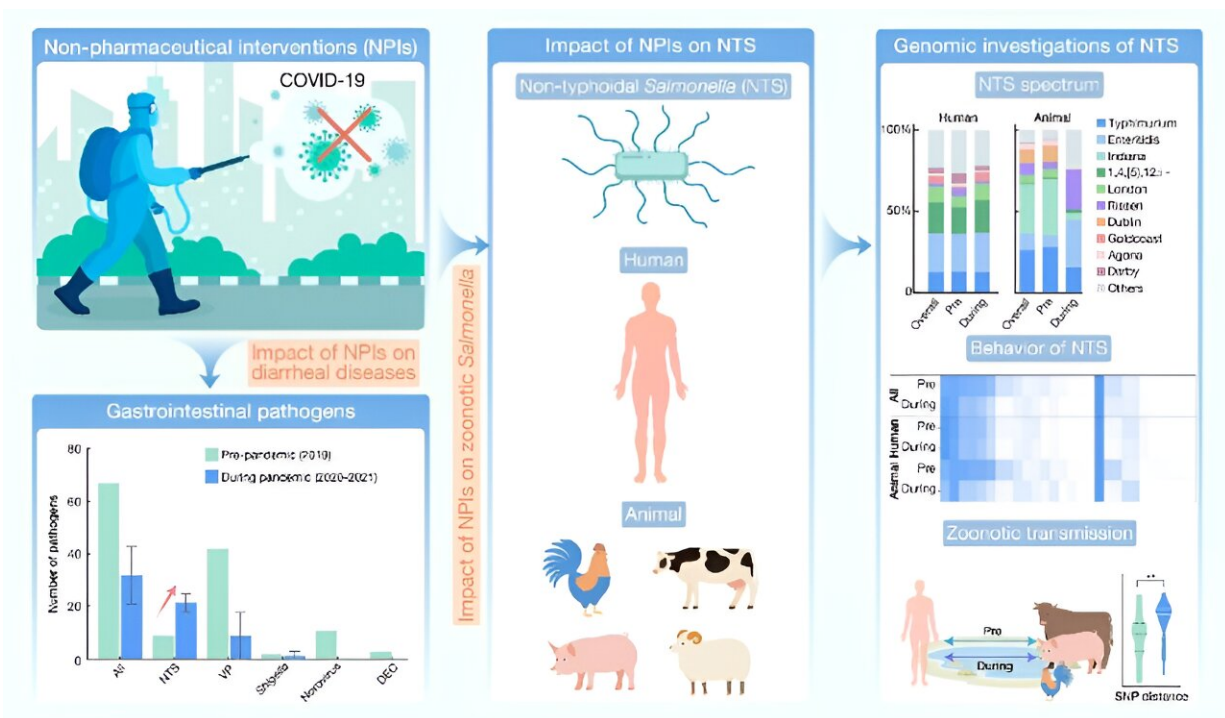


# Impact of COVID-19-related nonpharmaceutical interventions on diarrheal diseases and zoonotic Salmonella

April 23 2024



Nonpharmaceutical interventions (NPIs) reduced the incidence of acute diarrhea, with a decrease in most enteric pathogen infections, except for non-typhoidal Salmonella (NTS). During the pandemic period, NTS showed an overall reduction in antimicrobial-resistant (AMR), disinfection-tolerant, and virulence capabilities. A marked NTS serovar variations between human and animal isolates. NPIs reduce NTS zoonotic transmission, indicating compensated routines for transmission. Credit: Min Yue, School of Life Science, Hangzhou Institute for Advanced Study, University of Chinese Academy of Sciences; College of Medicine, Zhejiang University

Non-pharmaceutical interventions (NPIs) have been proven effective in reducing the spread of COVID-19, but their broader impact on gastrointestinal disorders remains poorly studied. Non-typhoidal Salmonella (NTS) infections are primarily self-limiting diarrheal illnesses with a high case fatality rate in certain regions. Systematic investigation of the genetic characteristics and transmission pathways of NPIs in China is lacking.

A study was conducted by Linlin Huang (Department of Veterinary Medicine, Zhejiang University College of Animal Sciences, Zhejiang, China) and Haiyang Zhou (Department of Veterinary Medicine, Zhejiang University College of Animal Sciences, Zhejiang, China; Hainan Institute of Zhejiang University, Hainan, China).

This study analyzed acute diarrhea outpatient cases pre- and during the COVID-19 in Hangzhou, China. The results showed that NPIs implemented during the pandemic were significantly affected by outpatients' age and occupational distribution. While the detection rate of most foodborne pathogens declined, there was an abnormal increase in the detection rate of NTS. The study is [published](#) in the journal *hLife*.

Through tracking research on patients' diets, the researchers speculate that COVID-19-related NPIs may have reduced the frequency of dining out, leading to more homemade meals, which may increase the risk of NTS transmission through consuming contaminated meat.

Furthermore, it was observed that the invasiveness index of NTS decreased significantly during the pandemic, suggesting that the abnormal behavior of NTS might be associated with its enhanced colonization ability in the intestine, leading to an increase in the incidence of acute diarrhea.

Furthermore, the researchers conducted [whole genome](#) sequencing analysis on NTS samples from human and animal sources. The analysis revealed [dynamic changes](#) in NTS serotype patterns during the pandemic and significant reductions in both resistance and virulence.

These changes exhibited notable differences between human and animal samples. SNP analysis results showed that during the pandemic, the possibility and frequency of zoonotic transmission events caused by NTS showed a downward trend. These findings suggest an unexpected positive impact of COVID-19-related NPIs in controlling NTS. The elevating cases during the COVID-19 further indicate pathways other than food- or meat-borne for Salmonella transmission.

The findings may have broader implications beyond China, which promote an improved understanding of the indirect effects of COVID-19 on enteric pathogen infections, or pathogens with a different transmission route, in other countries. The knowledge gained can aid in developing adequate contingency plans for appropriate strategies against gastrointestinal infections.

**More information:** Linlin Huang et al, Impact of COVID-19-related nonpharmaceutical interventions on diarrheal diseases and zoonotic Salmonella, *hLife* (2024). [DOI: 10.1016/j.hlife.2024.03.005](https://doi.org/10.1016/j.hlife.2024.03.005)

Provided by Tsinghua University Press

Citation: Impact of COVID-19-related nonpharmaceutical interventions on diarrheal diseases and zoonotic Salmonella (2024, April 23) retrieved 4 May 2024 from <https://medicalxpress.com/news/2024-04-impact-covid-nonpharmaceutical-interventions->

[diarrheal.html](#)

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.