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Walkability Assessment to Reduce Childhood Obesity in Wilson County Kansas

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Abstract

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MSN, Walden University, 2011

BSN, St. Mary of the Plains, 1979

Project Submitted in Partial Fulfillment

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Abstract

Promoting physical exercise is necessary to combat childhood obesity. Walking to school is an encouraged physical activity, but the feasibility of walking to school depends on the walkability of the environment. During the last 40 years, the number of U.S. schoolchildren who walk to school has declined. The purpose of this evidence-based practice project was to perform a walkability assessment of the 2 largest communities in Wilson County Kansas to identify and address walkability issues. Frameworks for this practice initiative were social cognitive theory and the Health Promotion model. Questions for the project addressed whether sidewalks along the main pedestrian routes leading to the schools were in good enough condition to allow children to walk safely to and from school. Using an adapted tool from the Pedestrian Safety and Mobility Audit Guide, assessment of the condition of the sidewalks was completed using the key characteristics of the sidewalks such as width, evenness, surface, and condition in the 2 major school routes. Results indicated no safe walk route in Fredonia. In Neodesha, only the sidewalks on the west side of 8th Street were in excellent condition. Safety issues identified during the assessment led to recommendation of safe pedestrian travel on only one route to school. Findings may be used to promote daily physical exercise for children, which may reduce the risk for obesity and promote social change for the community.

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Section 1: Nature of the Project

Introduction

The lifelong health issues of an overweight or obese child make childhood obesity a high-priority public health problem (McKee, Maher, Deen, & Blank, 2010). Childhood obesity will impact the health of the United States due to obesity-attributable diseases including diabetes, heart disease, cancer, musculoskeletal disorders, sleep apnea, and gallbladder disease (Gollust, Niederdeppe, & Barry, 2013). Some of the other disorders impacted by childhood obesity are early puberty or menarche, anorexia, bulimia, asthma, and respiratory issues (Shanks, Lechtenberg, & Delger, 2014). Emotional and psychological issues of negative self-esteem, withdrawal from peer interaction, depression, anxiety, and the feeling of chronic rejection are complicated by obesity when children are teased and excluded from friend groups (Simoes et al., 2013). There is an association between childhood obesity and poor gross motor development and endurance performance (Berkowitz & Bochard, 2009). Obesity affects mortality rates and increases economic costs related to health care (Evans, Finkelstein, Kamerow, & Renaud, 2005). Lutfiyya, Lipsky, Wisdom-Behounk, and Impanbutr-Martinkus (2007) stated that there are an estimated 300,000 deaths in the United States each year attributed to obesity. In this doctoral project, I examined the problem of childhood obesity and described the conditions of the sidewalks leading to the schools in Wilson County Kansas.

Problem Statement

Obesity is a lifestyle choice that can result in an increase in debilitating health conditions (U.S. Department of Health and Human Services, 2014). Obesity has reached

epidemic proportions as a worldwide phenomenon affecting both affluent and financially challenged countries alike (Simoes et al., 2013). The Centers for Disease Control and Prevention (CDC, 2012) defined overweight in children as falling between the 85 and 95 percentile for gender and age on the body mass index (BMI) growth chart. Children younger than 2 years old who exceed the 95 percentile of weight for length are at a greater risk for childhood obesity (Nihiser et al., 2007). The overall obesity rate among children ages 2-19 has remained steady at 17% since 2004 (CDC, 2014).

In Kansas, the CDC identified adolescents in Grades 9 through 12 as 13.1% overweight and 12.4% as obese (CDC, 2011; Manry, Harding, Ochs, & Schenk-Pitts, 2014). In Kansas, 15.7% of children ages 2 to 5 years were assessed to be overweight and 13% were obese (CDC, 2011). Children in rural areas are 25% more likely to be overweight and less physically active (Filbert, Chesser, Hawley, & St. Romain, 2009; Lutfiyya et al., 2007). Seventy million people live in rural United States, and 40% of them are overweight or obese (Rockeymoore, Moscetti, & Fountain, 2014). For Kansans, this includes 193,501 children who live in the 88 rural Kansas counties (Manry et al, 2014, p. 13). Wilson County Kansas is in rural Southeastern Kansas and has a population of approximately 9,000 people. Thirty-four percent of the adult population are obese (Kansas Rural Health Works, 2013). The Community Health Needs Assessment – Wilson County, Kansas (Kansas Rural Health Works, 2013) placed reversing the trend of obesity as a high priority.

The economic impact of obesity is staggering. The annual medical costs for obese adults are 36% higher than expenses of normal-weight individuals (Wang, Denniston,

Lee, Galuska, & Lowry, 2010). Obesity is responsible for between 5% and 7% of the total annual medical expenditures in the United States or $75 to $111 billion per year (American Academy of Child and Adolescent Psychiatry, 2016; CDC, 2014). Nash, David, Reifsnyder, Fabius, and Pracilio (2011) stated that if current trends continue, 43% of U.S. adults will be obese by 2018, adding nearly $344 billion to the nation's annual direct health care costs and accounting for more than 21% of healthcare spending.

Purpose Statement and Project Objectives

The purpose of this doctor of nursing practice (DNP) evidence-based practice project was to perform a walkability assessment of the two largest communities in Wilson County Kansas to identify and address walkability issues. Information obtained through the walkability assessment was used to recommend improvements to walking routes to encourage increased physical activity of children through walking. This increase in physical activity may help reduce the incidence of childhood obesity in the same county. The project demonstrated the need for interventions to address the increasing number of children who are overweight or obese. Childhood obesity is a current and future health issue for residents of Wilson County.

The objective of this childhood obesity project was to enrich the lives of Wilson County children by assisting in the reduction of childhood obesity. Issues concerning the walkability of community sidewalks may contribute to childhood obesity in Wilson County. Through completion of this walkability assessment and dissemination of findings, I have encouraged walking for exercise and increased awareness of childhood obesity in Wilson County.

Project Questions

Project questions answered during the project included the following: What are the main pedestrian routes in the two largest communities in Wilson County Kansas? What are the main pedestrian routes leading to the schools in the two largest communities in Wilson County? What is the condition of the sidewalks along these main pedestrian routes?

Significance/Relevance to Practice

Children are generally at the mercy of the adults in their lives to provide all of their food and determine the size of portions that they eat. When served larger portions, children have the tendency to consume what is available. It is common for families today to either eat out or have take-out meals up to four times a week (Sizer & Whitney, 2008). Americans have become accustomed to larger portion sizes when dining or carrying out. The slogan "super-size" has resulted in both adults and children that are now "super-sized" (Sizer & Whitney, 2008). Childhood obesity is usually an outward sign of family lifestyle choices such as poor diet and lack of exercise (Carr, 2009). "Parents provide not only the genetic predisposition to obesity but also serve as role models, foster feeding interactions and create home environments that shape their children's experiences with food and eating" (Lindsay, et al., 2012, p. 861). Sedentary habits of families are a factor in the child's desire or interest in physical activity. Evaluating lifestyle factors of the family including an evaluation of physical activity and time spent with electronics is imperative.

The Strategies to Overcome and Prevent (STOP) Obesity Alliance Task Force on Women has identified that reduction of childhood obesity cannot occur unless headway is made in the obesity rates in women (Women's Health, 2010). Mothers are usually the more involved parent in the meal planning and food choices served to the children (Berkowitz & Bochard, 2009). "We rely on women to serve as the 'Chief Health Officer' for the family, but with more than a third being obese themselves, we're unlikely to break the cycle with children without finding ways for moms to overcome their weight problems as well" (Women's Health, 2010, p. 112). The rate of obesity in adults residing in Wilson County is 34%. This statistic is a reflection of the rate of obesity of mothers in Wilson County. If the assumptions made by Berkowitz and Bochard (2010) are correct, then interventions including both children and mothers will improve the problem of childhood obesity in Wilson County.

