WATER RECREATION AND CHILDREN EXPOSURE TO THE RISKS OF HEAVY METAL: IN MANYERA RIVER, NIGER STATE, NIGERIA

Musediq Olufemi Lawal[1],
Department of Sociology, Osun State University.
flawal2005@gmail.com

Timileyin Gabriel Olajuwon
University of the Western Cape
4284200@myuwc.ac.za

Abstract

Recreation use of inland and marine water is increasing in many countries. It is estimated that foreign and local tourists together spend around two billion days annually at coastal recreational resorts. Recreational use of the water environment therefore offers a significant financial benefit to the associated communities but also has implications for health and for the environment. Water-based recreation and tourism also expose individuals to a variety of health hazards, ranging from exposure to the potentiality of contaminated foodstuff and potable water supplies to exposure to sunshine and ultraviolet (UV) light and bathing in polluted waters. The health risks posed by poor quality recreational waters are generally related to infections acquired while bathing this, relatively little is known about the medical effects of water-based recreation to the users in Nigeria particularly rural environments. This study therefore becomes necessary to fill the vacuum thus created.

EXTENDED ABSTRACT

Throughout history, water has had a significant role in determining the type, frequency, and intensity of leisure activities in different places. There is a persistent and complex relationship between water resources and human behaviour in an environment, which is highlighted by looking at past recreation patterns and making predictions about future trends in recreational use. The presence of water contributes to many recreational opportunities, including both water-dependent and water-enhanced recreational activities. The significance of water cannot be underemphasized as it enhances recreational activities. These activities include, but are not limited to, hiking, and camping along bodies of water, viewing scenery, and studying nature. Although, water-based and water-enhanced recreational activities are often less detrimental to water quantity and quality, many human uses of water (e.g., agriculture, industry, etc) nonetheless has been posited by literature to have greater effects. However, while the impact of recreation on the water regime still presents challenges to managers attempting to create opportunities for recreational activities while maintaining water and environmental quality. Recreational activities that negatively affect water resources not only reduce the quality of water-based experiences or pose health concerns for other recreationists, but they also can present problems with using water for other functions, such as for a municipal drinking water supply.

While there has been significant analysis of the benefits of water especially for recreational activities, the health risks pose by poor quality recreational water generally related to infections acquired whist bathing cannot be left unattended to. In both coastal and freshwaters, the point sources of pollutions that causes most health concern are those due to domestics' sewage to coastal and riverine waters which exerts a variable polluting effect that is depending on the quality and composition of the effluent and the

capacity of the receiving waters of accepting that effluent. However, relatively little is known about the attitude of the local communities to water-based recreation activities, their knowledge of possible health hazards in water recreation and other behavioural approach to these activities and the noted hazards. Not only this, the existing literature on water-based recreation is heavily inclined towards medical field and at the same time focusing on industrialized societies. This study therefore become necessary to fill the vacuum thus created through a study of attitude of the people towards water-based recreation in Manyera River, Niger State. To address this issue, the following questions were raised: What are the likely and manifesting health hazards that are associated with usage of the water in these rivers? How are the noted health hazards being treated? What are the social and medical implications of the noted hazards in the hosting communities? A study of this nature has the potential of bringing to limelight what people passed through while using unregulated water for recreation. Students, scholars, researchers, health care managers and others could find this study useful as it will broaden their knowledge and will equally contribute to the existing literature on tourism, recreation and health in Nigeria.

