International Academic Research Competition-IARCO24

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Research Topic: Effects of Environmental Heavy Metals on the Vital Organs of Diabetic Patient Workers in the Industrialized Areas of Bangladesh.

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Research Question:

How much the environmental heavy metals effect in human body with diabetics in the industrialized area of Bangladesh and what is the consequence?

Introduction:

In the recent decades, the effect of heavy metals on human and animal has gained a great concern. In addition, heavy metals have the potential to be harmful to the human body's organs, including the kidneys, brain, liver, skin, and heart. Environmental heavy metals as lead (Pb), mercury (Hg) and cadmium (Cd) are consider to be nephrotoxins if exposed to high concentrations [1]. These metals gradually build up in the body as a consequence of widespread chronic exposure to low levels, especially among industrializing countries [1] such as Bangladesh. The study looks into the heavy metals impact on Diabetic Patients (DP) in industrial workers of Bangladesh. By surveying the population to identify diabetic patients and analysing their biological samples, we can determine the current state of heavy metal effects on industrial workers.so that we can come up with a way to prevent DP from getting worse.

Literature Review:

Heavy metals have the potential to contaminate food, water, and soil. The kidneys become damaged initially by lead, mercury, arsenic, and cadmium.
Research shows, Heavy metals may build up in the kidneys in addition to filtering wastes. According to one study, exposure to heavy metals can lead to worsen kidney disease. Renal function decline can be prevented and chronic kidney disease may be brought due to trace amount of heavy metal. Prolonged exposure to lead may be harmful to liver cells, causing cellular infiltration and glycogen depletion, both of which can lead to chronic cirrhosis.

There is evidence that pesticide use in Bangladesh could lead to health and environmental risks, and unregistered pesticide residues in environmental samples further illustrate a lack of effective national pesticide control [3]. Additionally, it has been suggested that harmful metals found in pesticides and fertilizers may play a role in chronic kidney disease [4].

The effect of heavy metals in human and animal body along with the kidney damage has been assessed during the recent decades. Although some heavy metals sources and risk factors, heavy metal effect in environment and human has been searched in case of Bangladesh, there is less evidence of heavy metal intoxication in kidney and their consequences. Therefore, the purpose of this study is to determine the extent to which heavy metals affect chronic kidney disease in Bangladeshi manufacturing employees.

Research Methodology:

This study will be conducted with quantitative methods approach. A survey with pre-planned questionnaire will be conducted to the population in the heavy metal exposure area especially industrial and some sample such blood, urine, serum will be collected from the CKD patients.

Data Analysis:

For data analysis, we will consider Hierarchical regression analysis where effect of heavy metal (dependent variable) will be assumed based on CKD (independent variable).

Practicability and Ethical Consideration:

Data collection will occur 3 months followed by analysis. The study will never lead any unethical experiment and will follow participant privacy and data security.

Potential Limitation:

Limitation may arise for data collection as industrial site restrictions, self-reporting bias, transportation of biological sample properly to find out the reliable result. Industrial settings may not have dedicated areas for sample collection.

Conclusion:

Following completion, research findings will be disseminated via conferences, scholarly publications, and scientific presentations. By analysing this important data, these insights will demonstrate how heavy metals affect the workers of Bangladesh and maximize the health risks to the working class.

References

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