



# Special Diabetes Program for Indians

## Diabetes Prevention Program

Publications 2012-2023

**Latent class analysis of [stages of change](#) for multiple health behaviors: results from the Special Diabetes Program for Indians Diabetes Prevention Program** (Jiang, Beals, Zhang, et al.) *Prevention Science*, 2012, 13:449-461. <https://doi.org/10.1007/s11121-011-0272-z>

- Latent class analysis was used to identify subgroups of people based on their answers to stages of change questions. Three classes were identified: Contemplation, Preparation, and Action/Maintenance classes.
- Male and retired participants were more likely to be in more advanced stages.
- Participants who exercised more, ate healthier diets, and weighed less were significantly more likely to be in the Action/Maintenance class. Further, the participants who had higher self-efficacy, stronger family support, and better health-related quality of life had higher odds of being in the Action/ Maintenance class.
- Stages of change for multiple behaviors can be summarized by a three-class model in this sample.

**Translating the Diabetes Prevention Program into American Indian and Alaska Native communities: Results from the Special Diabetes Program for Indians Diabetes Prevention Demonstration Project** (Jiang, Manson, Beals, et al.) *Diabetes Care*, 2013, 36:2027-2034.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3687272/>

- The completion rates of SDPI-DP were 74, 59, 42, and 33% for the follow-up and Year 1, 2, and 3 assessments, respectively.
- The crude incidence of diabetes among SDPI-DP participants was 4.0% per year.
- Significant improvements in weight, blood pressure, and lipid levels were observed immediately after the intervention and annually thereafter for 3 years.
- Class attendance strongly correlated with diabetes incidence rate, weight loss, and change in systolic blood pressure.
- Our findings demonstrate the feasibility and potential of translating the lifestyle intervention in diverse American Indian and Alaska Native communities.
- Knowler and Ackermann provided a commentary on the article ([Diabetes Care, 2013, 36:1820-1822](#)), Jiang et al. responded ([Diabetes Care, 2014, 37:e-35-e36](#)), and Knowler and Ackerman provided an additional response ([Diabetes Care, 2014:37\(2\): e37](#)).

**Participant and site characteristics related to participant retention in a diabetes prevention translational project** (Jiang, Manson, Dill, et al.) *Prevention Science*, 2014, 16:41-52.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4081526/>

- Participants who were younger, male, with lower household income, no family support person, and more baseline chronic pain were at higher risk for not completing all 16 DP sessions and for dropping out.
- Sites with large user populations and younger staff had lower likelihood of retaining participants successfully. Other site characteristics related to higher risk for retention failure included staff rating of participant disinterest in the DP program and barriers to participant transportation and child/elder care.
- Future translational initiatives need to pay attention to both participant- and site level factors in order to maximize participant retention.

**Demographic characteristics and food choices of participants in the Special Diabetes Program for American Indians Diabetes Prevention Demonstration Project** (Teufel-Shone, Jiang, Beals, et al.)

*Ethnicity and Health*, 2015, 20:327-340. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5108238/>

- Retired participants, those living in urban areas and with high income and education selected healthy foods most frequently.
- Young males, those with low income and education consumed unhealthy foods most frequently.
- Selection of unhealthy foods did not differ by urban and rural setting.

**Socioeconomic disparities in weight and behavioral outcomes among American Indian and Alaska Native participants of a translational lifestyle intervention project** (Jiang, Huang, Johnson, et al.)

*Diabetes Care*, 2015, 38:2090-2099. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4613924/>

- Lower household income was strongly related to less reduction in BMI, and weakly related to less improvement in physical activity and unhealthy food consumption.
- Sites with fewer professionally prepared staff were less successful at improving participant BI and healthy food consumption.

**Changes in food choices of participants in the Special Diabetes Program for Indians–Diabetes Prevention Demonstration Project, 2006–2010** (Teufel-Shone, Jiang, Beals, et al.) *Preventing Chronic Disease*, 2015, 12:150266.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4651117/>

- An increase in healthy food choices was associated with reduced weight, BMI, fasting blood glucose and LDL and with increased physical activity at the follow-up assessment.
- At the Year 1 assessment, the associations persisted between healthy food and reduced weight and BMI, and with increased physical activity.

**Longitudinal patterns of stages of change for exercise and lifestyle intervention outcomes: An application of latent class analysis with distal outcomes** (Jiang, Chen, Zhang, et al.) *Prevention Science*, 2016, 17:398-409. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4791189/>

- Based on many questionnaire responses regarding plans for exercise, participants were divided into one of three groups: Pre-Action, Transition, and Maintenance.
- Females in the Transition group had the greatest improvements in physical activity and weight at follow-up and Year 1, and males in the Transition group had the greatest improvements in weight at follow-up and Year 1
- This article demonstrated that latent class analysis can be used to consolidate questionnaire responses to create meaningful categories to examine factors affecting outcomes.

