

Analysis of Water of River Kshipra during Kumbh Mela 2016 Ujjain, Madhya Pradesh

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Abstract: The complete analysis of water from Lalpul Ghat and Triveni Ghat sampling stations was carried out to determine the quality of water being used in the Ujjain Kumbh Mela held in 2016. In Physico-chemical analysis, various quality parameter were measured including pH, NO_3^- , SO_4^{2-} , Cr(IV), total dissolved solids (TDS), total hardness. The pH of all water samples were found almost neutral. The TDS, hardness data showed some increase in their observed values. All Parameters were within the permissible limits. The study of physico-chemical characteristics of the collected water sample suggests that the evaluation of water quality parameters as well as water quality management practices was carried out periodically to maintain the water quality.

Keywords: Physico-chemical analysis, TDS, NO_3^- , SO_4^{2-} , Cr(IV).

Introduction

Water plays an essential role in human life. [1]. It is one of the most important compound that profoundly influence life [2]. In the last few decades, there has been a tremendous increase in the demand for fresh water due to rapid growth of population and the accelerated pace of industrialization [3]. Rapid growth of population and increase of urban activities significantly influences the water quality of receiving water bodies [4-5]. Water quality and human health are closely related, water analysis before usage is of prime importance. Ground water contains high amount of various ions, salts etc. [6]. Different species of human pathogens, virus and parasites like Giardia lamblia and Entamaeba histolytica) [7-9]. When present in drinking water causes serious risk of ailment like gastroenteritis [10], diarrhea, dehydration etc. The objectives of the present study was to analyze physic-chemical water samples collected from the selective localities of Ujjain district.

Materials and Method

In the present study, a study on water quality of river Kshipra at Ujjain impairment is made during Kumbhmela 2016 to assess the impact due to mass bathing on the river Kshipra water with special reference to Shahi Snan days. Sampling sites were selected after detailed site visit which included inspection of river from origin to place where actual bathing was meant to take place.

The water samples were collected in triplicate from the river banks of river kshipra after bathing activity. The labelled samples were kept in ice box and taken to the laboratory for analysis which was performed within 10 hours of collection. The physic-chemical parameters like pH, SO_4^{2-} , TDS, Ca^{2+} , Mg^{2+} ions, Hardness, BOD and TDS were analysed according to American Public Health Association (APHA) guidelines.