Environmental issues that influence childhood obesity relate to exercise. Long gone are the generations of children who played outside all day. Planned communities often do not have sidewalks on which to walk, skate, or ride a bike (Sizer & Whitney, 2008). Although none of the communities in Wilson County are planned communities, there are many streets where sidewalks do not exist or where brick sidewalks are overgrown. Walking down the middle of the street for exercise might work for adults but would be dangerous for children. Children would not be as aware of traffic dangers or tall enough for drivers of vehicles to readily see them if they are walking on the street. Play areas exist in all of the communities in Wilson County, but most parents do not allow their children to walk to or play there without supervision.

Implications for Social Change

Kansas is the home to approximately 40,000 nurses (Kansas Action Coalition, 2013). Nurses are predominately female, and many are mothers of small children. There are many ways that nursing professionals can influence childhood obesity. Nurses are regarded and trusted as individuals with knowledge of health issues. Taking a stand against childhood obesity, nurses should look for opportunities to encourage parenting styles that support physical activity, reduce sedentary behaviors, and model healthy nutritional choices (Berkowitz & Bochard, 2009). Berkowitz and Bochard (2009) suggested that nurses become involved with policy at the federal level to advocate for the promotion of physical activity/physical education in elementary schools. Nurses can also become community experts serving in organizations that support efforts to preserve and enhance parks thereby promoting physical activity. When nurses volunteer to assist with the development of walking or bicycle paths, promotion of active living will naturally occur.

Prevention and treatment of childhood obesity is a public health priority and will require social change. With almost one third of children and two-thirds of adults in the United States being overweight or obese, change in physical activity and nutrition must become the chief concern (Institute of Medicine, 2012). Poor health as an adult, obesity later in life, a decrease in life expectancy, and quality of life are also linked to childhood obesity (Wang & Veugelers, 2008; Shreve, 2015; Waters, et al., 2011).

Definitions of Terms

Adolescence: The period in development between the onset of puberty and adulthood. Generally between 11 and 18 years of age (Mosby's Dictionary of Medicine, Nursing, and Health Professions, 2009.

Body mass index (BMI): A measure used to determine childhood overweight and obesity that is calculated using a child's height-to-weight ratio (kg/m2) (Simoes, et al., 2013). Although BMI does not measure body fat directly, it is a reasonable indicator of body fatness for most children and teens (CDC, 2012). BMI measurement has been used for many years in the insurance industry to predict the development of health problems (Moore, 2009).

Child: A person of either sex between the time of birth and adolescence (Mosby's Dictionary of Medicine, Nursing, and Health Professions, 2009.

Obesity in children: A BMI at or above the 95th percentile for children of the same age and gender (CDC, 2012).

Obesity: The condition of excess body fat to the extent that health is impaired (Simoes, et al., 2013)

Overweight in children: A BMI between the 85th to 95th percentile for gender and age on the BMI growth chart (CDC, 2012).

Physical activity: Moderate to vigorous intensity leisure-time activity lasting for at least 20 minutes/day 3 days per week (Liu, Bennett, Harun, & Probst, 2008).

Severe Obesity: A BMI higher than 40 (Shreve, 2015).

Assumptions and Limitations

With any project, it is important to identify assumptions at the beginning of the project. During the project, I assumed that there would be a desire to improve childhood obesity in Wilson County Kansas. I also assumed a walkability assessment would help identify issues with encouraging children to increase physical activity by walking to school. Rockeymoore et al. (2014) noted that residents of rural communities typically have issues with financial resources and are often unable to support organized sports activities. Fewer areas for organized physical activities and the lack of sidewalks to encourage walking occur in rural communities (Rockeymoore, Moscetti, & Fountain, October 2014). An additional assumption was that Wilson County might be lacking in organized physical activities for children under the age of 18. Financial issues may exist and hinder healthy dietary choices as well. "The often higher prices of fresh, nutritious foods combined with the accessibility of cheaper fast-food restaurants and convenience stores mean rural diets contain more fat and sugar and fewer fruits and vegetables" (Rockeymoore et al. 2014, p. 3).

Rural areas are negatively impacted by the shortage of health care professionals (Filbert et al., 2009). Regular interactions with health care providers, especially advance practice registered nurses, who promote healthy lifestyles have the potential to impact the incidence of childhood obesity (Filbert et al., 2009). Time constraints within provider offices may hinder the documentation of a complete diet and physical activity history (Shreve, 2015).

I did not expect opposition to this project of preparing a walkability assessment to identify and address childhood obesity in Wilson County Kansas. In 2008, a "walking school bus" program was undertaken in Neodesha but was not sustained. Documenting the condition of existing sidewalks may not result in sidewalk reconstruction or guarantees of improvement in childhood obesity.

Summary

Excess body weight in children may lead to a lifetime of excess weight. Obesity is a significant and meaningful health issue that negatively impacts both the physical health and financial health of individuals. Obesity also is a substantial financial drain on the global economy. Strategies to improve childhood obesity include getting to know the physical condition of both individuals and the communities in which they live.

Section 2: Review of Literature and Theoretical and Conceptual Framework

Introduction

The purpose of this DNP evidence-based practice project was to perform a walkability assessment of the two largest communities in Wilson County Kansas to identify and address walkability issues. The magnitude of childhood obesity is a global concern. In the United States, childhood obesity in children ages 6 to 11 has more than doubled (6.5% to 17%) over a 25 year period from 1980 to 2005 (Barry, Brescoll, & Gollust, 2013). Adolescents ages 12 to 19 fared even worse during this time frame, with obesity tripling from 5% to 17.6% (Barry et al., 2013). The World Health Organization (as cited in Holden, 2010) declared that excess body weight is the fifth most important risk factor contributing to the burden of disease in developed countries.

The first step in designing this project was to conduct a systematic review of the literature on childhood obesity. The scope of this review of literature was broad. I attempted to extract relevant information on childhood obesity from a diverse group of both health experts and other sources. I used the Cumulative Index of Nursing and Allied Health (CINAHL), ProQuest Nursing & Allied Health Source, PubMed, the Cochrane Library, Medline, and other resources to locate literature for this project. Literature searches included current peer-reviewed literature, health-related websites, and national health initiatives. Key search terms included childhood obesity, *childhood overweight, nutrition of children, physical activity of children, obesity, overweight, rural obesity* and *overweight*.

Specific Literature Review

Ideally, a childhood obesity program would be community-based, family targeted, and culturally appropriate. It is imperitive for a childhood obesity prevention program to include parenting components (Taylor, et al., 2013). Taylor et al. used an intervention mapping framework to guide their step-by-step health promotion intervention program. The five steps in the intervention mapping included (a) needs assessment, (b) identification of outcomes and change objectives, (c) selection of theory based methods and practical applications to change health related behaviour, (d) designing an intervention, and (e) creation of an implementation plan (Taylor et al., 2013). The individual to target when designing interventions to improve nutrition is the mother (Taylor et al., 2013).

Nadar, Singhal, Javed, Weaver, and Kumar (2014) presented statistics about the alarming rate of childhood overweight and obesity, and indicated that a large percentage of overweight and obese patients remain undiagnosed. Nadar et al. cited unfamiliarity with the revised definitions of childhood overweight and obesity as one reason for under-diagnosis. The insufficient time available for appropriate patient counseling and the belief that counseling may not be an effective way to address the issue were also concerning (Nadar et al., 2014). A risk associated with children remaining undiagnosed is that obesity-related comorbidities may not receive appropriate laboratory screening and treatment (Nadar et al., 2014).

Carr (2009) summarized 42 randomized controlled trials and concluded that family-based behavioral weight reduction programs were more effective than other

routine interventions such as nutritional education and physical fitness education. Family-based programs focused on lifestyle changes. Carr stated that family-based programs "led to a 5-20 percent reduction in weight after treatment and at ten-year follow-up 30 percent of cases were no longer obese" (p. 40).

