

Abstract

The Research work was conducted to detect the concentration of selected heavy metals (Fe, Zn, Cr, Cd, Pb and Hg) in human body in relation to drinking water facilities in Lahore, Pakistan. A comparative analysis was made on water intake facilities and bio-accumulation of heavy metals in human body by using nails and hair samples as biological marker. The study population was consisted of drug addicted patients depending on Tap water drinking and control group using filtered water from many years. Water samples were collected from three sites; Minar-e- Pakistan, Data Darbar and Chouburji in Lahore, Pakistan. Nails and hair samples were collected from drug addicted subjects (n=15) and healthy ones as control group (n=15). A quantitative determination of heavy metals was made by using Flame Atomic Absorption Spectrometry (Shimadzu AA- 700F). Mean concentration levels of heavy metals in water samples were present in decreasing order of Zinc > Iron > Lead > Chromium > Cadmium > Mercury. A similar trend was observed for biological samples (hair and nails) collected from drug addicted patients. Mean values of heavy metals calculated from drug addicted patients were significantly higher than those of healthy ones (control group) indicating that contaminated water contributes to heavy metals accumulation and toxicity in human body. Concentration of heavy metals in samples was higher than permitted levels recommended by Pakistan Environmental Protection Agency and World Health Organization. This study recognized the factors which were responsible to the deposition of heavy metals in drug addicted patients, existing challenges, and requirements to trim down the levels of harmful heavy metals in water (drinking). Thus there is an emerging requirement to raise the alarming situation about participation of heavy metals in serious health issues. Conclusively, well filtered water plants must be implemented on macro level to prevent the accumulation of heavy metals from water intake facilities to human body.