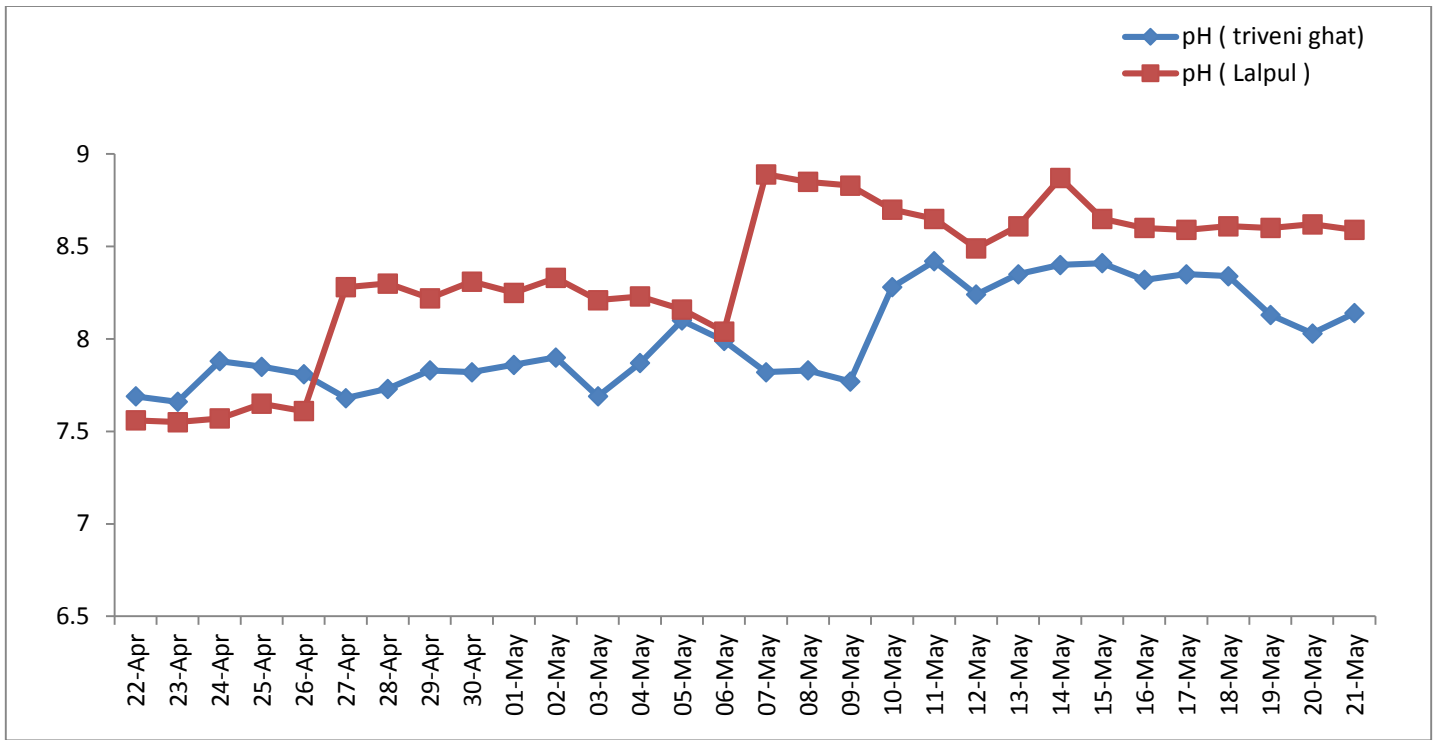


Fig 1: Comparative analysis of pH Value at Triveni Ghat and Lalpul during Ujjain kumbh 2016

