

Potable water and uncontaminated food at every household: Dream or reality? A study among tribal population of Naxalbari Block

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Abstract

Introduction & Objective: Water quality, water behavior along with food quality, food behavior, domestic environment and food handler's hygiene play pivotal role in preventing food and water borne diseases. Working women seemingly face more hazards and perceived negligence is higher in hilly tribal population. Thus the pilot study was undertaken. The objective of the study is to assess water quality at source and household level and cooked food quality, immediate domestic environment along with determining their existing knowledge/practices regarding water and food handling techniques. Water and food, a basic necessity, a fundamental right of each individual needs to be accessible, available, affordable as also potable and hygienic. 80% of all human morbidities are caused through contaminated food and water (WHO)¹. Gastroenteritis, cholera, typhoid, giardiasis, hepatitis, diarrhoea are few major public health problems in developing countries incurring huge financial burden². Thus water quality of drinking water and water behaviour of beneficiaries play decisive role in ensuring favourable health indicators. Moreover Goal 2 of SDG stating Zero Hunger, it is imperative to ensure right quantity and right quality of food reaches every platter. Cooked food quality, its immediate domestic environment comprising of the kitchen utensils and dining area, food handler's hygiene and appropriate food behaviour become mandatory prerequisites in avoiding food borne illnesses. Public water systems like communal wells and tube wells are required by state to provide biologically safe water. Individuals in rural areas are often required to collect water from a faraway source, transport and store water for use as majority are deprived of continuous water supply³. In poor resource settings practice of open wells at source and open storage drinking-water allows for faecal contamination to occur inside the household. Contamination by hands and domestic animals are proven predominant causes of declining water

Method: Descriptive community based cross-sectional study was conducted in collaboration with department of microbiology from May-July 2018 in Kiranchandra Tea Estate. Water quality was assessed among all five sources and selected 50 households using PA Coliform Kit. Water behavior was assessed in 187 households. All 120 houses with women as permanent workers were studied for food behavior, food handler hygiene and domestic environment. 50 selected houses were assessed for cooked food quality using PA H2SHI-Dip Media Kit. Results were interpreted after 48 hours

incubation and confirmed by culture. Water quality assessment - Study subjects availing water from available local sources were included. Predesigned pretested semi structured questionnaire consisting of variables related to sociodemographic profile, water handling techniques, related knowledge and practice to assess water behaviour and episodes of water borne diseases was used. Checklists, PA COLIFORM Kit⁹ used for testing bacterial contamination, culture media to isolate causative agent, incubator, zip lock bags and sample collector boxes and IEC materials were other tools. Interview method, water collection and testing techniques and observation methods were study techniques.

Results: Contamination was noted in both open wells and 33 houses with E coli and Klebsiella. Improper water carriage, storage and treatment were found in 67.2%, 76.3% and 88.2% cases respectively. Food quality and domestic environment were inappropriate in 56.3% and 68.4% cases respectively. Illiteracy and lack of administrative support were significantly associated. Study results have been subdivided into two subsections - section A for water quality analysis and section B for food quality assessment. Majority of study subjects were tribals, hindus, living in quarters, married, below poverty line, illiterate and addicted. Diarrhoea and food poisoning cases depicted rising trend common in these months. Study was performed in poor resource settings with few logistic constraints. Hawthorne effect encountered while assessing behaviour. Piped water supply was absent in study area and Swajaldhara project was abruptly scrapped. All 5 water sources, 3 deep tube wells and 2 open wells (not an ideal source) along with 50 sampled households were tested for water quality using PA Coliform Kit. At point of source, both open wells were found to be contaminated. At point of consumption, 66% households were found to be consuming contaminated water. 16 houses were catered by uncontaminated deep tube wells though (Fig.1). Prevalence of E.Coli, Klebsiella and Enterobacteriaceae were found in abundance among contaminated samples at both source and usage level. 187 eligible families were studied for water behaviour assessment. Water handling techniques were observed and knowledge, practice regarding water behaviour assessed. 93 families reported incidence of diarrhea (recall period 2 months). Only 36.4% had appropriate water behaviour. 66.3% had inappropriate knowledge regarding appropriate water handling techniques though 79.7% opined consuming clean water was essential for good health (Table 1). Inappropriate

water storage, carriage and treatment were found in 85.1% , 59.4% and 84.5% cases respectively. Unclean containers, open buckets and small mugs were used to store and transport water. 10.2% used packaged mineral water and 104 respondents having under five children, 44.9% families used boiling water. Illiteracy, BPL status, history of diarrheal episodes were found to be significantly associated with improper water handling techniques ($p < 0.05$) (Table 2). Interview revealed halting of Swajaldhara and lack of administrative support as other factors.

Conclusion: Water and food was unfit for consumption in vast majority. Water and food behavior was inappropriate. Identified causes need sustainable and viable solutions. A larger study is recommended. Study concludes that potable water and uncontaminated food at every doorstep of community is a dream yet to be completely realized. Prevalent contaminations were found during water quality analysis at point of source and point of consumption. Food quality analysis also revealed contaminations in a majority. Domestic environment and food handler hygiene was found to be

contaminated and unhygienic respectively in majority of cases. Food and water behaviour among majority of study subjects was also found inappropriate and unsatisfactory. Lack of awareness generation activities, administrative support, illiteracy, ignorance and poverty were the common reasons identified with later being significantly associated with food and water handling techniques. Health education sessions were conducted which witnessed a good audience and a warm response. Study revealed despite community having easy access to water sources majority still remain deprived of safe water. Compounded with improper water handling techniques the problem became grave. It was seen that food quality and food behaviour got compromised more in families of working women possibly due to their job routine and lack of appropriate food storage facilities.

Biography

Nilanjana Ghosh has completed her MBBS, MD in Public Health, DNB, MNAMS and DHM and PGDEPI. She is an Elected Member of National Editorial Board IJPH and State Executive Committee Member of IAPSM.

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*Note: Joint Event on 33rd International Conference on Oncology Nursing and Cancer Care and 16th Asia Pacific Pathology Congress
September 17-18, 2018 Tokyo Japan*

Volume 1, Issue 3