## Abstract

There is an alarming increase of cancer cases alongside an increased pesticide use in agriculture in Kenya. This has raised concerns about possible links between pesticide exposure and cancer incidences. This study investigated the potential associations between pesticide usage and cancer cases, focusing on key chemicals, exposure pathways, and at-risk populations. The study analyzed data from Kenyan surveys on pesticide usage, environmental contamination, food residues, and human biomonitoring alongside international and local epidemiological studies. Statistical analyses including correlation and chi-square tests explored the relationships between pesticide usage and cancer incidence. The results found that between 2015 and 2018, pesticide imports more than doubled, with over 75% comprising highly hazardous pesticides (HHPs). Residues were found in 46% of food samples tested, with 11% exceeding EU limits. Biomonitoring analysis found pesticide metabolites amongst farmers and their families. Higher cancer rates, particularly non-Hodgkin lymphoma and breast cancer, were observed in regions with intensive pesticide use (e.g., glyphosate and DDT showed a correlation of $r = 0.75$, $p < 0.028$). Phthalates, known endocrine disruptors, were inversely related to molluscicide use ($r = -0.40$, $p < 0.002$), suggesting spatial variation in pesticide types. The findings support a possible link between pesticide exposure and Kenya's cancer trends, aligned with known mechanisms such as DNA damage and hormonal disruption. The study found that weak regulation, continued use of banned substances, and limited farmer awareness exacerbate risks. We recommend phasing out HHPs, promoting biopesticides, enhancing residue monitoring, and increasing public awareness to mitigate health impacts while supporting sustainable agriculture.