The lack of parental involvement in the reduction and prevention of childhood obesity has resulted in ineffective family interventions. Davison, Jurkowski, Li, Kranz, and Lawson (2013) completed a study that focused on community-based family-centered interventions to reduce or prevent childhood obesity. Davison et al. took into consideration that although childhood obesity programs may consider themselves family-centered, very few programs involved the family in the interventions. This community-based participatory research approach enabled collaboration with parents of preschool-age children and community-based organizations. The theoretical foundation of the study was the family-centered action model of intervention layout and implementation .The family ecological model identified some specific subcomponents. Davidson et al.

> predicted that parents' active participation in the research process would foster critical reflection on the real life issues that contribute to obesity in their community while helping parents identify and then address in their decision-making important socia, cultural and environmental factors that contribute to healthy lifestyles. Together these mechanisms were hypothesized to result in a family-centered program that was culturally responsive and effective – as indicated by measurable outcomes (p.3).

The evaluation design used in Davison et al.'s (2013) study was a pre-post cohort design. This process was inclusive versus exclusive. The target Head Start centers invited all families with a child 2 years old or older to participate in the evaluation process. A total of 154 parents participated in the baseline self-report survey, and 119 participated in the follow-up analysis. The retention rate of participants was 77%. The pre-post evaluations of family interventions revealed that children at the post intervention had a marginally lower BMI score. Evaluation of parenting approaches post intervetion indicated significantly greater self-efficacy in providing healthier foods and support of children's physical activity.

Many factors affect childhood obesity. Chen and Escarce (2010) performed a secondary data analysis to determine whether the number of parents and the number of siblings influenced the BMI and risk of obesity in the children of the household. Single-mother families and families without siblings were more apt to produce a child with childhood obesity. Results indicated that consideration should be made concerning family structure when health care providers are discussing childhood obesity (Chen & Escarce, 2010).

The executive summary of a study undertaken by Children's Mercy Hospital in Kansas City (2011) states that "there appears to be a gap in parents' understanding of the full extent of repercussions for overweight children" (p. 1). Disease conditions such as diabetes and asthma were recognized by 81% of the parents in this study as worthy of medical attention (Children's Mercy Hospital in Kansas City, 2011). However only 55% of the parents in this study felt it was important to seek medical care for a child being

overweight (Children's Mercy Hospital in Kansas City, 2011). These findings indicated that the parents in this study did not understand the influence that overweight has on other disease conditions. A possible partnership between health care and school systems may offer an opportunity to reduce childhood obesity, and the study also indicated that parents should consider schools as partners and resources in the prevention of childhood obesity (Children's Mercy Hospital in Kansas City, 2011).

Lutfiyya et al. (2007) conducted a study of childhood obesity targeting participants residing in the rural United States to determine whether living in a rural area is a risk factor for becoming overweight or obese in children 5 to 18 years of age. Findings indicated that overweight rural children were more likely than their metropolitan counterparts to be Caucasian, live in households ≤ 200% of the federal poverty level, have no health insurance, have not received preventive health care in the past 12 months, be female, use a computer for non-school work more than 3 hours a day, and watch television for more than three hours a day (Lutfiyya et al., 2007). The research also revealed that rural children have limited access to parks and exercise facilities, fewer sidewalks, a lack of public transportation, and limited physical education classes compared to their urban counterparts (Lutfiyya et al., 2007).

The Institute of Medicine (IOM, 2012) stated that "left unchecked, obesity's effects on health, health care costs, and our productivity as a nation could become catastrophic" (p. 1). The IOM issued five recommendations concerning accelerating improvement in obesity prevention that included integrating physical activity every day in every way. The recommendations also included making healthy foods and beverages

available everywhere, activating employers and health care professionals, and strengthening schools as the heart of health (IOM, 2012).

General Literature Review

Health promotion and disease prevention have garnered much media attention in recent years. Despite this, obesity has become a worldwide health issue. In the United States, many citizens do not engage in the necessary health behaviors or participate in preventive care activities to reduce their risk for chronic diseases (Peterson & Cheng, 2013). Women living in rural areas are at greater risk of developing chronic illnesses due to a higher incidence of physical inactivity and obesity (Peterson & Cheng, 2013). Mothers are usually the more involved parent in the meal planning and food choices served to the children (Berkowitz & Bochard, 2009). Therefore, the mother has the most influence on physical inactivity of children.

The issue of childhood obesity includes the consequences on health and medical costs and warrants a strong justification for obesity prevention policy (Gollust, Niederdeppe, & Barry, 2013). Discussion of public policy issues surrounding childhood obesity is occurring at the local, state, and federal levels (IOM, 2012). Blaming obesity on bad nutritional habits or faulty genetics will result in less public support for obesity prevention policies (Barry et al., 2013). If external causes such as the lack of outdoor facilities to promote physical activity exist, there may be interest in public policy to improve the status of physical activity (Barry et al., 2013). Gollust et al. (2013) argued that obesity-related policies will be more acceptable if framed with responsibility lying

with schools, communities, the food and beverage industry, and the government, not just children and parents.

To prevent weight gain in African American girls, Stockton, McClanahan, Lanctot, Klesges, and Beech (2012) used a social ecological model to provide structure for their study of 303 African American preadolescent girls. Because researchers often have dificulty recruiting and retaining study participants, Stockton et al. sought to prevent recruitment and retention issues by incorporating and addressing issues with trust, communication, environment, and finances. The social ecological model assisted in outlining the multiple levels of influence within populations. At the inner core or individual level, interpersonal factors such as age, knowledge, attitudes, health beliefs, and personality traits influence health behavior. Family members and friends impact support at the interpersonal level. Community factors such as urban design and access to healthy food also influence health behaviors when there is limited access to playgrounds and food is mainly obtained from convienience marts. Stockton et al. (2012) were successful at retaining participants in the study by planning and implementing constant and consistent contact with the girls.

Wang and Veugelers (2008) investigated self-esteem and cognitive development as they relate to childhood obesity. Study subjects were in Grade 5, with probable ages between 10 and 11. The aim of the study was to determine whether good school performance was negatively or positively associated with self-esteem. The three outcome variables of body weight, self-esteem, and school performance were studied using structural equation models. Results indicated obesity as a risk factor for low self-esteem;

however, body weight did not affect school performance. Students with good school performance were less likely to have low self-esteem (Wang & Veugelers, 2008).

Benjamins and Whitman (2010) focused on overweight/obese Jewish children. They contended that if interventions and policies are written specific to the target audience, the program is more apt to be successful. The goals of the Benjamins and Whitman study were twofold: "to guide the selection of intervention activities and to focus educational efforts, and, to measure changes that could be attributed to these activities" (p. 384). The two schools chosen for the study formed wellness councils, wrote wellness policies, and implemented policy changes or activities. Areas targeted were health education, physical education, school environment, family involvement, and staff wellness. Health education presented a challenge due to the lack of readily available culturally appropriate materials (Benjamins & Whitman, 2010). Because these two schools were private schools, they did not participate in a federal school lunch program and only provided lunch twice per week. Schools that participate in the federal school lunch program are required to have a wellness policy and a wellness council. Parents and family planned, implemented, and served on the newly formed wellness councils. Health related articles were written and published in the school newsletter on a weekly basis. Teachers and staff at the schools participated in a variety of activities to underscore the fact that they were considered role models. Mental health issues also were addressed, including stress management, conflict resolution, and body image as they related to eating disorders (Benjamins & Whitman, 2010). According to the results of the study,

students had not incorporated this knowledge into their lived experience (Benjamins & Whitman, 2010).

Sealy and Farmer (2011) implemented the transtheoretical model to determine the readiness of parents to change lifestyle and dietary habits to reduce their child's weight. The transtheoretical model of change includes five stages: (a) precontemplation – unaware of a problem, (b) contemplation – acknowledgement of problem but no commitment to change, (c) preparation – planning steps toward change, (d) action – actively engaged in modifying behaviors, and (e) maintenance – consistently maintained behavioral and cognitive changes (Sealy & Farmer, 2011, p. 275). Sealy and Farmer (2011) indicated the majority of parents in the study to be either in the action or maintenance stages. The availability of healthy foods did not improve the parents' readiness for change, nor did the promotion of physical activity in their children (Sealy & Farmer, 2011). Parents did seem to understand the consequences of a poor diet and inactivity but were not ready to make changes (Sealy & Farmer, 2011).