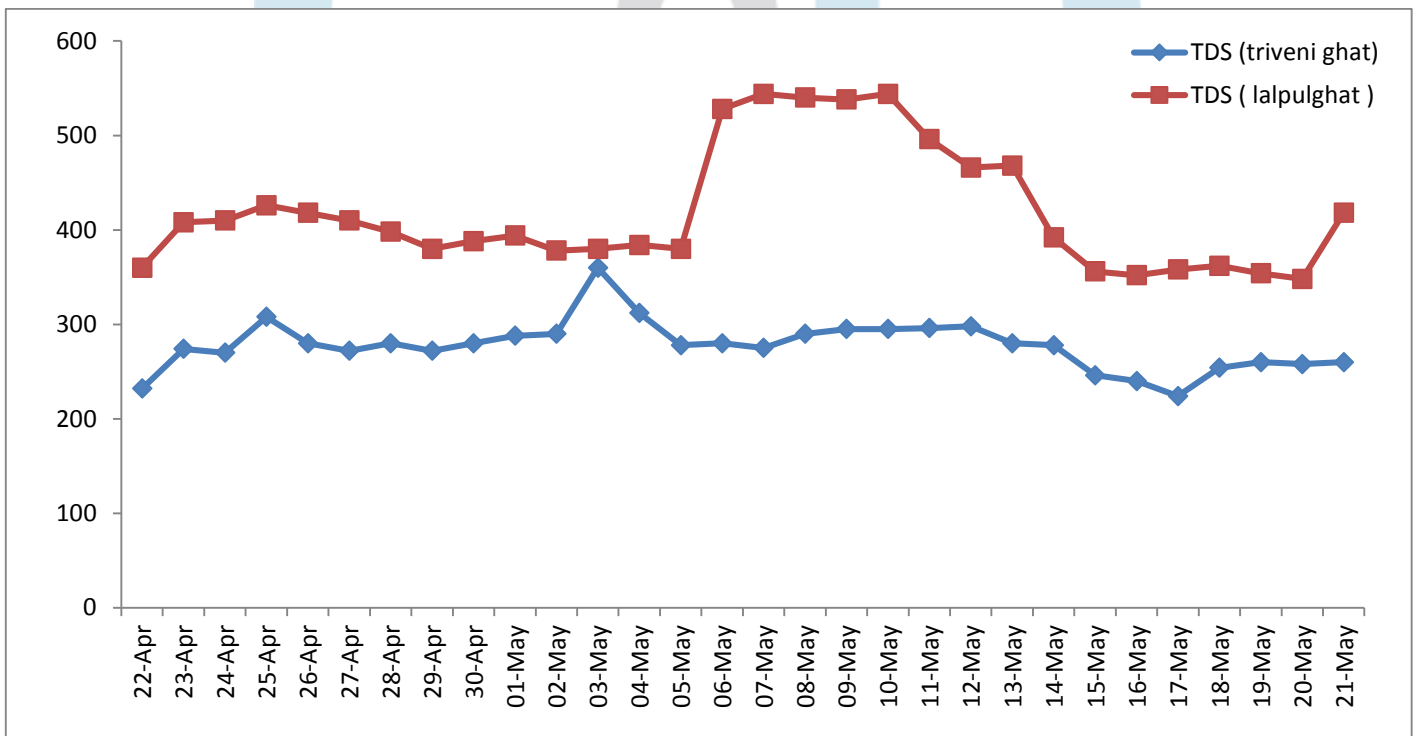


Fig 2: Comparative analysis of TDS at Triveni Ghat and Lalpul during Ujjain Kumbh 2016

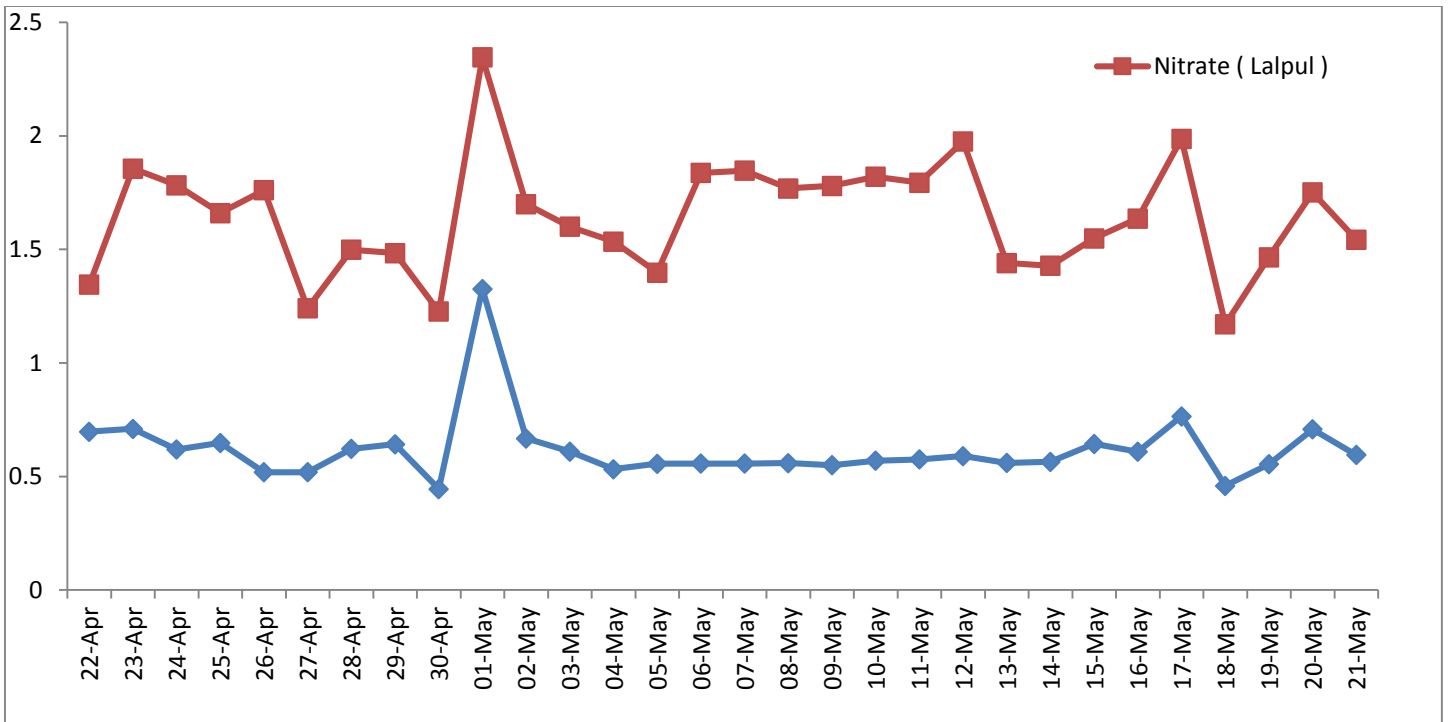


Fig 3: Comparative analysis of Nitrate at Triveni Ghat and Lalpul during Ujjain Kumbh 2016.

