

# Effects of a One-week Intensive Health Camp on Dietary Behaviors among American Indian Youth

Melissa Lopez-Pentecost, MS, NDTR<sup>1</sup>; Francine C. Gachupin, PhD, MPH<sup>2</sup>, Robin Hazelwood<sup>3</sup>; Otellie Honanie<sup>3</sup>; Jessica Quamahongnewa<sup>3</sup>; Cynthia Thomson, PhD, RDN<sup>4</sup>



University of Arizona  
Cancer Center

<sup>1</sup> University of Arizona College of Medicine, Department of Clinical Translational Sciences

<sup>2</sup> University of Arizona College of Medicine, Department of Family and Community Medicine

<sup>3</sup> Tribal Partner

<sup>4</sup> University of Arizona Mel and Enid Zuckerman College of Public Health, Department of Health Promotion Sciences



## BACKGROUND

- American Indians (AI) suffer the highest rates of diabetes in the U.S<sup>1</sup>; a chronic disease that is increasingly prevalent among AI children and is associated with increased risk of cancer<sup>2</sup>.
- Toward developing effective means to reduce diabetes and cancer burden in this population, a one-week intensive health summer camp was developed to improve disease risk-reducing behaviors among AI youth in Arizona.

## PURPOSE

- To examine the efficacy of a one week intensive health camp on dietary behaviors among AI youth and to examine if results vary by sex.

## METHODS

- AI children ages 10 to 15 years from tribes across Arizona are invited to a one week intensive residential camp.
- Kids participate in a week of experiential learning focused on healthy eating and physical activity.
- An in-depth assessment of diet is performed to track progress through 24h dietary recalls.
- 24h dietary recalls are collected by trained staff before and after the camp.
- T-tests were conducted to analyze differences in mean consumption of energy (kcal/day), total fat (g/day), saturated fat (g/day), total fiber (g/day), added sugars (g/day), and servings of fruit and vegetables (svg/day) pre-and post-camp.

## RESULTS

- A total of 313 dietary recalls were collected as a result of a Tribal-University partnership. Matched diet recalls for 45 children (boys=19, girls=26) were included in the current analysis.
- Results showed a statistically significant decrease in mean energy intake (P-value = 0.028), total fat (P-value = 0.004), and saturated fat (P-value = 0.026) (**Table 1**).
- No significant difference was seen for total fiber intake (P-value = 0.136), added sugars (P-value = 0.267), fruit intake (P-value = 0.82) and vegetable intake (P-value = 0.224) (**Table 1**).
- When examining differences by sex, a statistically significant decrease for energy (P-value = 0.014), total fat (P-value = 0.008), and added sugars (P-value = 0.027) was observed among boys. No statistical significant results were found among girls (**Table 2**).

Table 1. Effects of one-week American Indian (AI) Youth Wellness Camp on AI children's dietary components before and after camp 2016-2019

Dietary Component	Before Camp Mean (± SD)	After Camp Mean (± SD)	P-Value
Energy (kcal/day)	2047.9 (871.3)	1845.1 (741.4)	0.026*
Total Fat (g/day)	85.9 (43.2)	73.4 (32.8)	0.004*
Saturated fat (g/day)	28.4 (15.8)	24.7 (12.7)	0.026*
Total fiber (g/day)	15.6 (8.7)	14.2 (7.4)	0.136
Added Sugars (g/day)	67.6 (50.0)	61.4 (48.6)	0.267
Fruit (svg/day)	1.4 (2.5)	1.4 (1.9)	0.82
Vegetable (svg/day)	2.9 (2.2)	2.6 (2.1)	0.224

\*Statistically significant at P-value <0.05

Table 2. Effects of one-week American Indian (AI) Youth Wellness Camp on AI children's dietary components before and after camp and stratified by sex (Boys = 10, Girls =26).

Dietary Component	Boys (N=19)			Girls (N=26)		
	Before Camp Mean (± SD)	After Camp Mean (± SD)	P-value	Before Camp Mean (± SD)	After Camp Mean (± SD)	P-value
Energy (kcal/day)	2240.5 (940.8)	1895.5 (686.7)	0.014*	1919.58 (801.2)	1808.84 (780.1)	0.342
Total Fat (g/day)	94.1 (43.9)	75.6 (32.4)	0.008*	80.5 (42.2)	71.9 (33.2)	0.122
Saturated fat (g/day)	30.5 (14.4)	26.1 (12.8)	0.067	26.9 (16.6)	23.7 (12.7)	0.258
Total fiber (g/day)	16.8 (10.4)	14.7 (7.4)	0.215	14.8 (7.4)	13.9 (7.4)	0.429
Added Sugars (g/day)	76.1 (61.5)	51.7 (48.1)	0.027*	61.9 (39.9)	68.3 (48.1)	0.347
Fruit (svg/day)	1.1 (1.7)	1.3 (2.0)	0.503	1.6 (3.0)	1.4 (1.8)	0.673
Vegetable (svg/day)	3.0 (2.3)	2.8 (2.3)	0.634	2.9 (2.2)	2.5 (1.9)	0.311

\*Statistically significant at P-value <0.05

## CONCLUSIONS

- The American Indian health camp was effective at reducing total energy intake (kcal/day), total fat (g/day), and saturated fat (g/day), among American Indian children ages 10-15 years.
- When stratifying by sex, the camp was more effective at improving energy intake, total fat, and added sugar eating choices among boys as compared to girls.

### Founding source:

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### References:

- Centers for Disease Control and Prevention. National Diabetes Statistics Report, 2020. Atlanta, GA: Centers for Disease Control and Prevention, U.S. Dept of Health and Human Services; 2020.
- Dabelea D, Mayer-Davis EJ, Saydah S, et al. Prevalence of type 1 and type 2 diabetes among children and adolescents from 2001 to 2009. JAMA. 2014;311(17):1778-1786.