Relapse after successful treatment is related to the ability to remain in touch with the clients (Bauer, de Niet, Timman, & Kordy, 2010). In everyday life, it is difficult for many clients to remain compliant with skills learned from interventions in a protected therapeutic environment. This 36-week study included the use of text messaging via mobile phone to clients that had completed an intervention for childhood overweight (Bauer et al., 2010). Feedback messages were sent to clients using text messaging from a large pool of pre-formulated statements. These statements were of an encouraging tone, provided positive reinforcement of behavior changes, and suggested alternate ways of

dealing with any temptations to their recent behavior change. The children were then prompted to send back a message of receipt. The study revealed that 67% of participates adhered to the intervention and 51.4% maintained or reduced their BMI (Bauer et al., 2010).

Childhood obesity may even adversely affect national security (Gollust, Niederdeppe, & Barry, 2013). In a 2012 study, retired military leaders expressed concern that 25% of the 17 to 24-year-old age group were above the weight thresholds for military service (Gollust et al., 2013). Since 2002, there has been a 61% rise in obesity among active duty members of the United States military forces (Christeson, Clifford, Taggart, Beakey, & Carrier, 2015). Obesity related health issues have increased the military health care spending to as much as $1.5 billion annually (Christeson et al., 2015).

Conceptual Theory or Model and Project Framework

Social cognitive theory seeks to explore the interaction that occurs between a person, environment, and behavior (The Social Cognitive Theory, 2013). A person reacts according to the learned experiences they have had. Behaviors reflect the social context of the learned experiences (The Social Cognitive Theory, 2013). “Social Cognitive Learning Theory (2013) has been an effective way to predict and explain outcomes for healthy behavioral changes and has routinely selected for the framework in primary care treatment of childhood obesity” (p. 57). The six tenets of the Social Cognitive Theory are; reciprocal determinism, behavioral capability, observational learning,

reinforcements, expectations, and self-efficacy (The Social Cognitive Theory, 2013). These six tenets can be applied to childhood obesity.

Children live in a dynamic and changing world. Each child interacts with other persons, environments, and behaviors, each influencing the other. To successfully demonstrate behavior capability, a child must know what to do and how to do it. A child that has had the opportunity to observe an influential adult make good nutritional choices will be more likely also to make good nutritional choices. The same observation also applies to physical activity. A child whose parents are physically active will also be more apt to be physically active.

The tenet of reinforcements refers to the internal or external responses to a person's behavior that affect the likelihood of continuing or discontinuing the behavior (The Social Cognitive Theory, 2013, p5). Small children learn not to spit food all over the room through negative responses from caregivers and consequences imposed due to this behavior. Somewhat related to reinforcement is the tenet of expectations. Using the same child as an example, the child learns to expect praise for eating politely, and the good behavior may lead to an expectation of a reward.

"Self-efficacy refers to the level of a person's confidence in his or her ability to successfully perform a behavior" (The Social Cognitive Theory, 2013, p5). An illustration of self-efficacy that encompasses individual, environmental, and behavioral responses occurs as a person can select healthy nutritious items at the market. When this individual then prepares and consumes these nutritious choices, they have exhibited a

learned behavior. Based on the premise that individuals have the ability to determine if health habits are beneficial and also have the ability to change habits, social cognitive theory relies on self-efficacy of individuals (Sharma, Wagner, & Wilkerson, 2006).

Social cognitive theory when applied to certain behaviors will change the course of childhood obesity. Nutritional habits need to include fruit and vegetable consumption of five or more servings per day. This aspect may be challenging as the price of fresh fruits and vegetables can be quite costly. Combating childhood obesity will require that moderately intense physical activity be increased to 30-60 minutes daily. It is recommended to limit television viewing or video games to one to two hours per day. Video games that incorporate physical activity such as Wii tennis can be quite fun. This type of video game should be encouraged. Increasing water consumption to eight glasses per day will also be important to combat childhood obesity. During early fall and late spring when classrooms tend to get quite warm, schools should allow and encourage students to have a water bottle with them. Allowing water bottles year round at school will support the increase of water consumption to eight glasses of water per day.

The health promotion model involves motivating someone to improve their well-being and actualize their health potential (Plotnikoff, Costigan, Karunamuni, & Lubans, 2013; Skybo & Polivka, 2007). The health promotion model includes both a public health and psychosocial approach. The issue of childhood obesity is certainly a concern for public health. The use of a psychosocial approach will assist in the assessment of factors that influence how and why childhood obesity exists within a family. The psychosocial

aspect is critical. Overweight children often endure teasing and might develop a low self-esteem. Low self-esteem can affect the way the child performs in school and social situations. Low self-esteem can persist throughout life resulting in an obese child becoming an obese adult. Marcus, Dubbert, Forsyth, McKenzie, Stone, Dunn, and Blair (2000) indicated that children in primary grades are at the optimal age to develop a lifetime of good habits.

The logic model, also known as the theory of change, is the framework for this project. Hulton (2007) stated that logic models are a practical method for systematically collecting outcome data for community-based programs (p. 105). The logic model can be used graphically to create a visual relationship between the resources, activities, outputs and outcomes of a program or project. The steps of a logic model will allow the user to plan the project with the end in mind. Evaluation will include the activity of each step.

Using the logic model, the project focused on the walkability of the sidewalks in the two largest communities in Wilson County. The early steps of the project included procurement of city maps for the two communities in Wilson County. The central portions of the communities and the routes leading to the schools were determined. A visual assessment of the sidewalks was completed. A property owner on the identified route voiced concerns about privacy of property. The project was revised to eliminate photographs of sidewalk conditions. A map was developed to highlight the safest walkable routes for the output step. Outcomes are further broken down to short term outcomes and long term outcomes. Short-term outcomes included the determination of

the safety of the sidewalks leading to the schools, and to increase physical activity of schoolchildren by encouraging walking to school. The long-term outcome was to tie the need for physical activity to reducing and preventing childhood obesity in Wilson County.

"School attendance is a generic part of childhood; therefore schools provide a conceivable and logical setting for physical activity promotion" (Ridgers, Stratton, Fairclough, & Twisk, 2007, paragraph 6). Encouraging children to walk to school will increase the amount of time the child spends in physical activity. Determining the safety of the sidewalks provides confidence when promoting walking to school.

The Pedestrian Mobility and Safety Guide (2013) utalizes maps, digital photographs, traffic counts, and information about pedestrian crashes when conducting an audit. Traffic counts and pedestrian crash information is not available, therefore those components were not included in this project. The questions associated with the sidewalk assessment were designed to elicit comprehensive information concerning the condition of the sidewalks (Pedestrian mobility and safety audit guide, 2013).

Summary

There is a plethora of information regarding both childhood and adult obesity available. I attempted to use sources that reflected both diversity and sameness to this project. This project targeted two small rural communities, it is also important to include information concerning obesity issues found in urban settings. Family-based behavioral weight reduction programs have proven to be successful. Increasing physical activity

when coupled with a healthy diet should lead to a decreased overweight or obese physique. The parent who is in charge of the meal planning and preparation is the person who is most influential in the adoption of a healthy diet. Rural areas pose an increased risk of childhood obesity in part due to lack of healthy food resources. The lack of outdoor facilities that promote physical activity and little access to playgrounds also play a role in the increased rate of childhood obesity in rural areas.

Section 3: Approach

Introduction

Overcoming childhood overweight and obesity will require an increase in physical activity. Family involvement with reduction of sedentary behaviors is crucial. Increasing physical activity of children can be as simple as encouraging the child to walk to school. The purpose of this project was to assess the walkability of the sidewalks leading to the schools to determine whether it is advisable for school-age children to walk to school.