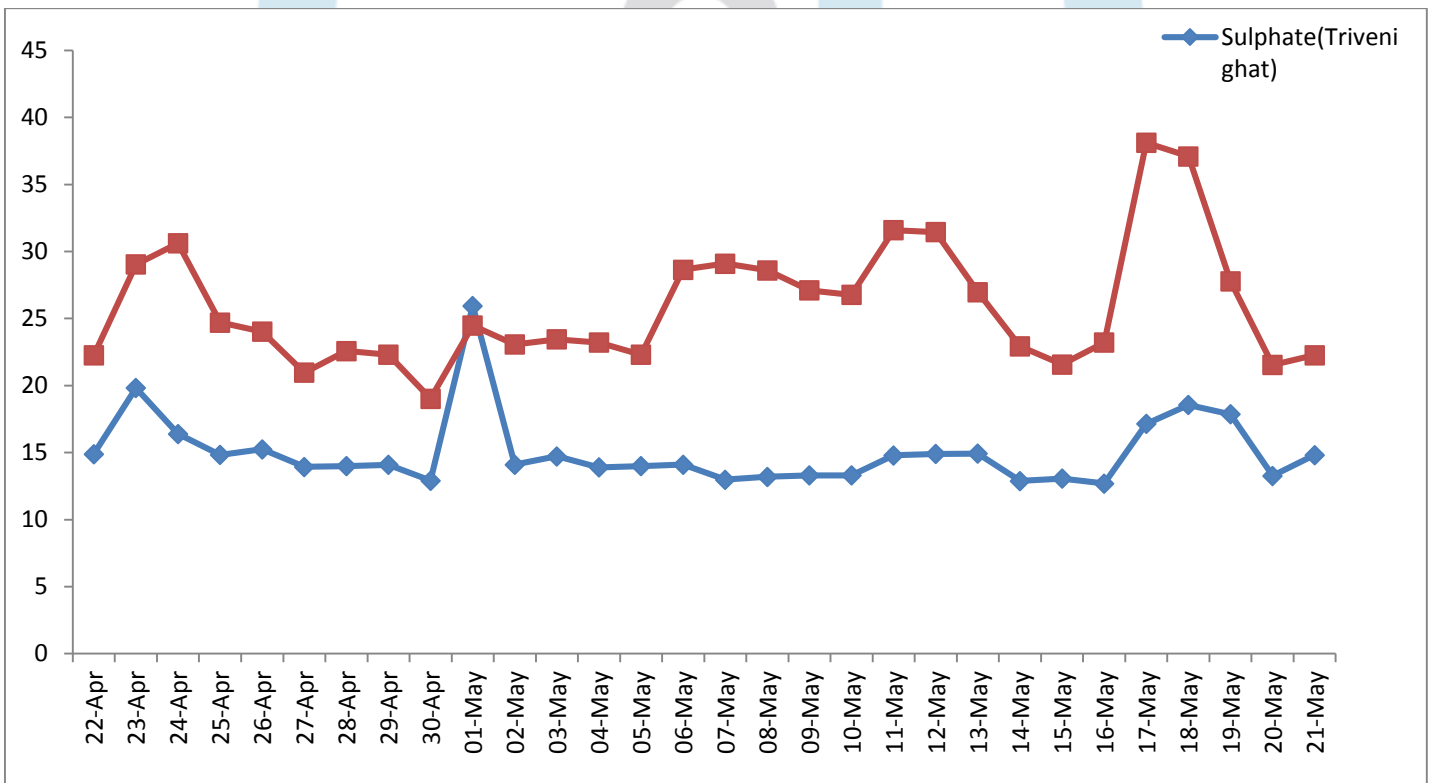


Fig 4: Comparative analysis of Sulphate at Triveni Ghat and Lalpul during Ujjain Kumbh 2016.

