Fighting the Obesity Epidemic in Indian Country: A Data-driven Collaboration between Oklahoma State University & Cherokee Nation

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We will detail how researchers at a state university successfully partnered with a sovereign nation in Oklahoma to address the problem of obesity among Native American/American Indians (NA/IN). Oklahoma State University and Cherokee Nation joined forces to identify obesity as a problem that impacts the tribal communities and has not been adequately addressed in national weight loss treatment research programs. We conducted an open pilot trial of behavioral weight loss. In the report, we will describe: 1) how the partnership came to be, 2) how local data was used to justify the pilot project, and 3) how we utilized pilot grant funding from the Oklahoma Shared Clinical Translational Resources (OSCTR) mechanism, a program of an IDeA program of the National Institute of General Medical Sciences (NIGMS) to implement the pilot research trial. Results from this trial will also be presented (see results below). We also will describe how we joined forces with various stakeholders to ensure that Cherokee communities benefit from high quality data-driven research. We will also discuss the role of the American Indian Data Community of Practice (AIDCoP) in sharing and disseminating relevant data and bringing together stakeholders in tribal health.

Trial Results

Randomized controlled trials (RCT) of acceptance-based behavioral treatment (ABT) for obesity indicate superior weight loss outcomes compared to standard treatments. However, the largest known RCT of ABT enrolled zero American Indians (AIs) and did not examine change in neurocognitive domains as potential treatment process variables. Thus, the POWER-UP trial (Pilot of Weight Reduction in an Under-served Population) piloted ABT for obesity and conducted pre- and post-neuropsychological evaluation in an under-represented AI population.

48 overweight/obese AI adults (aged 43.3±10.3 years, 85% female; baseline BMI = 36.8±4.4 kg/m2) enrolled in a 6-month open ABT weight loss trial (Identifier: NCT02786238). The primary outcome was percent weight loss (%WL) at post-treatment. Neurocognitive domains were measured with the NIH Cognition Toolbox and the Automated Neuropsychological Assessment Metric (ANAM-IV), including episodic memory (EM), working memory (WM), inhibitory control (IC), cognitive flexibility (CF), processing speed (PS), reading (RE), and vocabulary (VO).

Analyses of completers (N=36) indicated that participants lost an average of 5.2±4.9% of their initial body weight (range=3.5% gain to 17.2% loss; t(35)=6.3, p<.001, dadjusted = 2.13). Intent-to-treat analyses with last weight carried forward for all participants show a mean loss of 4.1±4.7%; t(47)=5,.8 p<.001, dadjusted = 1.7. Of the cognitive domains, only indices of inhibitory control showed improvement (ps≤.006). These cognitive improvements were not significantly related to %WL (ps≤.30), but effect sizes were meaningful and in the hypothesized direction (rs=.19-.22).

ABT for weight loss resulted in a clinically significant weight loss in an AI population. Cognitive inhibitory control also improved and showed notable effects in relation to weight loss. Next steps should include a controlled trial of ABT in AIs with a larger sample to probe mediational effects of neurocognitive change in weight loss.