Program Design

This childhood obesity program focused on the walkability of the two largest communities in Wilson County: Neodesha and Fredonia. Improve childhood obesity through the promotion of healthy exercise such as walking will occur only if the safety for pedestrians is ensured. Results of this walkability assessment were used to recommend future actions concerning walking to school. The walkability assessment included prioritized issues targeted for action.

The walkability assessment was completed using an adapted tool from the Pedestrian Safety and Mobility Audit Guide (AARP, 2013). Pedestrian safety and the walkability of sidewalks are important elements of any effort to improve physical fitness (AARP, 2013). The sidewalk assessment included many components from the Pedestrian Mobility and Safety Audit Guide (AARP, 2013):

- Are sidewalks provided beside the street?
- Are sidewalks continuous and on both sides of the street?

- Is the sidewalk width adequate for pedestrian volumes?
- Is there a landscape strip between the sidewalk and the street, or is there a narrow sidewalk right beside the street?
- Does the sidewalk end abruptly?
- Is there a break or missing section of sidewalk?
- Does the sidewalk provide at least a 48-inch minimum accessible width?
- Is the sidewalk level, smooth, and free from puddles, holes, cracks, and other discontinuities?
- Have the surfaces been maintained?
- Were the sidewalks designed to minimize slopes?
- If a slope is present, are there intermittent level landings, places to stop and rest if needed?

Population and Sampling

The Fredonia school enrollment for 2015-2016 school year was 203 students at Lincoln Elementary School, the middle school, and the high school. The Neodesha school enrollment for 2015-2016 school year was 226 at Heller Elementary, North Lawn Middle School, the junior high, and the senior high school. Wilson County Kansas is not racially diverse, and 95% of the population is Caucasian (Kansas Rural Health Works, 2013). The average income in Wilson County is $32,000 compared to the state of Kansas income average of $39,000 and the United States average income of $40,000 (Kansas Rural Health Works, 2013). Statistics indicated that 433 children (20.2%) of the population were living in poverty (Kansas Rural Health Works, 2013). Within Wilson

County, almost 10% of the population receives food stamp benefits (Kansas Rural Health Works, 2013). In addition, approximately 58% of the adult population self-reported as married, leaving a relatively large population as unmarried (Kansas Rural Health Works, 2013). These data indicate that children in Wilson County may be at risk for less than optimal living arrangements and nutritional deficiencies.

The walkability assessment includes a map of the most common pedestrian routes leading to the public schools of both communities. The decision not to include photographs of each block along these routes occurred due to a concern from a property owner on the route. The specific objectives for the walkability assessment were: determining the most common pedestrian routes; documentation of the sidewalk conditions; and presentation of this information to the target audience. Completed information documenting the walkability of community sidewalks has been presented to city administrators and school officials.

The ultimate goal of this project was to improve childhood obesity by promoting exercise through walking. Sidewalks included in this project were direct routes towards the schools and are outlined as follows.

Fredonia

- Lincoln Elementary School is located at 713 N 9th. Sidewalks on Jackson Street from Eighth to Ninth Street were included. Sidewalks on Eighth Street from VanBuren to Monroe were included. These blocks were identified as F1 through F-5.

- The middle school is located at 203 N 8th. Sidewalks from Washington to VanBuren on Eighth Street were included in this assessment and labeled project Blocks F-6 through F-14.
- The high school is located at 916 Robinson. Sidewalks from Jefferson to Robinson on Tenth Street were labeled project Blocks F-15 through F-17.

Neodesha

- Heller Elementary is located at 415 N 8th. Sidewalks on Eighth Street from Main to Church were included and labeled project Blocks N-1 through N-5.
- The junior high school and the high school are located at 1000 N 8th. Sidewalks on Eighth Street from Church to Grandby were included and labeled project Blocks N-6 through N-12.
- North Lawn School is located at 620 Grandby Street. Sidewalks on Grandby Street from Eighth to Fourth were included and labeled project Blocks N-13 through N-16.

Data Collection

The original plan included sidewalk photographs taken of each block along the identified routes. I encountered a few property owners who were uncomfortable with me photographing the sidewalks on their property. For this reason, the sidewalk assessment form does not include photographs.

Instrument

The instrument used was a tool adapted from the Pedestrian Mobility and Safety Audit Guide (AARP, 2013). The original tool design came through a cooperative effort by the AARP and the Institute of Transportation Engineers. The intention of the Pedestrian Mobility and Safety Audit Guide project is to illustrate pedestrian safety and mobility at intersections and road segments (AARP, 2013). The adapted tool for this project was designed to conduct a field audit and collect the data on the physical condition of the sidewalks along the most common school routes in Fredonia and Neodesha (Appendix A). The tool allowed me to assess key characteristics of the sidewalks such as width, evenness, surface, and condition. Maps of Fredonia (Appendix B) and Neodesha (Appendix C) were used to identify the most common routes.

Protection of Human Subjects

The initiation of the project followed Walden University's Institutional Review Board approval (IRB approval number 03-12-16-0191229). This project did not require the collection of personally identifiable information. No identification of property owners along the route occurred, and no photographs of homes or properties were taken. There were no inadvertent personally identifiable data collected. Completed data sheets were kept in a private office. I completed the National Institute of Health human protection training to ensure protection of human subjects.

Data Analysis

Data concerning the condition of the sidewalks were collected block by block using the following criteria:

- Is the sidewalk width adequate for pedestrian volumes?
- Does the sidewalk provide at least a 48-inch minimum accessible width that would accommodate two individuals walking side-by-side?
- Is there a landscape strip between the sidewalk and the street, or is there a narrow sidewalk right beside the street?
- Does the sidewalk end abruptly?
- Is there a break or missing section of sidewalk?
- Is the sidewalk level, smooth, and free from puddles, holes, cracks, and other discontinuities?
- Have the surfaces been maintained?
- Were the sidewalks designed to minimize slopes?
- If a slope is present, are there intermittent level landings (places to stop and rest)?

I tabulated the data and described the condition of the sidewalks. City blocks in both communities are 310 feet long. An example of a condition statement is "Block 15 east side of the street; the sidewalk is brick, contains two uneven spaces, approximately 100 feet of sidewalk is not level." Conditions of the streets included in the project were evaluated and a determination was made regarding whether one side or the other proved to be a safer walking surface. Based on the analysis of the sidewalk condition, sidewalks with the fewest issues as identified by the evaluation tool were identified as the safest surfaces to walk on. With child safety in mind, I recommended one side of the street or the other along the entire school route to discourage multiple street crossings.

Evaluation Model

The evaluation process of a project should begin when the project begins (Hodges & Videto, 2011). The framework for this project was the logic model, also known as the theory of change. The logic model was useful in the evaluation process. When the logic model is used graphically to create a visual depiction of the resources, activities, outputs, and outcomes of a program or project, performance evaluation can be easily accomplished by viewing the activity of each step (see Figure 1). The steps of a logic model allow the user to plan the project focusing on the change process with the end in mind. The logic model is not static and works best with the understanding that the project is a dynamic system (Frye & Hemmer, 2012). Plans were made to document both intended and unintended outcomes.

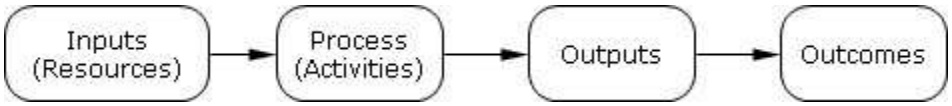

Figure 1. The logic model. (Glenaffric Ltd, 2007)

The walkability project was planned in linear steps (see Figure 2). The input step included adapting the Pedestrian Mobility and Safety Audit Guide (2013) for the walkability project. The processes/activities step evaluation included the data and the compiled results from procurement of sidewalk conditions. In the output step, the compiled walkability information was delivered to target audiences. The outcome step included feedback information on the delivered project.

