ABSTRACT

E.coli Contamination of Dug-Well Water in Derawan Island, Indonesia

Heru Sudarmansyah, Ratih Wirapuspita Wisnuwardani

Correspondence E-mail : heruilunk1994@gmail.com

Background: Ensuring microbiologically safe water is challenging in island communities reliant on shallow groundwater. High population density, limited land, and proximity of dug wells to fecal pollution sources may compromise water quality. Escherichia coli indicates fecal contamination and potential microbiological risks. Such water sources remain essential to local households and warrant careful assessment of their microbiological safety.

Objective: To assess E. coli contamination in dug well water on Derawan Island and its association with well conditions and distance from potential pollution sources.

Methods: This descriptive cross-sectional study examined 30 household dug wells. Well conditions and distances to potential pollution sources were assessed. Water samples were tested for E. coli using membrane filtration of 100-mL samples, with results expressed as colony-forming units per 100 mL (CFU/100 mL). Compliance was assessed against applicable Indonesian water quality standards. Associations between well-related factors and contamination were analyzed using [statistical test], with statistical significance defined as $p < 0.05$.

Results: Of 30 samples, 17 (56.7%) were positive for E. coli and failed to meet microbiological requirements, while 13 (43.3%) had no detectable E. coli and met the requirements. Therefore, more than half of examined dug wells showed evidence of fecal contamination.

Conclusion: E. coli contamination in dug well water on Derawan Island was relatively high. Well conditions [were/were not] significantly associated with contamination (p = [p-value]), while distance from potential pollution sources [was/was not] significantly associated. The findings underline the need to address microbiological safety of dug well water in island communities.

Keyword : Escherichia coli; dug wells; water quality; fecal contamination; island areas