Does Endogenous Modulation of Pain Contribute to Pain Risk in Native Americans?: Preliminary Findings from Oklahoma Study of Native American Pain Risk (OK-SNAP)

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Introduction
Native Americans (NA) have a higher prevalence of pain symptoms and conditions than non-Hispanic whites and other minority groups. Unfortunately, little to no research has uncovered the mechanisms that contribute to these differences in prevalence rates. Literature suggests that pain inhibitory processes may contribute to pain risk. Specifically, the degree of endogenous pain modulation is reduced in women with pain inhibits pain during the conditioning pain modulation task (CPM), a measure of endogenous pain modulation in response to pain stimuli.

Given this, the present study examined whether Native Americans had deficits in CPM inhibition. Moreover, because females are at a greater risk for pain and show deficits in CPM inhibition in some studies, the current study examined the potential moderating role of biological sex.

Objective
To determine whether conditioned pain modulation differs between Native American and Non-Hispanic White populations and whether this relationship is moderated by biological sex.

Participants
Healthy Participants: N = 187
- Participant Characteristics: Female (49.7%), Native American (48.7%), average age = 28.7 years (SD =12.4), completed partial college (49.2%)

Exclusion Criteria: <18 years of age, cardiovascular, neurological, circulatory problems, chronic pain condition, substance abuse, psychosis, symptoms, uncorrected impaired vision, numbness, high blood pressure, difficulty with vocalization, English limited use of analytic medicine, current use of anxiolytic, antidepressant, and antihypertensive medication.

Method: Conditioned Pain Modulation (CPM)

Conditioned Pain Modulation

CPM Phase
- Pretest - participants received 5 painful stimulations prior to lowering their hand in painfully cold water (10°C)
- Conditioning - participants received 5 painful electrical stimulations while their hand was in painfully cold water at 2 cm
- Post-test - participants received 5 painful electrical stimulations after removing hand from water

Pain Ratings: Following each of the 15 electric stimulations during CPM, participants rate the sensation of their pain using the Numerical Rating Scale (NRS).

Numerical Rating Scale (NRS)
- Ratings were verbally made after each stimulation

Procedure
Participants provided consent after study procedures were explained
Participants completed demographic information for biological sex and Native American ancestry
Participants that endorsed Native American heritage provided a certificate of American ancestry

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Data Analysis
- Linear Mixed Model ANOVAs were conducted with biological sex, race/ethnicity, and CPM phase as IVs
- Significant Group x Conditioning Phase interactions were evaluated with Fisher’s LSD comparisons between Pretest and Conditioning phases
- Graphs depict the difference in painNFR between Pretest and Conditioning (conditioning minus pretest)

Results
Conclusion
Both groups displayed similar patterns of inhibition during CPM of pain across sex
No interaction effect for CPM phase by race was observed (p = .01) such that both groups displayed similar inhibition of NFRs
No main effect of group (p = .28)
No interaction effect for CPM phase by race was observed (p = .19) such that both groups displayed similar inhibition of pain
Main effect of CPM phase (p < .001)