

**Submission Title:**

*The Influence of Anchoring on Emergency Department Patient Pain Scores*

**Author(s)**

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**Abstract**

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**Introduction and purpose**

The anchoring-and-adjustment heuristic implies that humans are disproportionately influenced to make judgments that are biased toward an initially presented value. We conducted a prospective trial to evaluate the hypothesis that patients anchored to a higher number would report higher mean pain scores.

**Methods**

This was a prospective, randomized, interventional trial at an academic, urban ED. A convenience sample of patients >17 years of age presenting to the ED with complaints of pain were included. Participants were randomized to receive a written survey with either an anchor number of “20” or “80” and then asked if their current pain score was “greater than” or “less than” the anchor number. Subsequently, the patient reported their pain on a 1-100 scale. Categorical data analyzed by chi-square; continuous data by t-tests. A multivariate logistic regression was performed to control for confounding. The primary outcome parameter was to compare mean pain scores between the “20” and “80” anchor groups.

**Results**

108 patients were in the study group; 80% were < 65 years of age, 50% female, 72% non-white race, 57% household income < \$20,000, 21% did not graduate high school, 19% private insurance, and 51% had the 80 anchor. The most common chief complaints were musculoskeletal pain (45%) and chest pain (18%). Bivariate analysis revealed that patients with the 80 anchor had a significantly higher mean pain scores than the patients anchored to 20 (72+/-26 vs. 49+/-31;  $p < 0.0001$ ). The two anchor groups were similar with respect to age, race, income, education, insurance type, chief complaint type, but there were statistically significantly more females in the group using

the anchor of 20 (60% vs. 40%,  $p=0.03$ ). A multivariate logistic regression was performed and found that on average, the group anchored to “20” had 17.9 lower pain score than those anchored to “80” ( $p=0.04$ ) and females had 15.20 lower pain score than males ( $p=0.02$ ), controlling for confounding.

## **Conclusion**

ED patients who received a higher anchor reported higher pain scores than patients who were anchored to a lower number.