Status and Potential of Community-Engaged Research to Investigate Physical Activity Interventions for Children with Autism Spectrum Disorder in Chinese-American Communities

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Abstract

Children with Autism Spectrum Disorder (ASD) engage in less physical activity (PA), and in one estimate[6] were 1.3 times more likely to be obese than their typically developing (TD) peers. Barriers to PA in children with ASD exist at the individual, family/peer and community levels of the socio-ecological model. Research on multilevel adaptations to PA programs has been promising. With adapted coaching, adolescents with ASD have achieved fitness gains equal to those seen in TD children, and have performed high levels of moderate-intensity PA in community settings. Social skills development has also been noted. Community-engaged research is well suited to identifying barriers to PA and designing programs and lifestyle approaches to health. It may be particularly useful for research with children with ASD and their families from culturally diverse communities. Scant research has been conducted on PA in ASD, but it is almost non-existent among Chinese-American children/families, for whom familial and cultural perspectives on ASD, modes of exercise and health, and other factors may diverge from the typical American norm.

Purpose

The purpose of this poster is to:

•Review research on multi-level determinants of PA and exercise, and on intervention procedures for children with ASD in general.
•Review research on community-engagement approaches for addressing PA and related health challenges in children with ASD.
•Describe Chinese-American cultural variables that may influence participation in PA in children with ASD and their families.

Multi-level Determinants of PA, Exercise and other Behaviors in Children with ASD

Numerous determinants in the form of barriers can influence PA and exercise in children with ASD. Sixteen such barriers were reported in the literature reviewed, all measured via questionnaires and interviews. Determinants were found at three levels, or “perspectives:” *individuals* (children) with ASD, *families*, including parents and siblings, and *communities*.

Multi-level Determinants of PA for Children with ASD

Perspective	Barriers	Findings
Individuals	Learning[15,16]	Physical activity (PA) skills were difficult to learn.
Individuals	Communication[10,12,15,16]	Fewer adolescents with ASD believed that PA was a way to make friends, and they had problems in communicating with others.
Individuals	Beliefs[7,16]	Fewer adolescents believed that PA would be good for their health.
Individuals	Screen Time[9,10,11,14]	Screen time and PA – both in number of hours and type of PA - were inversely correlated. But children with ASD showed better responses to verbal directives delivered through video.
Individuals	Behavioral problems[9]	Behavioral problems could be obstacles for children with ASD to be engaged with the others.
Individuals	Motor skills[9,11,12]	Motor difficulties affected the ability to perform PA.
Individuals	Age[2,8,9,13]	The older the children, the less they were to be engaged in PA.
Families	Supervision[9]	More supervision was needed when the children engaged in PA.
Families	Skills to promote inclusion[9]	Parents lacked skills for helping their children to make friends.
Families	Fear of being injured[1]	Parents feared that their child might be hurt during PA, and that their children might hurt others.
Families	Peers[12,16]	Children with ASD had difficulty talking with typically developing peers, who in many cases did not want to play with them..
Families	Time[12]	Parents wanted their children to learn to do homework, which took more time to complete as compared with typically developing children. Accordingly, children with ASD had less time for PA.
Families	Transportation[1,11]	Children with ASD had short-term challenges with transitions, which prevented them from moving indoors to outdoors and back, and from going to new places.
Communities	Opportunities[9,11,12]	Opportunities for children with ASD to enroll in PA were lacking and too costly.
Communities	Staff[1]	Lack of available programs and inexperienced personnel influenced the extent to which the needs of children with ASD were met.
Communities	Equipment[11]	Too few or inappropriate pieces of equipment were available for children with ASD to perform PA.

Community-engaged Approaches for Addressing PA and Related Health Challenges in Children with ASD

Few studies have employed community-based participatory research (CBPR) approaches to address the general needs of children with ASD, and to our knowledge no published studies have focused on PA in these children. However, one study used a community-based approach with adults with developmental disabilities.
Bazzano, Zeldin, and Garro (2007)[3] used a community-based approach to design a seven-month Healthy Lifestyle Change Program (HLCP) to address obesity and overweight in adults with developmental disabilities, aged 18-65. The authors conducted a pre-post test evaluation of HLCP, which was designed to increase knowledge, skills and self-efficacy about health, nutrition and fitness in participants. Measures were taken on BMI, abdominal girth, self-reported nutrition, and PA level to determine the effectiveness of the program. Data indicated that HLCP was associated with improved lifestyles, weight loss and increased community capacity, suggesting community-based approaches may be an effective and efficient way to encourage participants to be engaged in the health and exercise programs.

Chinese-American Cultural Variables: Do they Influence Participation in PA in Children with ASD and their Families?

- Chinese culture is quite different from American culture. Immigrated Chinese-Americans have had to adapt to the American culture. Although some studies were identified that suggested Chinese-American cultural variables may influence participation in PA in typically developing children, no research was found on children with ASD.
- Acculturation can influence a person's beliefs, attitudes, and behaviors[5]. In addition, changes in immigrants' health status are more apt to be associated with higher levels of acculturation in the second and third generations[5].
- Some studies also found that low-acculturation levels in families adversely affected their access to health and educational resources for promoting healthy nutrition and weight[4,5]. Limited awareness of obesity and health issues were related to obesity. With such limited awareness, family members might ignore the importance of PA.
- Other studies have indicated that socio-environmental factors might increase the likelihood of participation in PA among Chinese American children[17].
- Chinese culture and norms may shape parents' roles differently, as compared to their western counterparts. Chinese families place their children’s academic performance as the top priority; for example, parents may not support participation in PA until all academic assignments and household responsibilities are completed[17]. In such cases, children might have less chance and time to be engaged in PA.

Conclusion

Determinants at multiple levels influence the extent to which children with ASD engage in PA and exercise. At the same time, culture may be an important factor that influences engagement in PA. More research is needed in this area. Applying the social-ecological model and community-based programs of research might help us to better understand and confront health challenges among Chinese-American children with ASD and their families.

References

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