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Introduction

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This issue of *Preventive Medicine* presents papers that summarize the findings of Pathways, an intervention trial for the primary prevention of obesity in American Indian schoolchildren funded by the National Heart, Lung, and Blood Institute. This landmark study is the only multi-site school-based randomized controlled study for the prevention of obesity in American Indian schoolchildren ever conducted. Obesity is one of the most serious problems facing American Indian youth today and it has grave implications for immediate and long-term health. In the first article, Story et al. review the high prevalence of obesity in American Indians, examine the implications, and establish the need to develop and test effective strategies for prevention.

Pathways addresses obesity using behavioral and environmental approaches through the following four components: physical activity, classroom curriculum, school food service, and a family intervention. The study design, measurement instruments, and intervention components were developed and tested during a 3-year feasibility phase that took place between 1994 and 1996. The 5-year full-scale study took place from 1996 to 2000. The full-scale study included a cohort of 1704 children in 41 schools (21 intervention, 20 controls) in 7 American Indian communities. In the paper by Stone et al., the design, implementation, and quality control aspects of the study are described.

Extensive quality control contributed to the reliability of the findings, reporting improvements in school meals, student knowledge, and self-reported diet and physical activity changes. The results of each of the intervention components are addressed in separate articles beginning with the article by Davis et al., which describes the classroom curriculum and family interventions and reports significant changes in knowledge and ethnic identity.

Three articles specifically address the dietary changes resulting from Pathways. Positive changes in the nutrient content of school lunches are described in the Story et al. article. Cunningham-Sabo et al. further describe how Pathways was successful in reducing fat in breakfast meals. Twenty-four-hour dietary recall measures were used to measure mean fat calories in school lunch, total daily energy intake, total fat, and fat calories. These measurement activities helped in assessing the success of Pathways dietary interventions and are described in the article by Himes et al.

The effects of the Pathways intervention on physical activity are described in an article by Going et al. Reporting the results from pre-test and post-test, Stevens et al. present the positive impact of aspects of obesity-related knowledge, attitudes, and behaviors. In comparing different body composition methods to assess percent body fat, Lohman et al. report differences among methods in the mean change and reliability of change estimates.

Although schools are a logical location for reaching children, school-based interventions face many challenges. Experienced researchers familiar with conducting health promotion and disease prevention research in schools generally agree that we often have unrealistic expectations of school-based interventions. Examining the research process and the school climate helps to explain and understand the findings. The article by Steckler et al. describes the process evaluation of Pathways and presents important information on the reach, extent, and fidelity of Pathways implementation. The article on school climate by Gittelsohn et al. provides important information that is useful in understanding successes and failures in the Pathways program and offers a model for predicting success.

Acceptance and support from the school officials and the community are crucial for the successful implementation of school-based interventions. From the beginning of Pathways, the participating schools and American Indian communities they represented were committed to the study. During implementation of Pathways in both the pilot and full-scale phases, tribal officials, school board members, and school staff participated in focus groups and individual interviews in a formative assessment that generated more than 25 targeted behaviors, which became the cornerstone of the Pathways intervention strategy. In the lessons learned paper by Gittelsohn et al. that closes this issue of *Preventive Medicine*, the importance of engaging the community, conducting formative research, and involving the family are described. Pathways clearly demonstrates that a participatory approach is important and can be used to conduct a standardized multi-site school-based trial to test interventions focusing on the prevention of obesity.

Recognition of the epidemic of obesity is relatively recent and studies such as Pathways contribute to the growing knowledge base. The results of Pathways reported in this issue provide scientific data and a great deal of experience that have implications for researchers, policy makers, and programs for schools that serve American Indian students and school health programs in general. Pathways was deemed successful in introducing children and their families to new concepts regarding healthful living and it significantly affected health knowledge, ethnic identity, and the attainment of dietary guidelines for meals served at school. However, like other school-based interventions aimed at changing health behaviors, Pathways had no significant effects at its culmination on percent body fat.

The fact that obesity is caused by a combination of genetic, metabolic, behavioral, environmental, and socioeconomic factors makes it a complex challenge for prevention. For most individuals, excess calorie consumption and/or inadequate physical activity provide the logical focus for prevention and intervention efforts. Sustained interventions may need to start earlier and last longer. They may need to address a broader range of factors that influence caloric intake and physical activity, such as environmental and socioeconomic factors beyond the school setting. Integrating interventions such as Pathways into a comprehensive school health education program, and including more community-wide activities, may strengthen the efforts of the intervention overall. Pathways demonstrates a need for additional research to test approaches that promise to be effective in preventing obesity in youth.

We express our deepest appreciation to the many parents, teachers, and children who generously shared their time and ideas to develop, implement, test, and evaluate each component of the intervention. We also gratefully acknowledge the advice and guidance we received from tribal cultural consultants, members of the Pathways Protocol Review Committee, and the Pathways Data Safety and Monitoring Board. We are deeply appreciative of members of the guest editorial board who gave freely of their time and expertise to review and comment on each of the papers in this special issue. The administrative assistance of Adam Rue and Leslie Trickey is also greatly appreciated. Finally, we thank Robert Katz, M.D., Chair, Department of Pediatrics at the University of New Mexico, School of Medicine, Health Sciences Center, for providing support for the publication of this supplement.