Inputs	Processes	Outputs	Short-term Outcomes	Intermediate Outcomes	Long-term Outcomes
Pedestrian Mobility and Safety Audit Guide	Map the most common pedestrian route for both communities. Special attention to routes leading to and from schools.	Delivery of compiled walkability information to targeted audience	Compile data from the completed sidewalk audit. Evaluate the sidewalk conditions using the Wilson County Pedestrian Sidewalk Walkability Assessment Tool.	Encourage increased physical activity of children in Wilson County through encouraging walking for exercise	Childhood obesity reduction and prevention Link lack of physical activity to childhood obesity
	Identify and document condition of sidewalks along the route				

Figure 2: Wilson County childhood obesity logic model

Summary

The purpose of this project was to influence the reduction of childhood obesity by promoting physical activity of children. A walkability assessment of the sidewalks leading to public schools was conducted to determine whether an endorsement of a "walk

to school" campaign would be a safe recommendation. Sidewalk conditions were examined, documented, and analyzed for safety components using a standardized form. Information from the walkability assessment was made available to school officials and city administrators.

Section 4: Findings, Discussion, and Implications

Introduction

The purpose of this DNP evidence-based practice project was to perform a walkability assessment of the two largest communities in Wilson County Kansas. Identifying walkability issues of the sidewalks leading to public schools was the objective. Enrollment in Fredonia and Neodesha schools during the 2015-2016 school year included 429 students. Increasing the physical activity of these children with activities such as walking to school supported reduction of childhood obesity. In Section 4, I present the findings of this project, including the conditions of the sidewalks leading to schools in both communities. I also discuss the findings in the context of the literature and include implications for practice, social change, project strengths and limitations and analysis of self.

Summary of the Findings

The sidewalks of both communities vary considerably in type, condition, and accessibility. Some streets do not have sidewalks at all. Children walking along those streets must walk either on the grass parallel to the street or in the street. Both communities have one important road (Eighth Street), which is the principal north-south route on which schools are located.

The initial design of this project included photographs of the sidewalks. I encountered a few property owners who were uncomfortable with me shooting pictures of their sidewalks. For this reason, I did not include photographs in the sidewalk

assessment form. The completed sidewalk assessment form identifies which block the information pertains to and includes a rating scale about that particular block.

What I did not know when I started this project was that in 2008, the Neodesha School District in coordination with the City of Neodesha participated in the Safe Routes to School Project. Based on student information, the west side of Eighth Street was determined to be the most traveled sidewalk for students walking to and from school. A sidewalk assessment conducted in 2008 indicated many deficient conditions on both the east and west side of Eighth Street. The Neodesha School District received grant funding from the Safe Routes to School Project in Kansas to improve the sidewalks on the west side of Eighth Street. Those sidewalks remain in excellent condition today.

The assessment tool used in this project, the Wilson County Pedestrian Sidewalk Walkability Assessment Tool, was adapted from Pedestrian Mobility and Safety Audit Guide (AARP, 2013). The scale from the tool included the following descriptors for sidewalk condition: excellent, very good, good, some problems, many problems, and disrepair or non-existent. Each block in the study was identified with an initial: F for Fredonia blocks or N for Neodesha blocks. Likewise, each block had an identifying number. For example, F7 referred to a Fredonia block of Eighth Street between Madison and Jefferson. The assessment tool included the elements of width, landscape strip, sidewalk surface condition, and wheelchair ramps to determine the state of the sidewalk. Adequate sidewalk width is required, for both the amount of pedestrian traffic and the recommended 48-inch minimum. A landscape strip between the street and sidewalk provides a buffer zone between the automobiles on the street and pedestrians on the

sidewalk. Abrupt ends to the sidewalk or sections missing in the sidewalk are a safety hazard. The condition of the sidewalk surface, such as levelness, smoothness, and being free from puddles, holes, and cracks, was identified as well. Finally, I made a notation concerning the presence or absence of wheelchair ramps required by the Americans with Disabilities Act (ADA).

Fredonia Sidewalks

The three schools in Fredonia have Eighth Street in common. Nine blocks separate Lincoln Elementary School located at the north end of Eighth Street, and the high school, which is located at the south end of Eighth Street. The middle school is located on the west side of Eighth Street between Jefferson and Adams. In Fredonia, only two blocks on the west side of Eighth Street had sidewalks in excellent condition. These two blocks were the block where the middle school is located and the block just south of the middle school. Additionally, the block identified as F6 on the west side of Eighth Street between Monroe and Madison, was in very good condition. These three blocks, F6, F7, and F8, had the only positive sidewalk descriptors of very good or excellent.

Vegetation covers most of the sidewalk in Block F5 and contains four sections of uneven sidewalk that have at least a two-inch difference in height. The height differences create a tripping hazard for pedestrians walking on these sidewalks. The unevenness of the sidewalk is also evident in Block F4 but not to the extent present in Block F5. Sections of the sidewalk are missing in Blocks F3 and F9 on the west side of Eighth Street. Sidewalks do not exist on the west side of Eighth Street in Blocks F2 and F10.

The ramp requirements to meet the ADA are present on the west side of Eighth Street on both ends of Blocks F7 and F8. The south end only of Block F6 contains an ADA ramp. Aside from the blocks mentioned above (F6, F7), and F8, none of the other blocks have ADA ramps on the west side of the block at either end of the block.

The ADA ramp requirements are not consistently present on the east side of Eighth Street either. Block F8, directly across the street from the middle school has an ADA ramp on the north end of the block only. However, the south end of Block F7 does not have an ADA ramp. The lack of consistent ADA ramps will hamper the use of wheelchair or assistive walking devices. Block F7 does have an ADA ramp at the north end. Continuing north on East Eighth Street, Block F6 has an ADA ramp on the south end only.

Many of the existing sidewalks on the east side of Eighth Street have not been maintained satisfactorily to support pedestrian traffic. The north end of Block F6 contains three large sections of sidewalk that have at least a 2-inch uneven rise or drop. Vegetation overgrowth, unevenness, and missing sections of sidewalks are apparent in Blocks F5, F7, F9, and F10. Sidewalks are non-existent in Blocks F2, F3, F4, and much of F8. There are no sidewalks on the east side of Eighth Street in Fredonia that can be categorized as good for pedestrian traffic.

Lincoln Elementary School in Fredonia has a physical address of 713 N 9th. Lincoln School and school grounds cover the entire block of Jackson Street from Eighth Street to Ninth Street. The drop-off and pick-up point for students have been relocated

from the school front entrance to the current location on Jackson Street. The sidewalks on the north side of Jackson where the school is located have very good sidewalks. I was surprised to find that there is no ADA ramp on both ends of this block. Directly across the street from Lincoln Elementary School, on the south side of Jackson from Eighth Street to Ninth Street, there are no sidewalks at all.

Fredonia High School has a physical address of 916 Robinson. It is located on an elongated block of Robinson from Eighth Street to Tenth Street. The south side of Robinson where the school is located has excellent sidewalks. The north side of Robinson across the street from the high school has no sidewalks at all.

Neodesha Sidewalks

There are four schools in the Neodesha school district. Heller Elementary School has a physical address of 415 North Eight Street. Heller Elementary includes pre-school, kindergarten, first, second, and third grade. North Lawn Middle School includes fourth, fifth, and sixth grade. The address of North Lawn Middle School is 620 Granby. The middle school block is an elongated block that starts at Eighth Street on the west end and runs to almost Fourth Street on the east end. Included in this block are the Neodesha Splash Zone swimming pool and several large playground areas. The junior high and high school reside in the same elongated block and share the address of 1000 North Eight Street.

The Neodesha School District in conjunction with the City of Neodesha received grant funding from the Safe Routes to School Project in Kansas. As a result, new

sidewalks were constructed from Main Street to Granby Avenue on the west side of Eighth Street. Those sidewalks on the west side of Eight Street remain in excellent condition. I had no issues with recommending the west side of Eighth Street for active travel to school.