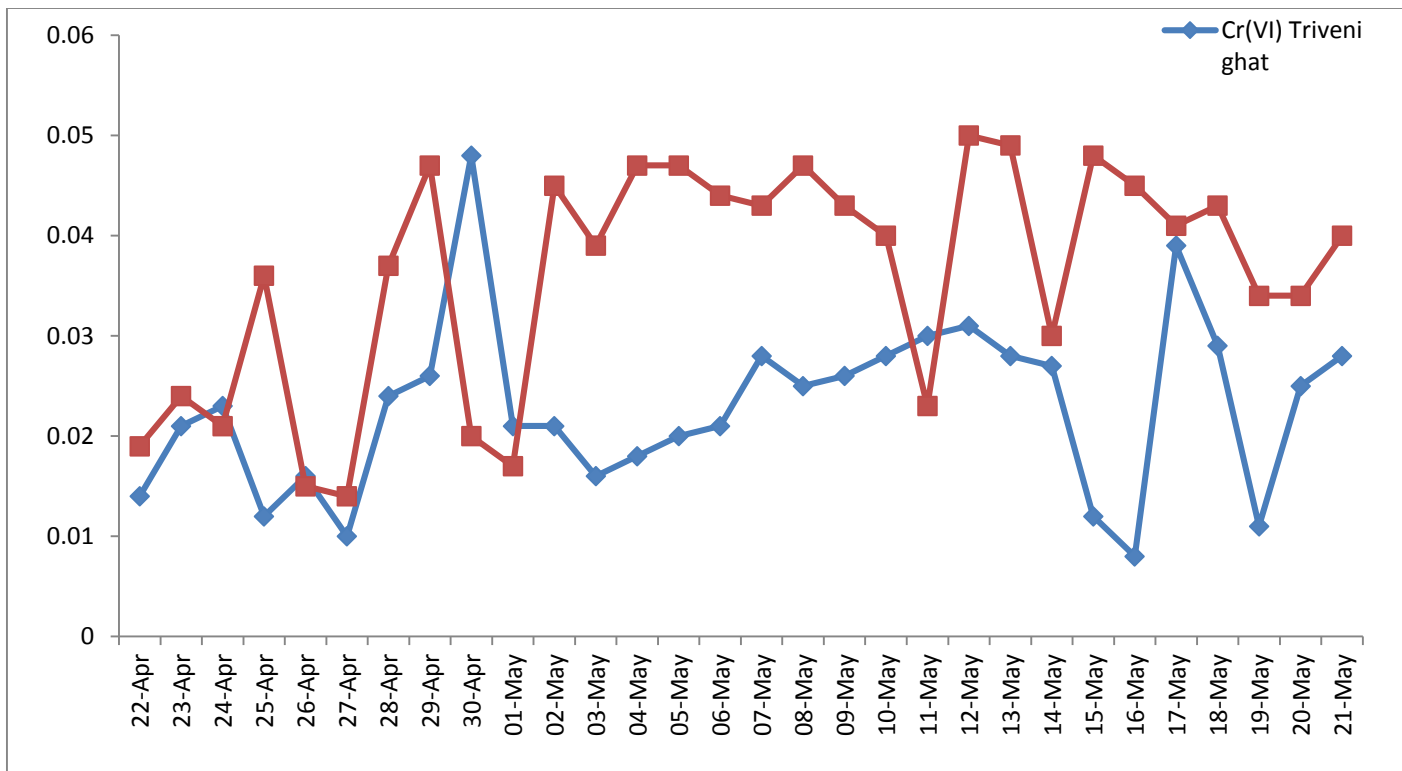


Fig 5: Comparative analysis of Cr(VI) at Triveni Ghat and Lalpul during Ujjain Kumbh 2016

