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Link between Diabetes and Environmental and Occupational Exposures

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Chronic cardio-metabolic disorders such as type 2 diabetes mellitus (DM2) have become an uncontrolled epidemic and a burgeoning cause of morbidity and mortality worldwide. In 2011, more than 170 M people had a diagnosis of DM2 with projected increase to 366 M by 2030. The Arab world, the countries with the highest prevalence of DM2 are: Saudi Arabia, Oman, Kuwait, Bahrain and UAE, whilst the countries with the lowest prevalence are Mauritania and Somalia. This prevalence was significantly associated with high GDP per capita and energy consumption.

As a consequence of rapid increase in combustion of fossil fuels for power generation and transportation, air pollution (indoor and outdoor) has been deemed a major risk factor for death and disability particularly in rapidly developing countries of the world. Increasing evidence from the literature review supports the role of occupational and environmental chemicals in diabetes development. Both epidemiologic studies and experimental evidence support adverse cardio-metabolic consequences of air pollution exposure, including worsening of whole body insulin sensitivity, promotion of hepatic endoplasmic reticulum stress, brown adipose dysfunction, and peripheral inflammation.

Articles on the link between Diabetes and environmental and occupational exposures that were published up to 2017 were retrieved from Highwire, PubMed, Embase, Web of Science, Global Index Medicus, and Medline search engines. The culprit chemicals include toxic metals, persistent organic pollutants (POPs), and bisphenol A (BPA) which impact health at the cellular level, and they have been linked to the development of DM. The difference observed between countries in the Middle East with regard to the levels and trends in causes of DALYs (disability-adjusted life-years), LE (life expectancy), and HALE (healthy life expectancy) can be attributed to a myriad of determinants, including social, cultural, ethnic, religious, political, economic, and occupational and environmental factors as well as the performance of the health system.

Biography:

Dr. Janvier Gasana, MD, PhD, is a professor and chair of Department of Environmental and Occupational Health of Kuwait University Faculty of Public Health since January of 2016. Previous faculty positions were held for 4 years at the National University of Rwanda Faculty of Medicine and for 20 years at Florida International University in Miami, Florida. His research focuses on exposome which represents a concept that incorporates the complex environmental and occupational exposures we face as humans. The current specific focus is on the mounting evidence of link between environmental and occupational exposures and NCDs (Non-Communicable Diseases) including Obesity and Diabetes.