ENVIRONMENTAL QUALITY AS A PART OF LONGITUDINAL STUDY AMONGST RURAL WOMEN - INDIAN CASE STUDY

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Abstract: The rural population of India comprises more than 700 million people residing in about 1.42 million habitations spread over 15 diverse ecological regions. It is estimated that around 37.7 million Indians are affected by waterborne diseases annually and 1.5 million children are estimated to die of diarrhoea alone and 73 million working days are lost due to waterborne disease each year. The problems of chemical contamination is also prevalent in India with 1,95,813 habitations affected by the pathogen infested low water quality. The major pathogenic organisms responsible for water borne diseases in India are bacteria (E Coli, Shigella, V cholera), viruses (Hepatitis A, Polio Virus, Rota Virus) and parasites (E histolytica, Giardia, Hook worm). Hygiene, sanitation, storage and disposal are critical elements that are found to be lacking in the rural areas and thus require information on water quality for mitigative measures. Medchal Mandal Block of about 500 square kilometers area and consisting of 29 villages in RR District located at about 25 kms from Hyderabad City is taken up for analysis of water quality and health and correlate with land use characteristics. The study was divided into three phases i.e Phase 1 includes a random analysis of the samples across Medchal Mandal, Phase 2 includes a pilot study of the registered households in Nuttankal and Yellampet villages and Phase 3 is the life study – analysis of samples from households of women in the first trimester. The results of the three phases are presented in the paper. Water Samples were collected from various villages in this mandal. In phase 1 about 47 drinking water samples, 19 lake water samples, 4 samples of the soil in agricultural fields and 11 sediment samples were collected and analyzed for the assessment of their quality. In phase 2 nearly 100 samples of drinking water, salt and rice samples were collected. In phase 3 nearly 120 water samples are collected from households consisting of women in the first trimester of pregnancy. The physico-chemical and biological analysis is carried for all the samples. Procedures followed for analysis have been in accordance with the “Standard methods for examination of water and wastewater of the American Public Health Association (APHA, 1998)”. The salt and rice samples were analyzed to estimate the quantity of iodine and pesticides / heavy metals respectively. A rigorous analyses of data demonstrated that 89% of the samples from community water supply source were contaminated with coliforms. The water samples tested positive for MPN in the preliminary tests. The confirmation tests and the completed tests also gave positive results. All the salt samples collected had the requisite quantity of iodine as prescribed. Rice samples were analyzed for pesticides - DDT, Malation, 2,4 Dichlorophenol, 2,6 Dichlorophenol, degraded products of Monochrotopos. These values were found to be significant in few households and are correlated with the health of the pregnant women. The heavy metal analysis was carried on ICP / AAS for estimation of arsenic, cadmium and mercury concentrations. The analyses of the samples showed presence of the heavy metals in some of the water samples. The correlation of the water quality data with the health of the pregnant women and scope for low birth weight of new born children is carried out. The statistical analyses showed the extent of the influence of chemical water quality leading to malnutrition and ill-health. A longitudinal study of the phenomenon of influence of water quality and low birth weight of children is under progress.

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