IMPROVING DRINKING WATER SAFETY IN RURAL SCHOOLS: A STUDY OF E. COLI CONTAMINATION AND INTERVENTION OUTCOMES

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Background: Rural schools often rely on local or their own water sources, where monitoring of drinking water quality is limited. Ensuring safe drinking water in these schools is vital for children's health, making it important to raise community awareness and enforce continuous quality monitoring.

Methods and Objectives: A retrospective ten-year study (2012-2021) used data from the Institute of Public Health of Sabac database on the presence of E. coli in drinking water in rural schools connected to their own water supply. The aim of this study is to assess the microbiological quality of drinking water in rural school water supply facilities.

Results: During the observed period, 2,683 water samples were analyzed, of which E. coli was detected in 593 samples (25.97±8.89%). The study revealed that from 2012 to 2021, there was a 6% annual increase in the percentage of analyzed samples showing microbiological fecal contamination with E. coli, although this increase was not statistically significant ($R^2 = 0.25$). Over the ten-year period, the number of analyzed water samples decreased from 437 in 2012 to 88 in 2021, due to a reduction in the number of schools with their own water supply and temporary school closures due to the COVID-19 pandemic. However, there was a statistically significant decrease of 9.8% in the percentage of rural schools where E. coli was detected in wells ($R^2 = 0.69$), due to the installation of continuous disinfection systems in schools and the connection of 20 out of 109 schools to public water supplies.

Conclusions: The study observed a reduction in E. coli contamination, attributable to effective interventions such as continuous disinfection and the transition of schools to public water supplies. Ensuring safe drinking water is crucial for children's health. It is important to raise community awareness and maintain effective monitoring of water supply facilities in rural schools, even during future pandemics.

Keywords: E. coli, drinking water quality, rural schools, continuous disinfection, public water supplies