Zuni Diabetes Project (USA-Government)
http://www.ashiwi.org/Programs.aspx#hlp

Section I: Summary

Type 2 diabetes is a significant health problem among many tribes of North American Indians. The Zuni Diabetes Project was introduced in 1983 to promote lifestyle changes in exercise and diet for the management and prevention of type 2 diabetes in the Zuni Indian tribe of western New Mexico, in the United States. The Zuni Diabetes Project focuses on behavioral modification through incentives, role-modeling, and other strategies. The program is ongoing and has achieved successful outcomes in participant weight loss and glycemic control as evidenced in a number of studies.

Section II: Statement of Purpose

The prevalence of diabetes in American Indian tribes such as the Zuni has increased dramatically due in part to changes in living conditions on American Indian reservations in the mid-20th century. As the tribes have moved away from a way of life based on agriculture, hunting, and foot transportation, a more sedentary lifestyle rooted in mechanization, office work, automobiles and television has replaced it. A traditionally high fiber diet has also been replaced by a diet heavy in processed foods, fat, and sugar. Some studies also indicate that American Indians may be genetically predisposed to diabetes, particularly when such dramatic dietary changes take place.

At the time the Zuni Diabetes Project was started in 1983, diabetes was the most prevalent disease among Zunis and the leading cause of outpatient visits to the tribal public health service hospital. The program was implemented to promote lifestyle changes in physical activity and diet for the prevention of diabetes through a community-based, structured program of exercise, motivation, guidance, and education.

The program was initially coordinated by the Indian Health Service Health Education Office but is now managed by the tribal-owned Zuni Wellness Center. Thirty initial participants were identified and selected by medical staff to participate based on their anticipated compliance. Participants were invited by a letter from a health educator, with phone and home visit followups.

Exercise classes were scheduled for twice a week in a centrally located gym within the community. However, response was initially very poor and no participants showed up for the first six classes. On the seventh class, one woman showed up, then brought a friend, and by the end of the second month regular attendance had reached a total of eight. Over time, attendance grew to 50, primarily through the word-of-mouth influence and encouragement of participants. The program also began to receive publicity

in the newspaper and on television, and others began to see visible signs of weight loss in participants, which helped the program gain credibility.

Each exercise class is a one-hour session that includes aerobics, heart-rate monitoring, strength training, and stretching. Over time, the number of classes offered has increased from two per week to classes several times daily, five days a week, in a number of sites in the community.

The initial program was developed with a number of features to encourage participation and adherence to the program. These features included:

- *Convenience* – Exercise classes met at convenient hours in a centrally located venue within walking or biking distance of most homes.
- *Organized content* – Classes were properly designed by instructors who were well trained and certified; classes were punctual and consistent.
- *Education* – Health and fitness topics were presented every other week before class and written materials were provided; physician clinics were held once a week in conjunction with class to monitor progress, check serum glucose levels and blood pressure, and dispense medicines. On-site care by physicians was an incentive for participation and some doctors further acted as role models by participating in the exercises.
- *Assessment and feedback* – Each participant received an initial and then periodic physical assessment (body fat, blood pressure, blood sugar, etc.) as well as periodic one-on-one counseling.
- *Motivation* – A number of incentivizing strategies were employed to increase motivation and participation, as described below.

Special Events

A number of special events were designed to provide additional exercise opportunities and engage the broader community. Rewards and incentives were incorporated to promote participation. Special events included:

- "100-Mile Club" and the "250-Mile Club " in which participants were required to run or walk a minimum of 2 miles, 3 days a week. Progress was charted on a public bulletin board and prizes were awarded (t-shirt, running shorts) when a participant reached the 100 or 200 mile goal.
- Weight Control Program, a 20-week behavior modification program for weight loss. Participants paid a fee, which was reimbursed over time as financial rewards for attending exercise classes, lectures, completing homework, and attaining a weight loss goal of a half-pound per week. This strategy also employed a "buddy system" for support and motivation for the 20 weeks. Bonus rewards were paid every fifth week to the buddy pair who lost the most weight.

- Other fitness events and challenges such as fun runs, bike races, and a biathalon. Plaques and t-shirts were awarded to participants as incentives.
- Winter Aerobic Challenge, a structured incentive program to encourage physical activity during the winter. Points were awarded to participants based on the type, duration, and intensity of the activity. Certificates and t-shirts were awarded based on the points/fitness level achieved.

Additional Rewards

Other incentives were provided to program participants who met certain weight loss and diabetes management goals. For example, exercise mats were awarded to participants who lost 5 pounds and maintained the loss for 2 weeks. Running shoes were awarded for losing 15 pounds and maintaining the loss for 3 weeks. Participants who managed their blood sugar and were able to go off medication were awarded an "I Outran Diabetes" t-shirt.

Recognition

Recognition of progress and achievement was another strategy used to motivate and change behaviors. The program recognized participants in a number of ways, including bulletin boards in high visibility areas, awards, and public acknowledgement from the program director at classes and lectures.

Section III: Outcomes

The Zuni Diabetes Project has achieved successful outcomes for weight loss and reduced serum glucose levels in the Zuni community. 220 Zunis participated in the initial program implementation from 1983 to 1985, and the program continues to this day. Measurable outcomes from the first two years of the program included:

- 61 individuals lost an average of 21 pounds
- 35 persons with diabetes participated, of whom 19 had baseline and post-participation measurements available.
- 17 of the 19 lost weight ranging from 1 to 50 pounds
- 17 of 18 persons with serum glucose measurements available reduced their level, with reductions ranging from 3mg/dl to 181 mg/dl.
- 9 of 19 diabetics were taken off medication, 5 never started on medication, and 5 remained on medication.
- Participation in fitness events increased both by enrollment and by number of events offered. Over 200 persons participated in two events in 1983; 1570 persons participated in five events in 1985.
- Four 20-week weight loss programs were conducted with a total of 99 participants and average weight loss of almost 10 pounds.

The features of convenience, organized content, education, assessment, and motivation appear to be successful in establishing a community-based model for behavior modification related to exercise and diet. Many of the incentives and rewards were seen as signs of status and achievement in the community and were highly valued. Direct social support, such as the buddy system in the weight loss program, appeared to be very effective in motivating and changing behaviors. The competitive nature of many of the program components may have also spurred interest while promoting team thinking and mutual support.

Section IV: Additional Resources

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Heath, GW, BE Leonard, RH Wilson, JS Kendrick and KE Powell, Community-based exercise intervention: Zuni Diabetes Project (abstract only), *Diabetes Care*, 1987, Vol. 10 (5): 579-583, http://care.diabetesjournals.org/cgi/content/abstract/10/5/579.

Heath, Gregory W., Robert H. Wilson, Juneal Smith, and Bruce E. Leonard, Community-based exercise and weight control: diabetes risk reduction and glycemic control in Zuni Indians, American Journal of Clinical Nutrition, 1991, 53(6): 1642S-1646S, http://www.ajcn.org/content/vol53/issue6/#SUPPLEMENTS

Leonard, Bruce, Carol Leonard, Robert Wilson, Zuni Diabetes Project, *Public Health Reports*, 1986, Vol. 101(3): 282-288, http://www.pubmedcentral.nih.gov/articlerender.fcgi?tool=pubmed&pubmedid=3086921