The conditions of the sidewalks on the east side of Eighth Street are a different matter. In the Neodesha assessment of sidewalks, Block 1 does not provide the recommended 48-inch width in two locations. Two gas meters protrude into the sidewalk decreasing the width to 36-inches. The slope at the alley contains some 2-inch deep holes and other pocks in the asphalt. Block N2 has the only sidewalks on the east side of Eighth Street that are excellent. Meticulous maintenance of the lawns and homes in this block caused me to speculate that the current homeowners will continue to provide excellent sidewalks. The east side of Eighth Street lacks consistency in the condition of the sidewalks, and therefore would not be the safest side for schoolchildren to walk on to school.

A definite difference between the Fredonia and Neodesha communities is the presence of ADA ramps. The 10 blocks on the east side of Neodesha Eight Street that have sidewalks have ADA ramps on both ends of the block. Not all of the ADA ramps were in pristine condition; some contained broken areas, pocks, or the street entry was not level. There is no difference in the number of individuals using wheelchairs in both communities.

Issues with the condition of sidewalks in Blocks N3, N4, and N5 include; overgrowth of grass onto sidewalks, rough surfaces, uneven surfaces, and standing water. Blocks N6, N7, and N8 are one elongated block between Church Street and Carolina

Street and have sidewalks that are a mixture of paved and brick surfaces. Much of the brick surfaces are 36 inches in width and have grass overgrowth. The concrete sidewalks contain several rough areas. Block N9 includes several areas where sidewalk height varies by 2 inches or more. Blocks N6, N7, and N8 also include many mature trees that hamper light filtration. These uneven areas would be safer for pedestrian traffic if the uneven places were marked with bright paint or tape strips. Blocks N11, N12, and N13 do not have any sidewalks at all.

Discussion of Findings in the Context of Literature

Childhood obesity is increasing. Lifetime adverse health implications are linked to obesity. To combat childhood obesity, promoting physical exercise is paramount, and active travel to school is desirable (McDonald, Yang, Abbott, & Bullock, 2013). During the last 40 years, the number of schoolchildren who walk to school has declined. In 1969, 41% of students walked or biked to school, but by 2009, this percentage was down to 10% (Chillon, et al., 2014).

The literature indicated several factors that influence the decision of active travel to school. Social norms, socio-demographic factors such as ethnicity and income, and attributes of the physical environment are factors in the choice to walk or bike to school (McDonald et al., 2013). Distance to school, weather, and sidewalk conditions also influence the decision to walk or bike to school. Chillon et al. (2014) found that parents' concern about safety correlated with less active travel to school. Conversely, when pathways to school were more pedestrian friendly, higher rates of active travel to school occurred (Chillon, et al., 2014). Parents in the Chillon et al. (2014) study described an

unacceptable distance as greater than 1 mile. Fredonia and Neodesha are both small communities with very few homes outside a 1 mile radius. Both communities provide cross-town busing for students whose homes are located closer to a school that the children are not attending. The students catch the cross-town bus at the school closest to their home.

Rural areas struggle with the upkeep of infrastructure. Sidewalks and crosswalks may not be maintained and may pose safety risks (Lifsey & Mantinan, 2014). The condition and safety of the sidewalks in this project supported the statements from Lifsey and Mantinan. In Fredonia, there was no clear path to school that did not pose safety risks. Neodesha has excellent sidewalks on the west side of Eighth Street, but not on the east side. I have no hesitations about recommending active travel to school using the West Eight Streeth route.

Implications

Habitual physical activity will influence the health status of individuals over their lifespan. Children who walk or ride a bike to school develop healthy habits of daily physical activity (Chillon, et al., 2014). Active travel to school may have a positive impact on reducing the obesity epidemic (Saunders, Green, Petticrew, Steinbach, & Roberts, 2013). "Active travel is seen by policy makers and practitioners as not only an important part of the solution to obesity but also for achieving a range of other health and social goals, including reducing traffic congestion and carbon emissions" (Saunders et al.,

2013, p. e69912). Public health policies should include the increase of physical activity by active travel.

In response to the upward trend of childhood obesity, the U.S. government adopted the Child Nutrition and WIC Reauthorization Act in 2004. A requirement for participation in the National School Lunch Program charges each school district to create local wellness policies. The school wellness policies must include nutrition education, promotion of physical activity, and nutrition guidelines for all foods available on the school premises with the objective of promoting health and reducing obesity (Hoxie-Setterstrom & Hoglund, 2011). School nurses are key stakeholders in the development and implementation of these wellness policies. Active travel to school fits right into the wellness policies.

Practice

School nurses are uniquely stationed to observe growth patterns and influence children concerning nutrition and physical activity to combat overweight and obesity. Mandates are in place that requires school nurses to monitor and promote children's health in the school setting (Steele, et al. 2011). "Opportunities exist for the school nurse to lead, advocate, and collaborate with stakeholders to intervene for the benefit of all school children (Hoxie-Setterstrom & Hoglund, 2011, p.330). In the two communities included in this project, both school districts employ school nurses who actively promote healthy lifestyles. Educational programs include suggestions for fun family activities with suggestions and recipes for healthy snacks. Bicycle rodeos were held recently in both

communities through the cooperative efforts of the school nurses, physical education teachers, local hospitals, police department, and local insurance agents.

Educating future nurses about the issue of childhood obesity is vital in reducing the percentages of overweight or obese children. Recognizing the need to reach new nurses as they enter nursing practice, the National League of Nursing (NLN) has announced an expansion of the NLN Center for Excellence in the Care of Vulnerable Populations. NLN plans to highlight the pediatric issues of lack of proper nutrition, obesity prevention and control, and pediatric wellness. Anne Bavier, president of NLN, states this new focus "will enable nurse faculty to incorporate new and relevant pediatrics education into nursing curricula and produce graduates with vitally needed skills" (Tagliareni, 2017).

Research

The CDC and the Healthy People 2020 both have goals to reverse the trend of inactive travel to school (U.S. Department of Health and Human Services, 2014). Parental impressions of street-crossing danger, traffic danger, unsafe sidewalks, distance to school, and crime danger influence the parent's decision to allow the child to walk to school. Further research to determine parent perceptions of to and from school walkability is warranted (Napier et al., 2011).

Social Change

Safety and convenience are factors in determining if parents allow children to walk to school (Napier et al., 2011). In the hectic activity of the morning, parents want

the peace of mind that the children are safely at school. By driving them to school, the parent can then report to work without worry of whether the children arrived at school. Parents are more likely to allow children to walk home from school in the afternoon especially if the time of arrival at home corresponds with time the parent returns from work (Saunders et al., 2013).

Active travel to school has declined in the United States from 47.7% in 1969 to 12.7% in 2009 (Stewart et al., 2012). Increased childhood obesity rates, increased traffic congestion, and increased air pollution from fuel emissions are all influenced by this trend (Stewart et al., 2012). Establishing a dependency on automobile travel to and from school is likely to continue into adolescence and adulthood (Giles-Corti, et al., 2011). The trip to and from school provides children with ten opportunities to walk during the school week (Napier et al., 2011).

> Societal pressures have created the expectations that children do not walk to school, in part due to parental and child perceptions that walking to school is neither safe nor convenient. Some researchers have claimed that today's children are part of a "bubble wrap" generation where children's active travel around home is restricted by a combination of parental anxieties, time pressures, and environmental changes (Napier et al., 2011, p45).

During the school year, school-age children spend significant portions of their days at school. "Schools are closely linked with their communities, are accessible to all children regardless of socioeconomic status, and maintain relationships with children and

families for a long period of time" (Steele, et al., 2011, p. 129). School nurses have the unique opportunity to collaborate with children and their families, other school employees, and medical professionals to promote a healthy lifestyle (Steele, et al., 2011).

