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Understanding Community and Family Barriers and Supports to Physical Activity in American Indian Children

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Increasing physical activity (PA) in children and adults is necessary to prevent or ameliorate chronic diseases such as obesity, type 2 diabetes and cardiovascular disease. Interventions designed to increase PA at the individual and community level through policy and environmental change are essential. American Indian (AI) communities face a disproportionate burden of chronic disease and are eager to work on multi-level methods for disease prevention.¹ Over the past 10 years our research group has been partnering with multiple AI communities in northern Wisconsin on research to understand barriers and supports to healthy lifestyles and PA. Methods have included the WINGS epidemiological work and parental questionnaires² (see this issue), key informant interviews and focus groups³⁻⁴, PhotoVoice/GIS mapping, accelerometry/direct observation⁵, and environmental assessment. An intervention, Healthy Children, Strong Families, and Supportive Communities, is underway and focuses both on the family environment and aiding individuals in making healthy choices.⁶ The intervention also assists communities in making community level changes to support healthy lifestyles.

Our journey with these communities to understand the prevalence of obesity and cardiovascular disease and the role of attitude and environment in order to aid intervention design has taught us many valuable lessons. The framework of our work has been community based participatory research⁷⁻⁸, and tribal members were involved at all stages of the research whenever possible. In this commentary, discussion of the lessons learned from each of these methods is divided into 3 realms: community views and suggestions, objective measurement, and environmental assessment. Some methods cross more than one realm. These notes from the field may help other communities as they travel a similar journey toward wellness.

Community Views and Suggestions

During the WINGS study, the parent survey for parents of 3-8 year old children included an open ended question seeking suggestions for changes in the community that might encourage healthier lifestyles.² Caregivers provided 90 suggestions of how to promote healthy lifestyles in their community. Fifty-six of those suggestions specifically mentioned physical activity related changes. Common themes noted by caregivers were the desire for more family oriented activities, more activities and sports directed at younger children, parents needing to spend more time with children in activities, and needing more facilities for younger children/families.

Our key informant and focus group work showed the importance of understanding parental views of health in order to intervene in increasing PA. Parents had a view of health

dominated by the importance of social and emotional health. Parents often perceived inside to be a safer place for children. This translated into parents keeping kids inside and safe which, in turn, led to more sedentary activity vs. letting them play outside, which was perceived to be less healthy/safe in the short term.⁴

The Pathways study also conducted extensive formative research on PA prior to its initiation,⁹ and found a lack of PA opportunities, a lack of exercise facilities and programs, and a lack of parent-child activities, although parents were highly supportive of children's PA. As children in the Pathways study became older, other barriers to PA noted were homework, weather, fatigue after school, and being afraid of injury.¹ In our study, as in Pathways, WINGS parents gave a number of suggestions and are eager to have PA opportunities expanded for their young children.

Observation/Direct Measurement of Child PA

PA may play a significant role in modulating weight gain but is difficult to measure accurately in very young children. We did a pilot study of ten Head Start AI children (mean age 4.5 years) at one reservation. Children wore accelerometers as much as possible for 14 days, and families received monetary compensation for their participation. Children wore the accelerometers for an average of 10.7 days with average duration of wear of 9.1 hours. Child PA measured by accelerometry in our study showed low levels of moderate/vigorous activity and high levels of sedentary activity in these very young children, with the majority of time spent in light (42%) or sedentary activity (55%). No differences in any activity level were found for weekend days vs. weekdays or between boys and girls. Children were also observed in the classroom using the CPAF¹⁰ and excellent agreement between this measure and accelerometry was found.⁵ Based on this pilot study, accelerometry was chosen in our HCSF intervention as the method to objectively assess activity levels pre- and post-intervention.⁶ The intervention is currently ongoing, and we now have three years of practical experience with the use of accelerometers in this population.

Significant challenges in implementing accelerometry during the intervention, included: comfort/size issues with the belts; children or teachers removing the belts during naps or toileting; incidents such as accelerometers being eaten by dogs, being burnt in a fire, or lost etc.; difficulty in getting families to return accelerometers despite a daily cash incentive and self-return envelopes, necessitating multiple follow-up calls, home visits, etc. to retrieve them; children pushing the time stamp frequently; and shipping issues that necessitated figuring out when it was en route and when it was being worn by the subject. During 3 years of use, 64 accelerometers were purchased, 15 have been lost.

Lessons learned include the need for close parent and teacher participation in replacing belts inadvertently taken off by children, close attention to families using them by providing one to one instruction, daily follow-up and home visits if needed for pick up, and modification of the belts for young children, and increased attention to the importance of classroom acceptance/desirability by peers and teachers. Few intervention studies have been done with young AI children (less than 5 yrs old), and only two studies have used accelerometry in assessing PA in AI children.^{11,12} Our HSCF intervention will be one of the first to use accelerometry to measure PA in AI 2-5 yr olds and their primary caregivers.

Environmental Assessment

We have used traditional measures of assessing PA opportunities including direct observation of child activity at local playgrounds, assessment of the number of programs, and locations for PA, as well as using a participatory photomapping project with a small group (n=14) of AI youth (ages 11-14) to understand both their movements on one

reservation as well as their perception of health. With respect to PA, we have found that the existence of facilities does not equate to utilization, especially with respect to parks due to perceived and real safety issues inhibiting use by children. For example, in the photomapping project, a public basketball court was perceived to be “unhealthy” by children as it was the site of drug activity but a similar basketball hoop by a neighborhood house was “healthy” as it was a safe and inviting place to play. In addition, children were willing to bicycle on the state highway as it was perceived by them to be safer than the trails through the woods. Thus, despite access to outside opportunities, these many be perceived as unsafe and not be utilized by youth, and lastly, children may have very different ways of accessing community resources and differences in their perceived barriers vs. adults.

Lessons Learned

1. Local data, both for the individual and the community, is invaluable in engaging the interest of community members.
2. Obesity is not a perceived health issue for most families in WI AI communities.
3. Future health risks to children such as diabetes or cardiovascular disease are not perceived to be as important as current safety and “health”.
4. The definition of child “health” is different in these AI communities and focuses on emotional/social not physical health.
5. Both attitudinal and environmental issues are barriers to healthy choices.
6. Objective measurement of PA in free living adults and children with accelerometry is difficult but achievable with attention to issues.
7. Environmental assessments of PA opportunities are insufficient for understanding barriers to PA.
8. Qualitative research such as photovoice, key informant interviews and parental focus groups were essential in understanding child, family and community barriers and supports to PA.

Intervention Design

The collaborative intervention designed as a result of engaging the community includes understanding of these multiple barriers and supports to the community and families, focuses on family health and strength and not obesity prevention. It focuses first on engaging both the family and child and then on engaging the entire community in barrier reduction for healthy lifestyles in order to support families. We feel that to be helpful in AI communities, PA interventions should focus on: 1) providing interesting and fun things to do as a family, 2) expanding community programs and activity opportunities, trails, etc. for younger children and families, 3) understanding the role of safety issues and social support esp. adult males in increasing child PA, 4) if using accelerometry to evaluate intervention success, it is best used in a specific context such as at school or Head Start with close supervision and with more than 5 days of data collection. Our work with the communities involved has provided many important lessons in working with AI families and communities in their journey toward health and may be of use to other such communities in intervention planning.

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