

A Comprehensive Understanding of The Roles of Microbial Gastroenteritis in Acute Gastroenteritis

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Structured Abstract

Background: Acute gastroenteritis (AGE) is a widely found disease, having a microbial, viral and parasitic etiology, and the disease has significant morbidity in low resource level. It manifests itself with such symptoms as fever, vomiting, diarrhoea. This paper explores food-borne and water-borne causes, risk behaviour and approaches to address health in the community. It takes the reader through the myriad ways by which notable pathogens, *Salmonella*, *Campylobacter*, pathogenic *E. coli*, Rotavirus, Norovirus and *Giardia lamblia* infect the gut and disseminate. Understanding the mechanisms is crucial for development of disease-markers and of targeted therapies. Contemporary ways of treatment with focus on vaccines, oral rehydration, antibiotics, and probiotics are reviewed in the study, as well as the necessity of new and better interventions to prevent and treat AGE in vulnerable groups.

Methods: This report was conducted using a framework for a research review. Specific searches in Google Scholar, PubMed, ScienceDirect, and Springer Link that were published between 2019 and 2025 served as the data sources. All the information was located, and screening was done using the appropriate subjects that were provided. According to the study's eligibility standards, a total of 97 papers were used.

Results: Norovirus, Rotavirus, *Salmonella*, *Campylobacter* and *Giardia* are the five major pathogens that cause AGE. Such pathogens usually exist by either foodborne transmission or waterborne transfer. They are well adapted and have distinct features that enable them to endure the extreme conditions of an environment. The common ones are diarrhoea, vomiting, and nausea, whereas, when untreated, they may give rise to worse symptoms as the infection of the intestine and gut causes inflammatory bowel symptoms or haemolytic uremic syndrome. With the uprising of antibiotic resistance treatment is complicated but may still be handled through antivirals, vaccines and probiotics, though with variable success depending on the condition of the individual host.

Conclusion: Conclusively, AGE continues to be a worldwide health predicament because of its various microbial reasons, methods of transmission, and complications. Knowledge of mechanism of the pathogen and resistance pattern is important in effective treatment and prevention. There is need of ongoing study to enhance diagnostic items, therapeutic options and pinnacle health action particularly in most susceptible groups.

Keywords: AGE, pathogens, transmission, antibiotic resistance, prevention and treatment

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