Environmental Exposures: Health Outcomes for Minority-Owned Auto Repair Shops

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INTRODUCTION

Auto repair shop workers have been seen to have much higher levels of certain heavy metals compared to the average individual[1], contributing to negative health effects such as DNA damage, asthma, and cancer[2]. Auto mechanics in small, independent, and minority-owned repair shops additionally are likely to not have access to appropriate resources or safety conditions. Additionally, there seems to be lack of clarity regarding to whom the burden of responsibility the workers' safety falls under[3].

The objective of the present study was to explore inequities in systems and practices that may contribute to the occupational exposure of heavy metals in local auto mechanics in the Triangle Area. Specifically, we aimed to:

- Investigate existing information on three critical areas on health and safety practices in the mechanic community
- Assess the scope of the issue of heavy metal toxin exposure in minority auto mechanics in the context of North Carolina via community outreach
- Begin to collect data and outline action items for a research and field study

METHODOLOGY

Literature Review	A literature review was conducted of: 1) existing occupational safety **curricula** for mechanics, 2) **regulatory bodies and policies** protecting auto workers, and 3) past **surveys** on auto mechanic safety practices.
Preliminary Community Outreach Survey	Surveys were administered to local auto mechanics to identify **perceptions on occupational safety** and **interest in follow-up research activities**. An auto worker from Raleigh served as a community liaison for connecting with local shops.

RESULTS

Literature Review:

- There are various training programs that exist for auto mechanics, but they lack consistency and standardization.
- Auto workers and shop owners are unclear on who the responsibility for following safety regulations lies.
- Regulatory bodies, such as OSHA, exist to protect automobile workers and the environment. A multi pronged approach is necessary to address employee education and employer responsibility.

Feasibility Study:

- In the four shops that have been visited in case analysis, most workers and owners seem concerned about issues related to work health and safety and would be interested in participating in a formal study.
- Many garages did not have proper ventilation. Other groups at risk for exposure were observed, such as workers' children and businesses that share work space.
- The informal nature and layout of shops were observed, such as bottles of used oil on the ground and unofficial office spaces.

CONCLUSIONS

- There is a critical need to investigate the health of minority auto workers.
- There is a **gap in literature** on the health and protection of minority auto shop workers.
- Members of the auto mechanic community are **largely interested** in future research studies.
- Further investigation is needed on **secondary exposures** to heavy metals, such as children and employees of adjacent businesses.

NEXT STEPS

Short-Term Goals

Summer 2023 Proposal		
TARGET	Identify drivers of poor occupational safety practices	Assess baseline exposure to heavy metals
METHODS	Administration of standardized interviews	Collection of hair and nail biosamples
MEASURES	Qualitative interview analysis	Analysis of heavy metal concentrations

Long-Term Goals

We recommend **policy work** and **community outreach** plans for upstream improvements in:

(1) auto mechanic training programs,

(2) enforcement of protective regulations, and

(3) community-based environmental protection solutions.

(4) follow-up studies in the possible spillover exposure to surrounding populations, such as utilizing big data for contact tracing to map geographical spread.

REFERENCES

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