Tribal Council member, faculty from the tribal college, a youth activity specialist and mentor, and parent and youth representatives. Community stakeholders will be identified for their influence and experience with culture, parent and child insight and participation, community, and resource outreach. The team will include tribal health organization employees with expertise in pediatric care, diabetes prevention, and nutrition will also be represented in team members. A Clinical Nurse Leader (CNL) will be responsible for the CAB and team's leadership and collaboration. A quality improvement team member matrix will help form the group (Institute for Healthcare Improvement, n.d.).

Target Sample

American Indian families will be recruited from within the reservation or from organizations providing services to AI children. Children ages five to eight and their parents or guardian will be invited to participate.

Instruments

Quality improvement tools, including root-cause analysis and a Plan, Do, Study, Act (PDSA) (Institute for Healthcare Improvement, n.d.), will help inform program development through an iterative process. The PDSA will allow for the evaluation of program success and failures and outcome measures. A root-cause analysis will be conducted by the CAB and project team members to identify local and community factors that may contribute to the prevalence of obesity in children living on the reservation. Further, a strengths, weakness, opportunities, and threats (SWOT) evaluation will be used to leverage community strengths that support the program and address weaknesses that could threaten success.

An analytic data dashboard reflecting key performance indicators of BMI, blood pressure, girth measurement, and participation rate will be utilized to evaluate participant and family outcomes within the program. Complete program evaluation will occur biannually to allow the team to assess program successes and barriers and identify and implement appropriate changes or improvements.

Proposed Analysis

Outcomes of the program will be measured by anthropometric data and child and parent lifestyle variables. Height and weight will be collected according to standard protocols and will be used to calculate age- and sex-specific BMI percentiles. Child participants will also complete

a youth physical activity and nutrition survey. Parental lifestyle outcomes will be measured by parent reports of Family Physical Activity, Nutrition surveys, Nutrition Self-Efficacy, Food Security Scale, and Cultural Involvement scale scores. Descriptive statistics will be entered into the team quality analyst's dashboard to be analyzed and evaluated by the team and CAB. Child and parent health outcomes will be compared pre- and post-program participation.

Clinical Nurse Leader Role

Clinical Nurse Leaders have the knowledge and skills to drive change in healthcare and significantly impact the quality of care and health outcomes of at-risk populations. Through clinical experience and expertise, CNLs are adept at understanding health disparities in at-risk individuals, families, and populations for which they care. Further, this skill supports the CNL in identifying health needs within target populations and subsequently leads the development of programs to meet health needs within vulnerable populations.

The role of advocacy in CNLs is essential to improving health outcomes and addressing social determinants of health for at-risk populations. Influencing healthcare, the CNL applies nursing perspective to the interpretation of research and actively participates with interprofessional teams to develop and implement policies and programs responsive to diverse populations' healthcare needs. Striving towards improved population health, CNLs promote strategies for prevention and health promotion of culturally appropriate programs.

Applying advanced knowledge, CNLs are able to integrate clinical judgment, population characteristics, research, scientific evidence, team perspectives, and informatics to inform health improvement. As educators, CNLs can use their principles and competencies to mentor and

educate nurses to apply critical thinking and evidence-based practice in patient care. As patient educators, CNLs encourage and empower patients to make healthy lifestyle choices.

As *advocates* and *educators* of patients, communities, and health professional teams, CNLs understand the importance of collaborative relationships to the development of successful *teams* is instrumental to improvement. The complexity of healthcare and quality improvements requires strong leaders who are adaptable to change and who will coordinate a multidisciplinary team. Clinical Nurse Leaders can apply leadership skills and decision-making to lead interprofessional teams in the provision of culturally appropriate quality nursing care.

Clinical Nurse Leaders have emerged as innovators in quality improvement. As specialists in healthcare, CNLs play a fundamental role in the design, implementation, and evaluation of evidence-based solutions, programs, and quality improvement strategies (American Association of Colleges of Nursing, 2013). Core competencies of CNLs make them remarkably qualified to lead programs that address health disparities and strive for health equity.

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