

Impact of Social Determinants of Health on Biomarkers of Immune Function in Trauma

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Introduction

- Social determinants of health (SDOH) are the “structural conditions in which people are born, grow, live, work, and age”¹.
- SDOH have been shown to impact stress².
- Since chronic stress and immune competency are closely related³, it is important to understand how SDOH impact immune biomarkers.
- Although the impact of stress on immune function is clear in the general population, there is a gap in knowledge on the impact of SDOH on the ability of patients exposed to trauma to mount an effective immune response and facilitate recovery.
- We hypothesize patients with low SDOH (food insecurity, income strain, depression) to exhibit poorer clinical recovery, measured through immune biomarkers and physical therapy evaluations.

Methods

- This was an observational retrospective cohort study.
- Information was gathered from deidentified data from Epic records of trauma patients hospitalized at Our Lady of the Lake in Baton Rouge between January 2018 and May 2024.

Results

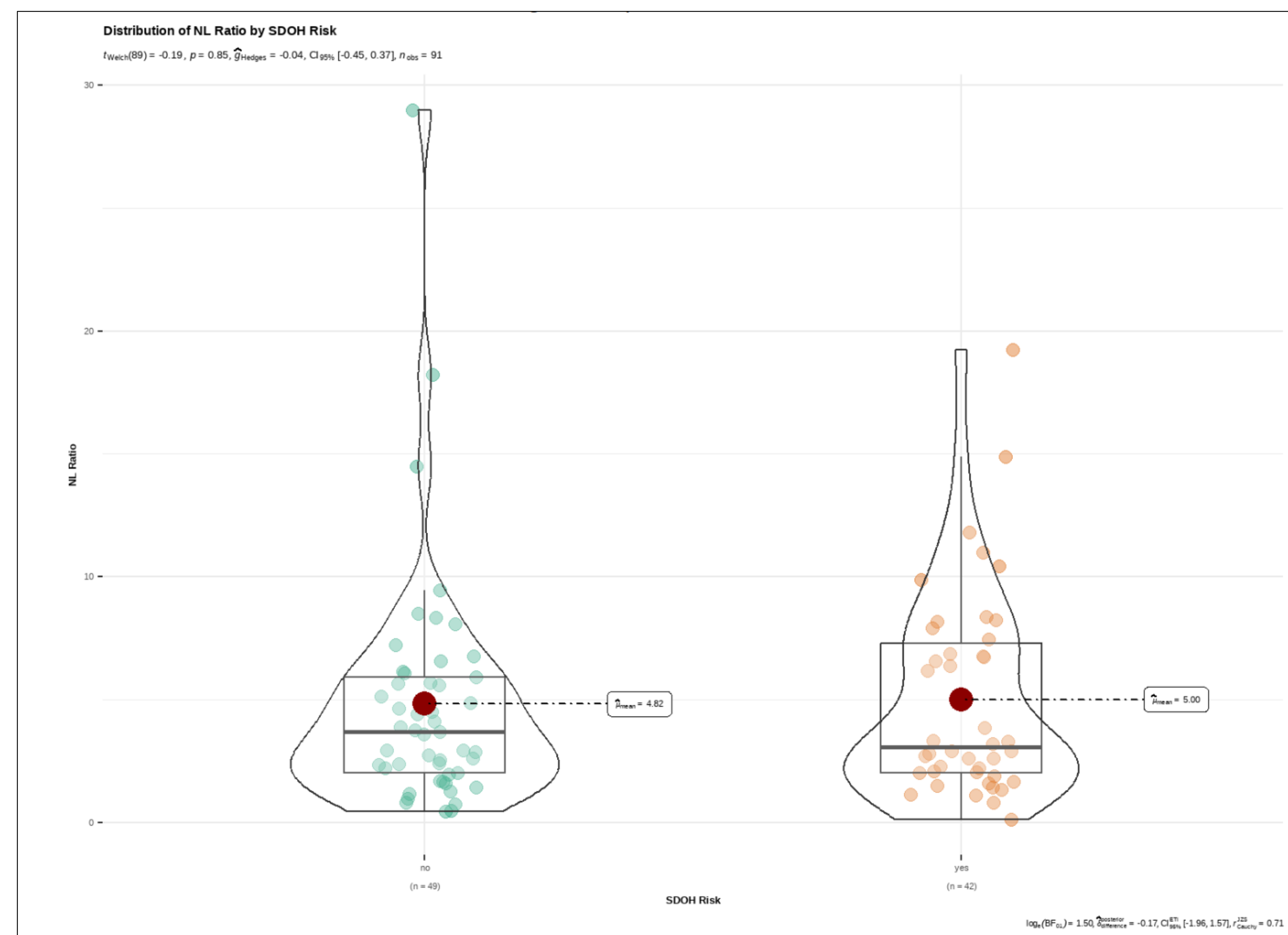


Figure 1: SDOH effect on Neutrophil-to-Lymphocyte ratio, N=91

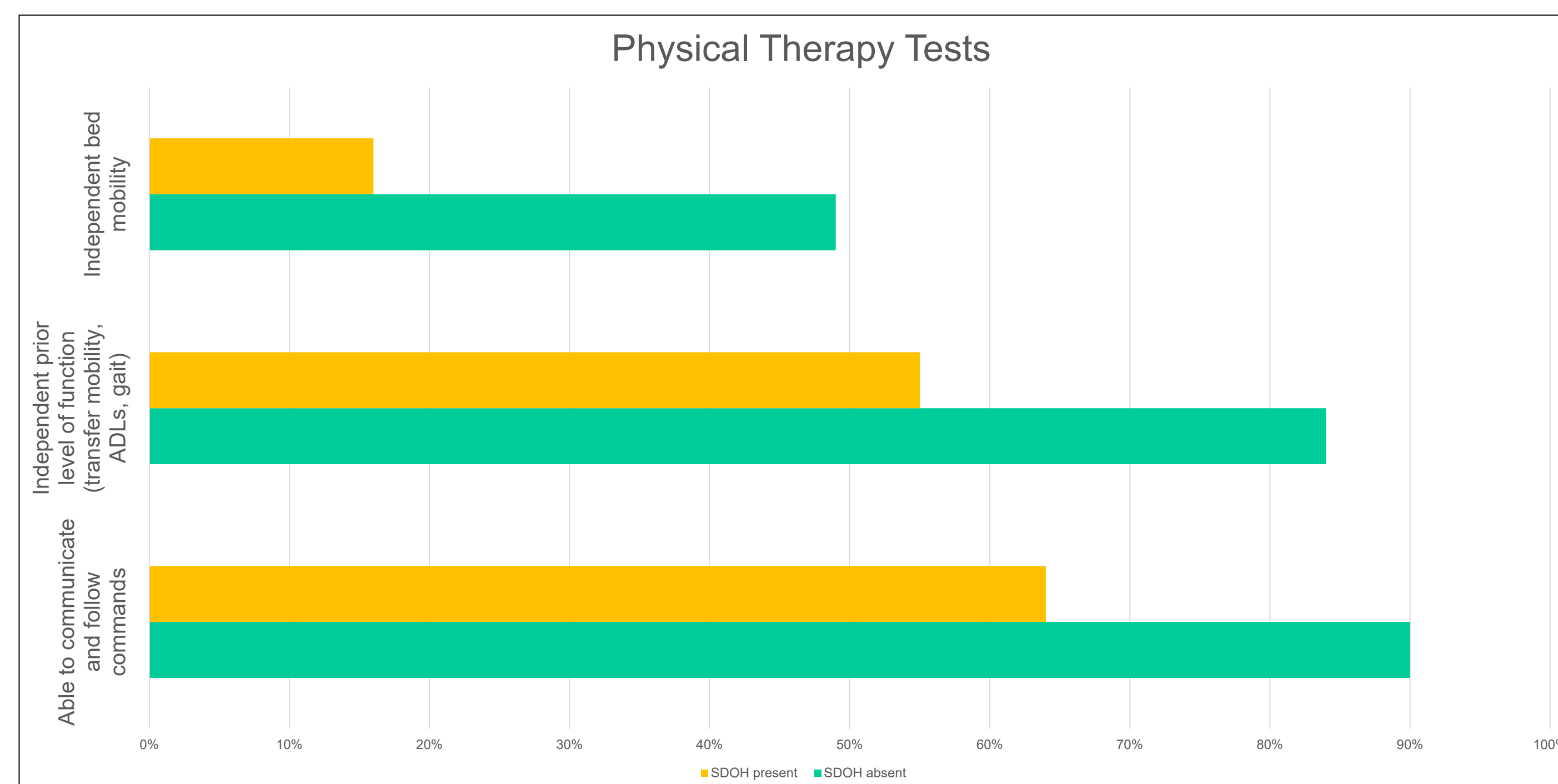


Figure 2: SDOH effect on physical therapy measures, N=95, p<0.01
Green=SDOH absent, Orange=SDOH present

Discussion

- SDOH was not found to be a significant factor in neutrophil-to-lymphocyte ratio (NLR). However, violin plot shape is suggestive of possible significance with a more robust sample size.
- SDOH was found to be a significant factor (p<0.01) on physical therapy measures like bed mobility, independent prior level of function, and ability to communicate and follow commands on discharge.
- Future work will aim at improving surgical outcome prediction based on SDOH and recovery from trauma and functional status based on laboratory analyses.

Conclusion

- Social determinants of health impact immune markers and clinical recovery outcomes in trauma patients. Additional work is needed to characterize not only the molecular mechanisms but also the optimal ways to reduce mortality and readmission and improve functional status in these patients.

References

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