

Opioid Monotherapy vs. Opioid-Antidepressant Combination: Impact on Self-Reported Health Outcomes in Older Black Adults Aged 65+ with Low Back Pain and Depression – An Analysis of the All of Us Database



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Introduction

- Chronic low back pain (CLBP) disproportionately affects older Black adults (≥65), impacting mobility, function, and quality of life.
- Managing CLBP is complex, especially with comorbid depression, which can worsen symptoms and complicate treatment.
- Clinical guidelines recommend nonpharmacological treatments (e.g., physical therapy, exercise, psychological support), yet opioid use remains high in this population.¹
- Opioid use is particularly common in those with comorbid depression, despite potential adverse effects and safety concerns.²
- Opioids are often co-prescribed with antidepressants, increasing risks of sedation, falls, cognitive impairment, and opioid dependence.
- Black adults remain underrepresented in research, leading to gaps in evidence-based treatment recommendations.³
- This study uses the *All of Us* database⁴ to examine opioid monotherapy vs. opioid-antidepressant therapy and their impact on self-reported health outcomes.

Methods

- Study Design:** We conducted a retrospective cohort study with data from the *All of Us* Research Program (assessed: January 2025).
- Sample:** The study sample included 3,003 older Black adults aged ≥65, diagnosed with CLBP and depression, identified using International Classification of Diseases 9 and 10 codes.
- Cohorts:** Participants were divided into two groups:
 - ✓ Opioid-Only Group (n = 2,953)
 - ✓ Opioid-Antidepressant Therapy Group (n = 559)
- Outcome Measures:** Self-reported general health, mental health, physical health, quality of life, and social well-being were assessed. Additionally, demographic factors and social determinants of health (education, employment, and income) were considered.
- Statistical Analysis:** Descriptive statistics and Chi-squared tests were performed using Python-based Jupyter Notebook, with statistical significance set at $p < 0.05$.

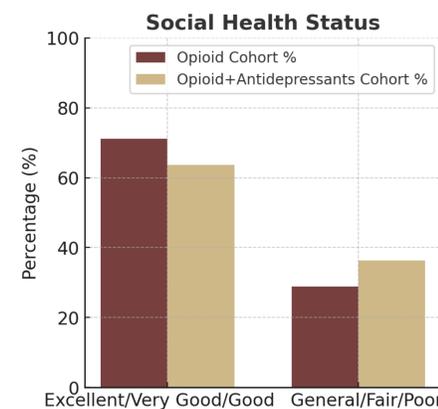
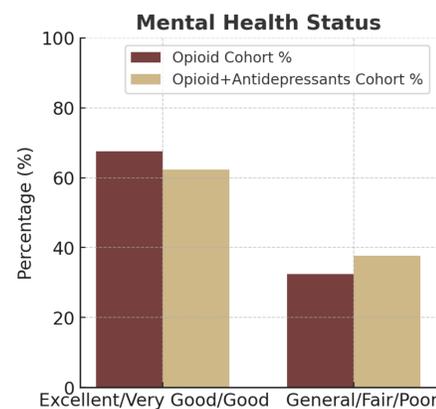
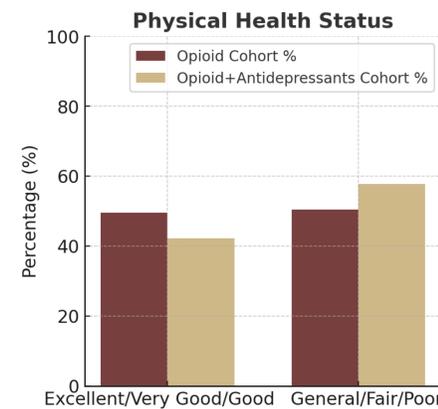
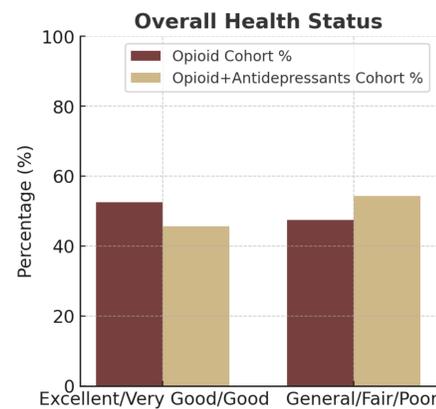
Results

- Overall Health:** The opioid-only group reported good/very good/excellent overall health (52.50%) compared to 45.62% in the combination therapy group ($\chi^2 = 7.19$, $p = 0.0073$).
- Mental Health:** The opioid-only group rated their mental health as good/very good/excellent (67.59%) compared to 62.25% in the combination therapy group ($\chi^2 = 4.88$, $p = 0.0271$).
- Physical Health:** The opioid-only group reported good/very good/excellent physical health (49.49%) compared to 42.25% in the combination therapy group ($\chi^2 = 7.97$, $p = 0.0048$).
- General Quality of Health:** The opioid-only group reported good/very good/excellent general quality of health (69.74%) compared to 57.75% in the combination therapy group ($\chi^2 = 25.03$, $p < 0.00001$).
- Summary:** These differences were statistically significant, indicating that individuals in the Opioid + Antidepressants Cohort were more likely to report poorer health across multiple domain

Older adults with chronic low back pain and comorbid depression who take ONLY opioids report BETTER overall health, mental health, and physical health compared to those taking BOTH opioids and antidepressants.

Key Takeaway:

- Those using both opioids and antidepressants were more likely to report worse health across multiple areas.
- These findings highlight the need for careful medication management in older Black adults with CLP and depression



Flowchart of Participants in Opioid Use and Antidepressants Cohorts

Category	N
Total Enrolled in Research Workbench	78321
With Depression Disorders	14883
With Mental Health Disorders & Low Back Pain	7896
Aged <65 Excluded	4444
No Opioid/Antidepressants Prescriptions Excluded	449
With Opioid Prescriptions	2558
With Opioid & Antidepressants Prescriptions	445

Discussion

Key Finding: Older Black adults (≥65 years) with CLBP and comorbid depression reported worse self-perceived health outcomes when using opioid-antidepressant combination therapy compared to opioid monotherapy.

Potential Explanations

- Opioid exposure may reduce antidepressant effectiveness in older adults with CLBP, contributing to poorer mental and general health outcomes.⁵
- Opioid-antidepressant combination therapy is associated with a higher risk of adverse effects, including sedation, dizziness, falls, and cognitive impairment, particularly in older adults.⁶
- Our results are consistent with prior research indicating that opioid-antidepressant combinations fail to consistently improve pain relief and instead increase adverse effect.⁷
- Clinical Implications:** Caution is warranted when prescribing opioid-antidepressant therapy for older Black adults with CLBP and depression. Safer, evidence-based pain management alternatives should be prioritized to address the unique risks in this population
- Future Research:** Further studies should explore personalized, non-opioid pain management strategies, including behavioral interventions, physical therapy, and multimodal pain care

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Acknowledgements: I am incredibly grateful for my mentors Dr. Sorkpor and Dr. Yang for giving me the opportunity to work on this study as well as their helpful guidance throughout the year. I would also like to thank the Undergraduate Research Opportunity Program and The College of Nursing for this experience. We gratefully acknowledge *All of Us* participants for their contributions, without whom this research would not have been possible. We also thank the National Institutes of Health's *All of Us Research Program* for making available the participant data [and/or samples and/or cohort] examined in this study