In 2007, statistics revealed that the labor force participation rate for mothers with children under 18 was 71% (Morrissey, Dunifon, & Kalil, 2011). When working mothers are the primary source of transportation to and from school and to and from extracurricular activities, meal preparation time suffers. The lack of time results in reliance on either fast foods or prepared foods, unfortunately, higher in fat and calories (Morrissey et al., 2011). As mentioned earlier, more meals are consumed away from home, and less of the food budget is spent on fruits and vegetables (Sizer & Whitney, 2008; Morrissey et al., 2011).

The current 24/7 service driven economy has changed scheduling employees to a nonstandard work hour timetable (Li, et al., 2014). Deviating from the standard workweek of Monday-Friday has created "tag team' parenting (Li, et al., 2014). Tag team parenting allows the family to have one parent with the children at all times which reduces the need for childcare. An unfortunate result when the parents rotate through shifts is inconsistencies in routines (Miller & Chang, 2015). Meal preparation of unhealthy choices and disruption in nighttime sleep habits resulting in loss of sleep are associated with increased risk of obesity in children (Miller & Chang, 2015).

Project Strengths and Limitations

Strengths

I have a passion for the small community where I live. Issues associated with overweight and obesity are affecting the overall health of individuals in my community and the county in which I reside. This project presented the opportunity to identify safety risks when encouraging children to walk to school. Active travel to school helps children to be more physically active, reducing the possibility of overweight and obesity.

Limitations

This project evolved from a fall prevention program I prepared and presented at the Senior Citizen Center in Neodesha. For the fall prevention program, I used the Pedestrian Mobility and Safety Audit Guide published by AARP to evaluate and improve walkways in an attempt get senior citizens more active. This guide served as my inspiration for the safety of sidewalks childhood obesity project. Prior to embarking on this project I did not involve the school administrators or the school nurses of either community. If I had, I would have learned that the Neodesha School District participated in the Safe Routes To School (SRTS) program which provided partial funding for sidewalk improvements.

Recommendations for Remediation of Limitation in Future Work

Before the beginning of any future projects I might undertake, I will strive to look more holistically at the project. I have learned that the start of a project may look very

different from how the project evolves over time. Through this project, I recognize the importance of searching for stakeholders that can enrich the project.

Implications for Future Professional Development

Fighting overweight and obesity will continue to be a global challenge. I can see myself becoming active at the community level in projects that support proper nutrition, provide education about healthy eating, and promote physical activity. I hope to develop a strong voice for encouraging other individuals to join the fight against overweight and obesity.

Summary and Conclusions

Increasing physical activity in children must occur if there is any hope of reducing overweight and obesity in children. Physical activity coupled with healthy eating may provide the escape from the obesity cycle that is occurring. Statistically, if one parent is obese, there is a 50 percent chance that the children will also be obese. However, when both parents are obese, the children have an 80 percent chance of being obese (American Academy of Child and Adolescent Psychiatry, 2001). It is unfortunate that there are schoolchildren in Neodesha whose only outside physical activity is walking from the house to the car, from the car into school, outside recess at school, from the school to the car, and walking back to the house after arriving home via car from school (Orr, 2016). Active travel to school promotes the development of the healthy habit of physical activity. Safe travel to school does require an awareness of the condition of the sidewalks and planning for the recommended route.

Section 5: Dissemination Plan

The results of this project are being presented to school officials, school nurses, school faculty, and the local parent-teachers associations at the study site. The Wilson County Health Department, the two local hospitals, health professionals, and law enforcement will also be offered a presentation. There is also an opportunity to present the project to an area nursing organization.

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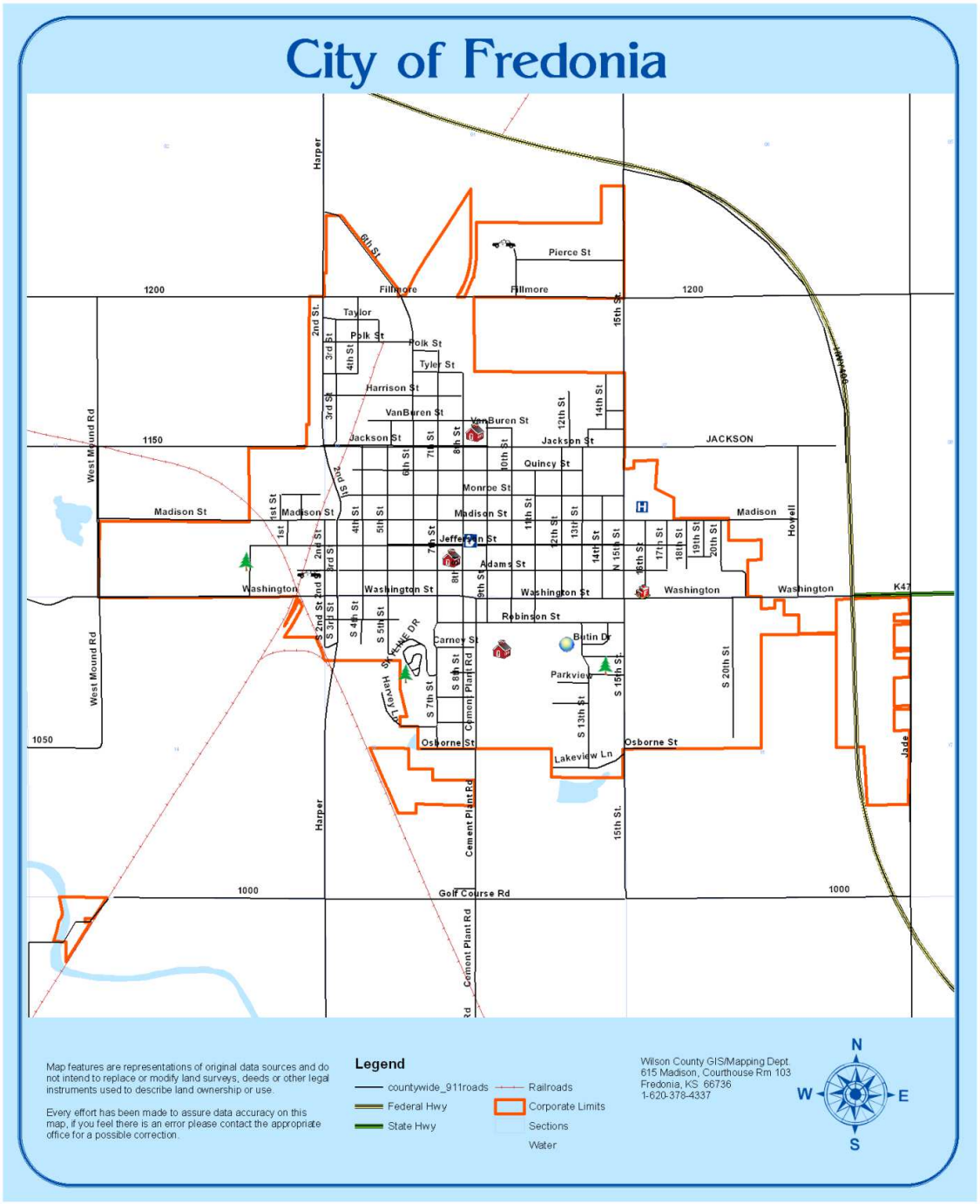
Appendix A: Wilson County Pedestrian Sidewalk Walkability Assessment Tool

Photo inserted is Block (between street name and street name)

- Is the sidewalk width adequate for pedestrian volumes? _____
- Does the sidewalk provide at least a 48-inch minimum accessible width? _____
- Is there a landscape strip between the sidewalk and the street, or is there a narrow sidewalk right beside the street? _____
- Does the sidewalk end abruptly? _____
- Is there a break or missing section of sidewalk? _____
- Is the sidewalk level, smooth, and free from puddles, holes, cracks, and other discontinuities? _____
- Have the surfaces been maintained? _____
- Were the sidewalks designed to minimize slopes? _____
- If slope is present, are there intermittent level landings (places to stop and rest)?

Appendix B: Map of Fredonia



Appendix C: Map of Neodesha