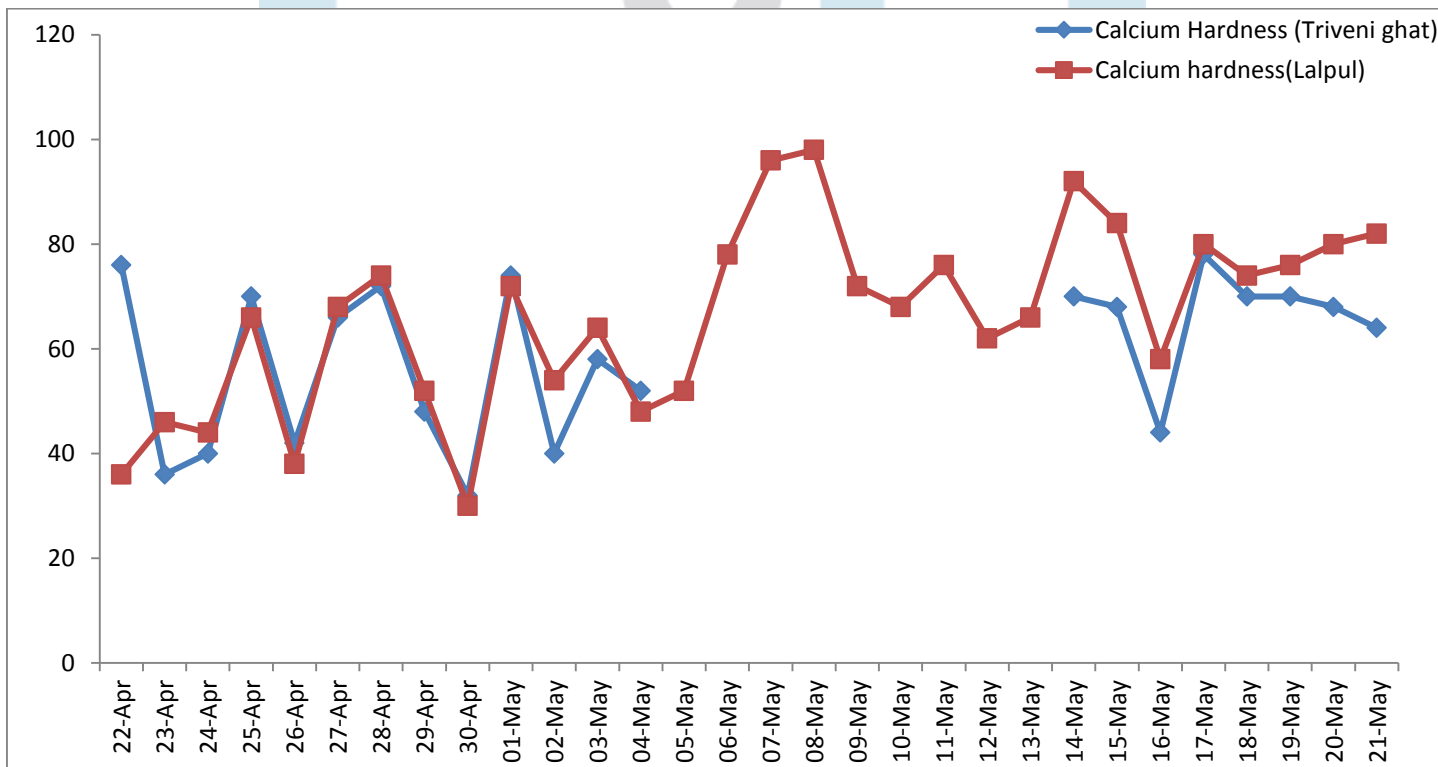


Fig 6: Comparative analysis of Calcium hardness at Triveni Ghat and Lalpul during Ujjain Kumbh 2016

Result and Discussion

The pH of the samples was found to range between 6.8-8 reaching a highest value to 8.5 during 6th May to 15 May. The TDS values were found to be maintained within the range of 225-375 and it reached to the highest level of 525 during 6th May to 10th May. The nitrate level was highest on 30th April. The level of Sulphate, Chromium (VI) and calcium hardness was found to be maintained nearly constant within permissible limits. On comparing all the data of the two sampling station Trivenighat and lalpulghat, it was found that the level of different results obtained from Lalpulghat was slightly more than Trivenighat samples.

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