Racette, B. A., Nelson, G., Dlamini, W. W., Hershey, T., Prathibha, P., Turner, J. R., Checkoway, H., Sheppard, L., & Nielsen, S. S. (2021). Depression and anxiety in a manganese-exposed community. *Neurotoxicology*, *85*, 222-233. https://doi.org/10.1016/j.neuro.2021.05.017

Definitions

- **Manganese (Mn)**: A metal that is essential in small amounts but can be toxic in higher levels.
- **BDI (Beck Depression Inventory)**: A questionnaire that measures the severity of depression.
- **STAI (State-Trait Anxiety Inventory)**: A questionnaire that measures anxiety levels.

Key Findings

- People living near manganese smelters showed higher levels of depression and anxiety.
- The study found a significant association between manganese exposure and higher depression scores.
- Anxiety scores were slightly higher in the exposed community but not as strongly linked as depression.

Introduction

This study investigates the link between manganese exposure from industrial activities and mental health issues, specifically depression and anxiety. Previous studies have shown that workers exposed to manganese can experience mood changes, and this study aims to see if the same is true for people living near manganese smelters.

Main Content

Background

Manganese is a metal used in industrial processes, such as smelting. While essential in small amounts, higher exposure levels can be harmful. This study looks at residents of Meyerton, a community near a large manganese smelter, and compares them with residents of Ethembalethu, a non-exposed community.

Methods

- **Participants**: 697 people aged 40 and above from two communities in South Africa.
    - 605 from Meyerton (Mn-exposed).
    - 92 from Ethembalethu (non-exposed).
- **Assessments**:
    - Beck Depression Inventory (BDI) to measure depression.

    - State-Trait Anxiety Inventory (STAI) to measure anxiety.
- **Air Sampling**: Measured manganese levels in the air in both communities to quantify exposure.

Results

- **Depression**: Meyerton residents had significantly higher BDI scores than Ethembalethu residents.
    - Average BDI score difference: 5.63 points higher in Meyerton.
- **Anxiety**: STAI-state scores were marginally higher in Meyerton but not as strong as the depression association.
    - Average STAI-state score difference: 2.12 points higher in Meyerton.

Conclusion

The study concludes that living near manganese smelters is associated with higher levels of depression and, to a lesser extent, anxiety. This suggests that environmental exposure to manganese can have significant mental health impacts. Efforts should be made to mitigate manganese exposure to improve community mental health.

By understanding the effects of manganese on mental health, public health policies can be better informed to protect affected communities. Further research is needed to explore the long-term impacts and potential interventions.

Word Count: 365