**Psychosocial predictors of weight loss among American Indian and Alaska Native participants in a diabetes prevention translational project** (Dill, Manson, Jiang, et al.) *Journal of Diabetes Research*, 2016: 1546939. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4662977/>

- At baseline, psychological distress and negative family support were linked to greater weight, whereas cultural spirituality was correlated with lower weight.
- Psychological distress and negative family support predicted less weight loss, and positive family support predicted greater weight loss.

**Derivation and evaluation of a risk-scoring tool to predict participant attrition in a lifestyle intervention project** (Jiang, Yang, Huang, et al.) *Prevention Science*, 2016, 17:461-471. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5532883/>

- Seven factors were related to not finishing the DP curriculum: male gender, younger participant age, lower household income, fewer comorbidities, chronic pain, site user population size (<5,000 or > 10,000 not optimal), and average age of site staff being under age 40.
- Six factors were related to dropping out in general: male gender, younger participant age, marital status (separated, divorced or widowed), chronic pain, site user population size (<5,000 or > 10,000 not optimal), and average age of site staff being under age 40.
- Scoring systems were created to identify whether a participant was at high risk for attrition.

**Sleep duration and diabetes risk in American Indian and Alaska Native participants of a lifestyle intervention project** (Nuyujukian, Beals, Huang, et al.) *Sleep*, 2016, 39:1919-1926. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5070746/>

- Short sleep duration, but not long duration, was significantly associated with increased diabetes risk and less weight loss.

**Neighborhood characteristics and lifestyle intervention outcomes: Results from the Special Diabetes Program for Indians** (Jiang, Chang, Beals, et al.) *Preventive Medicine*, 2018, 111:216-224.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5930056/>

- Participants from wealthier neighborhoods (higher household income according to neighborhood census data) were less likely to develop diabetes during the intervention, regardless of the individual participant's reported income level.

**Long-term outcomes of lifestyle intervention to prevent diabetes in American Indian and Alaska Native communities: the Special Diabetes Program for Indians Diabetes Prevention Program** (Jiang, Johnson, Pratte, et al.) *Diabetes Care*, 2018, 41:1462-1470.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6014547/>

- Even though there were challenges with staying involved in the program and with losing weight, participants who stayed with the program and lost more than 5% of their initial weight cut their long-term risk of developing diabetes by more than half, and participants who lost 3% to 5% of their initial weight cut their risk of developing diabetes by more than a third.

**Evaluating community-based translational interventions using historical controls: Propensity Score vs. Disease Risk Score approach** (Jiang, Chen, Beals, et al.) *Prevention Science*, 2019, 20:598-608.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6520136/>

- By its nature, the SDPI Diabetes Prevention Program did not have a control group. This article looked at a few ways of comparing DP participants against the control group from a different, published study. This involved matching many initial characteristics of the DP participants with participants in the control group.
- When the groups were compared without matching, it looked like the SDPI DP participants had a 65% reduction in risk, which likely overestimated the intervention effects. After matching, the risk reduction was 31% - 41%, depending on the type of matching.
- One of the most important characteristics to match was the baseline 2-hour oral glucose tolerance test result. Unfortunately, this test is now seldom used in clinical practice.

**Regression to normal glucose regulation in American Indians and Alaska Natives of a diabetes prevention program** (Pratte, Johnson, Beals, et al.) *Diabetes Care*, 2019, 42:1209-1216.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6609959/>

- This paper took an in-depth look at an important risk factor, regression to normal glucose regulation among prediabetes patients, in predicting later diabetes risk. It also examined which factors at baseline and at the one-year point of the intervention helped explain the relationship between regression to normal glucose regulation and future diabetes risk.
- Regression to normal glucose regulation among prediabetes patients is strongly associated with lower risk of future diabetes.

- Baseline glucose level (including fasting blood glucose and the 2-hour oral glucose tolerance test result) were critical factors explaining the association above, and weight loss was the most important modifiable factor.

**Perceived discrimination, retention, and diabetes risk among American Indians and Alaska Natives in a diabetes lifestyle intervention.** (Gonzales, Jiang, Garcia-Alexander, et al.) *Journal of Aging & Health*, 2021, 33(7-8\_suppl):18S-30S. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8647809/>

- Perceived discrimination was significantly and negatively associated with short-term and long-term retention and diabetes risk without adjusting. After controlling for socioeconomic characteristics and clinical outcomes, perceived discrimination was not associated with retention but was significantly associated with less improvement in body mass index (BMI) and HDL cholesterol.