Data for this study were collected using a questionnaire, non-participant observation and a library search for information on existing Literature. The literature contains existing articles on heavy metal specifically those carried out around Manyera River, Niger State. This is very essential to set adequate data that will complement one another for meaningful results. The administration of the questionnaire for this study involved clustering of the communities (Sabon–Pegi) into quarters. The quarters were identified by the names of their progenitors. From these quarters, 10 quarters were randomly sampled. Out of each of these quarters, 15 households were sampled; in each of the households sampled, a respondent was picked. In line with the patriarchal family system, the male heads of the household were given priority in the selection of respondents. The residents met while making use of the river at the time of data collection for this study were equally involved. Other regular users of the river who are willing to take part in the study were co-opted as well. The exercise was carried out within a period of 5 weeks with assistance of 6 field assistants who were students of a tertiary institution within the neighbourhood (Federal College of Wildlife Management, New Bussa, Niger State). A total of 200 respondents were sampled to get the needed data for the study. This population was involved in the administration of questionnaire. The size included 200 males and females who were residents of Sabon-Pegi community. Data generated for the study were processed using sample percentage to express the findings. Content analysis was used to extract information from the existing literature.

It is posited that Manyera River, Niger State Nigeria continue to attract attention of scholars who are particularly concerned about the activities within and the vicinity of the river over on daily basis. The river is known for the mining activities in the area although the river is mainly used as the source of livelihood of people around it. The livelihood in question includes fetching water for domestic use by the people living in

the area. At the same time, there are sections within the riverbank where people wash their clothes as well as the presence of the children using the river as their main source of swimming as recreation. The children are often in the habit of using their two hands to scoop the water from the river and drink it. Yet, the processing of Gold (Au) ore mined around the neighbouring communities by the artisanal miners is carried out within the bank of this river thereby causing incessant pollution The colour of water in Manyera River has an objectionable taste and odour. Within World Health Organization standards that acceptable water that is fit for domestic use should be colourless, tasteless and odourless, it can be concluded that water in Manyera River is not fit for use as drinking water except if treatment strategies are implemented.

This processing of Au involves activities like grinding, washing, drying, amalgamation with Hg and melting of the amalgam to extract the Au. The grinding, washing and extraction processes are done with bare hands and are devoid of any protective gear like eye goggle, nose guard, hand glove, boot, overcoat etc. Little attention is paid to human and environmental impacts of the processes particularly on the processors, the community members of which the children who constantly come to the river to swim are inclusive. It is however revealed that (a) the range of concentration of mercury in water is between 0.014-0.025mg/L, and (b) the concentration of mercury in the water is high compared to 0.001mg/L limit recommended by World Health Organisation (WHO). This poses danger to the communities around the river who depend solely on the water from the river for their livelihood like for drinking, washing, bathing etc.

Furthermore, it is alarming that people continue to make use of the water in this river on daily basis in spite of the presence of mercury noted therein. The most frightening aspect of this is the fact that exposure to mercury cause disease such as cancer, neurological disorder, autism, and in some cases has resulted into death. Mercury is absorbed into the body through deposition in a variety of body organs, including the kidneys and brain. Though the body can naturally rids itself of mercury slowly through the urine and stool. Meanwhile, an excessive amount accumulated over time can result in permanent damage to the kidneys, nervous system, and brain. The implication of this on pregnant women is also dangerous because elevated levels of mercury can pass on to the unborn babies thereby affecting development, especially the baby's brain, kidney, and nerves. Mercury can also be passed from mother to baby through breast milk during nursing.

It is obvious that the presence of mercury level Manyera River was a bit higher than the World Health Organisation (WHO) standard limit for drinking water thus the likelihood of an increased risk of the neurological damage and foetal deformities commonly associated with mercury poisoning. Heavy metals under acute exposure, lead to loss of appetite, fatigue, sleeplessness, hallucinations, vertigo, renal dysfunction, hypertension and arthritis among others while chronic exposure can result in birth defects, mental retardation, autism, psychosis, allergies, paralysis, weight loss, dyslexia, hyperactivity,

muscular weakness, kidney damage, brain damage, coma and may even cause death. Periodic and systematic study of the investigated and other metals concentrations is therefore recommended since long-term exposure of these metals poses significant health risk for human, animals and plants. The foregoing therefore necessitates the need to assess the level of contamination on the people living around the study area and who make use of water from the river for their domestic purpose and as well consume the fishes in the river.