



Research in Action

Impact of Physical Activity and Sleep on Obese Latino Youth at Risk of Diabetes

Introduction

Little is known about the influence of 24-hour physical activity and sleep patterns on Type 2 diabetes in obese Latino youth. Yet, diabetes affects one in 10 people in Arizona and will affect 29% of the total population of the United States by the year 2050. Given the importance of this public health issue, it is critical to improve our understanding about how diabetes is influenced by moderate-to-vigorous activity, sedentary behavior, sleep duration and sleep quality.

Adolescence is an important life stage for diabetes prevention as health behaviors and patterns established during this period are likely to continue into young adulthood and may predict future health outcomes. Yet during adolescence, youth often experience a decrease in their physical activity. Consequently, it is important to develop prevention programs which target lifestyle behaviors during youths' transition from adolescence to young adulthood in order to reduce the risk of diabetes.

Methodology

The aim of the study was to assess the impact of 24-hour physical activity and sleep behaviors on diabetes risk markers among Latino youth with obesity.

Participants were recruited from community organizations, pediatric

clinics and through the use of Spanish-language media in Phoenix, Arizona. All self-identified as Latino or Latina and were defined as obese based on body mass index. Additional measures included body fat as well as fasting and two-hour glucose using an oral glucose tolerance test.

There were 60 participants in the first phase of the study of whom 38 were adolescents and 22 were young adults. Each wore a wrist monitor (accelerometer) 24 hours a day for seven days to assess physical activity and sleep behaviors.

The second phase of the study consisted of interviews and included a total of 31 participants of whom 16 were adolescents and 15 were young adults. Interview questions asked what factors promoted or were barriers to physical activity and sleep as well as the influence of their families, friends and environments on these behaviors.

Discussion

Physical Activity: While most of the participants met or exceeded U.S. guidelines for daily moderate-to-vigorous physical activity, they were also sedentary for at least 10 hours each day.

The most common type of physical activity adolescents engaged in included physical education classes in school or walking in parks and in their neighborhoods. Their motivation to be active included a wish to improve their appearance or in response to bullying. "Some friends at school... they always treat me badly, 'Oh, you're fat, you're fat...'. There's no day that he hasn't called me fat" (adolescent male). Young adults walked and also worked out in gyms, citing the importance of having a workout buddy plus a desire to improve their health.

Both adolescents and young adults cited the value of support from their friends and also from their mothers in encouraging their physical activity. A third of the participants also noted the presence of diabetes in other family

members. One commented, "What does motivate me is my mom because she does have diabetes. Both my mom and grandma have diabetes... It's really scary" (young adult female).

Both adolescents and young adults mentioned concerns about the safety of their neighborhoods. "That's another downside of why I'm not going out" (young adult female).

Screen time was the major factor in sedentary behavior for both groups. Adolescents mentioned streaming or video games as an important way to socialize and engage with friends. "I like being on social media 'cause that's the only way I can talk to my friends" (adolescent female). Young adults also mentioned streaming, although by themselves, as a factor in their sedentary behavior.

Screen time has been identified as particularly harmful for glycemic control as it is often accompanied by snacking. It may also reduce the positive effects of physical activity.

Sleep Behavior: On average, adolescents were less likely to sleep for the recommended eight to 10 hours although young adults slept the recommended seven hours a night. Reasons for irregular sleep patterns included the presence of noise, bright lights and uneasiness about safety. "I mean, just where I live in general is a bad area. Nothing's happened to my family, so I sleep a little bit good at night. But just knowing that I am in the

place that I am, keeps me kind of on my edge" (young adult male).

Short sleep duration is associated with insulin resistance and impaired glucose metabolism. Poor sleep quality in both youth and young adults corresponded with an increase in body fat and increased risk for Type 2 diabetes in young adults.

Recommendations

Since physical activity and sleep are important factors in the development of Type 2 diabetes in obese Latino youth, there is a need to develop prevention programs for them based on a 24-hour cycle. Strategies to increase physical activity should incorporate the support of friends and family, especially mothers, as well as the recognition of the importance of diabetes among other family members. Special attention should be given to ways to decrease the amount of screen time because it reduces the benefits of physical activity. Because poor sleep patterns may affect glucose tolerance, regular sleep patterns need to be established in early childhood. Both young people and their parents need education about the importance of sleep and routines should be implemented to promote sleep and decrease the risk of diabetes in obese Latino youth.



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