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## **Bacteriological and physico-chemical quality of household drinking water in Kisii Town, Kisii County, Kenya**

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**EQUITABLE AND SUSTAINABLE WASH SERVICES:  
FUTURE CHALLENGES IN A RAPIDLY CHANGING WORLD**

**Bacteriological and physico-chemical quality of household  
drinking water in Kisii Town, Kisii County, Kenya**

Janet Kemunto Ondieki

*Kenya*

**REFERENCE NO. 3116**

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Water is a basic human need that is required in many operations especially in households. However, this crucial commodity in most cases does not meet the safety requirements as per the generally accepted standards (Cherunya et al, 2015). The study was designed to investigate the physico-chemical and bacteriological quality of drinking water used in households in Kisii town, Kenya. Analytical cross-sectional study was conducted to obtain information concerning household drinking water quality and safety. Stratified random sampling was used to obtain 422 drinking water samples at the point of consumption from all the 4 zones of Kisii town for analysis. TDS and electrical conductivity of all the analyzed water samples were within recommended standards of below 1000 ppm and 1500  $\mu$ SCM-1 respectively, 91.9% had turbidity of less than 5NTU, 69.4% had pH range of 6.5-8.5, 3.8% of the analyzed samples had temperature below 150C and 31.2% of the chlorinated samples had chlorine residue above 0.2 ppm. In terms of bacteriological analysis, 39.3% of the samples were contaminated with total coliforms and 17.5% with *E. coli*. The main finding of this study was that the household water samples were contaminated with bacteria and unfit for human consumption as they exceeded the recommended standard of 0CFU for both total coliforms and *E. coli* as per WHO and Kenya Bureau of Standards (KEBS). Public health officers should not only collect water samples from sources but also from households regularly to ascertain its quality and provide water safety promotion education to the general public. There was a strong relationship between bacterial contamination and temperature as well as chlorine residue. The study recommends Gusii Water and Sanitation Company (GWASCO) whose treatment and distribution capacity is expected to increase 4.5 times the current capacity to improve on their chlorine dosage at the treatment plant to ensure a minimum chlorine residue on 0.2ppm at the household or community taps.

**Reference**

Cherunya, P. C., Janezic, C., & Leuchner, M. (2015). Sustainable supply of safe drinking water for underserved households in Kenya: Investigating the viability of decentralized solutions. *Water*, 7(10), 5437-5457.

**Contact details**

Janet Ondieki is a public health officer at Kisii County, Kenya. She is a WASH specialist and a researcher with special interest in water quality.

**Janet Kemunto Ondieki:**

P.O. Box 5-40221, Kisii, Kenya. Telephone: +254729141904.  
Email: [jany.kem@gmail.com](mailto:jany.kem@gmail.com)