Trends in the prevalence and association between Escherichia coli (E. coli) contamination in household drinking water and the risk of childhood diarrheal disease in Bangladesh

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Background

Escherichia coli (E. coli) is one of the most prevalent agents causing moderate-to-severe diarrhea. We aimed was to ascertain whether E. coli contamination of the household drinking water and childhood under five years of age diarrheal illnesses.

Methods

In this study, data from the 2012 and 2019 waves of the Multiple Indicator Cluster Survey (MICS) were used. Colonies of E. coli were measured per 100 ml of water and divided into three risk categories. Less than one colony of E. coli contamination is considered as low risk, one to ten colonies are considered as moderate risk, and more than ten colonies is considered as high risk. Data were analyzed using logistic regression model with considering complex survey design.

Results

We discovered that children who were exposed to moderate levels of E. coli infection were 1.46 times (adjusted odds ratio (AOR) = 1.46, 95% confidence interval (CI: 0.71 - 3.01) and 1.29 times (AOR = 1.29, CI: 0.54 - 3.10) more likely to experience diarrhea than those exposed to low levels of E. coli contamination in MICS data of 2019 and 2012, respectively. Moreover, for MICS 2019 and 2012, high risk of E. coli contamination household children was 1.96 (CI: 1.06-3.63) and 1.29 (0.62-2.69) times more likely to suffer diarrhea than children from low risk of E. coli contamination group. However, all association was not statistically significant except for the high risk of E. coli contamination group of the MICS 2019.

Conclusion

The study's conclusion makes obvious policy insinuations and advises minimizing E. coli contamination in drinking water and developing proper hygiene practices to prevent childhood diarrhea.

Key Words: Escherichia coli, Drinking water, Childhood disease, Diarrhea, Under-5 children