



Review Article

# Prevalence of Self-Reported Acute Gastroenteritis Potentially Associated with Foodborne Illness Among Children Aged 1–14 Years: A Systematic Review and Meta-Analysis

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## ABSTRACT

Foodborne illness is a public-health concern worldwide. This study aimed to estimate the prevalence of self-reported acute gastroenteritis associated with foodborne illness among children and to identify associated factors with its occurrence. From inception until March 29, 2022, we carefully searched the PubMed and Scopus databases for prospective research published in journals. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist was used to evaluate the reporting quality of the included studies. Five studies had a STROBE score  $\geq 14$ . The pooled prevalence of foodborne illness among children aged 5-14 years old was higher than children aged 1-4 years old [13.7% (95% CI 9.1-18.2)] versus 7.5% [(95% CI 3.4-11.)]. Meanwhile the prevalence of foodborne illness among the children aged 5-14 years old by country was highest in Dominica (25.0%) while children aged 1-4 years old was highest in Grenada (14.60%). The differences in the prevalence of foodborne illness among children require a targeted approach of preventive strategies for better health outcomes in the future.

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## 1. Introduction

Foodborne disease is commonly defined as illness resulting from ingestion of food contaminated with pathogenic microorganisms, toxins, or chemical substances (Jones et al., 2007). In contrast, acute gastroenteritis (AGE) refers to a symptom-based clinical presentation characterised by diarrhoea, vomiting, abdominal pain, or nausea, which may arise from multiple transmission pathways, including foodborne, waterborne, person-to-person, or environmental exposure (MOH, 2006). Although AGE is frequently used as a proxy indicator in population-based surveillance of gastrointestinal illness, symptom-based reporting does not allow definitive attribution to foodborne transmission. Consequently, studies measuring self-

reported AGE provide estimates of gastrointestinal illness burden rather than laboratory-confirmed foodborne disease.

Foodborne disease-related gastrointestinal illness remains a significant cause of preventable morbidity in children, and is frequently associated with high-risk foods such as poultry, dairy products, fresh produce, unpasteurised beverages, ready-to-eat meals, and street foods (FoodSafety.gov, 2025 & Palma et al., 2010). These types of foods are considered “risky foods” as contamination may occur during the preparation, handling, storage, production or vending processes. Generating pooled prevalence estimates provides critical quantitative evidence for burden estimation, comparative risk assessment, and policy prioritisation. Such information is useful to support surveillance strengthening, hygiene promotion, food safety education and regulatory enforcement in child-focused settings (Kelly, Osburn, & Salman, 2014). The application of the STROBE checklist further supports methodological transparency of the reporting quality of observational studies by key parameters such as study design, participant selection, outcome definition, bias disclosure, and statistical reporting (Moher, 2015).

Children represent a particularly vulnerable population due to developmental, behavioural, and environmental factors that increase their exposure to enteric pathogens. The World Health Organization estimates that contaminated food causes approximately 600 million illnesses and 420,000 deaths globally each year, with children under five years accounting for nearly 40% of the global burden (Kelly, Osburn, & Salman, 2014). Beyond acute symptoms, repeated gastrointestinal infections during early childhood have been associated with growth impairment, malnutrition, and reduced cognitive development, underscoring the importance of understanding gastrointestinal illness patterns in paediatric populations.

Several global burden assessments have attempted to estimate the overall incidence of foodborne disease (Kelly, Osburn, & Salman, 2014). However, these large-scale assessments typically rely on modelling approaches and aggregated surveillance data rather than systematically synthesising prevalence estimates from observational studies focused on children. Moreover, many population-based surveys capture self-reported AGE rather than laboratory-confirmed foodborne infections, creating uncertainty in attributing illness specifically to foodborne transmission. Nonetheless, a systematic synthesis of such studies can provide valuable epidemiological insights into the burden of gastrointestinal illness in children and highlight variation across age groups and populations, contribute evidence relevant to risk assessment and public-health strategies.

Therefore, the present systematic review and meta-analysis aimed to estimate the pooled prevalence of self-reported acute gastroenteritis among children aged 1–14 years, while acknowledging that these estimates represent gastrointestinal illness potentially attributable to foodborne exposure rather than confirmed foodborne disease prevalence. By synthesising available observational evidence, this study seeks to provide a clearer understanding of gastrointestinal illness burden among children and identify important gaps for future surveillance and research.

## 2. Materials and Methods

This systematic review and meta-analysis was registered in PROSPERO (CRD42020208372) and conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (WHO, 2015). The PubMed (including MEDLINE records) and Scopus were searched from database inception to 29 March 2022 to identify peer-reviewed observational studies reporting the prevalence of foodborne disease-related gastrointestinal illness in paediatric populations. The search strategy combined MeSH and free-text terms related to foodborne illness and prevalence in children. The full search terms used for each database are presented in Appendix 1.

Eligible studies were full-text, English-language observational studies (cross-sectional, cohort, or surveillance-based) conducted in human participants and reporting extractable prevalence data for children aged 1–14 years. Mixed-age studies were included only if age-stratified data were available, while studies involving adults exclusively or lacking extractable paediatric data were excluded. After duplicate records were removed using EndNote X5, two reviewers independently screened the titles, abstracts, and full texts. Any disagreements were resolved through consensus.

However, because the review in the present study addressed gastrointestinal illness potentially attributable to foodborne exposure, studies using symptom-based AGE definitions were considered eligible even when laboratory confirmation of foodborne origin was not available. Age-stratified analyses were pre-specified for children aged 1–4 years and 5–14 years to reflect biologically and behaviourally distinct developmental stages. Children aged 1–4 years represent an early childhood group characterised by immature immune function, higher caregiver dependence, and increased environmental exposure, whereas children aged 5–14 years typically demonstrate greater autonomy in food choices, school-based exposures, and risk-related behaviours.

This stratification allows for more meaningful epidemiological interpretation and improves the relevance of findings for age-targeted prevention strategies. Reporting quality was assessed independently by two reviewers using the 22-item STROBE checklist (Moher, 2015), with scores  $\geq 14$  indicating good reporting quality. Each item was scored as “1” if adequately reported or “0” if insufficient information was provided (see Appendix 1). All eligible studies were retained, although only those with sufficient comparable data were included in the meta-analysis. Data extracted included study characteristics, case definitions, recall periods, sample sizes, and prevalence estimates with corresponding 95% confidence intervals. Where prevalence was not explicitly reported, it was calculated from raw data.

Pooled prevalence estimates were generated using a random-effects meta-analysis (DerSimonian–Laird method) with 95% confidence intervals. Statistical heterogeneity was evaluated using the  $I^2$  statistic (Elm, 2007). Subgroup analyses were conducted by age group and by country where feasible, with odds ratios calculated only for subgroup comparisons. This comparative analysis was intended to complement the pooled prevalence estimates by assessing whether older children had a higher likelihood of illness than younger children across eligible studies. Publication bias was assessed using funnel plot inspection and Egger’s regression test where appropriate, although these findings were interpreted cautiously due to the small number of included studies. All analyses were performed using OpenMetaAnalyst software (Higgins & Thompson, 2002).

### 3. Results and Discussion

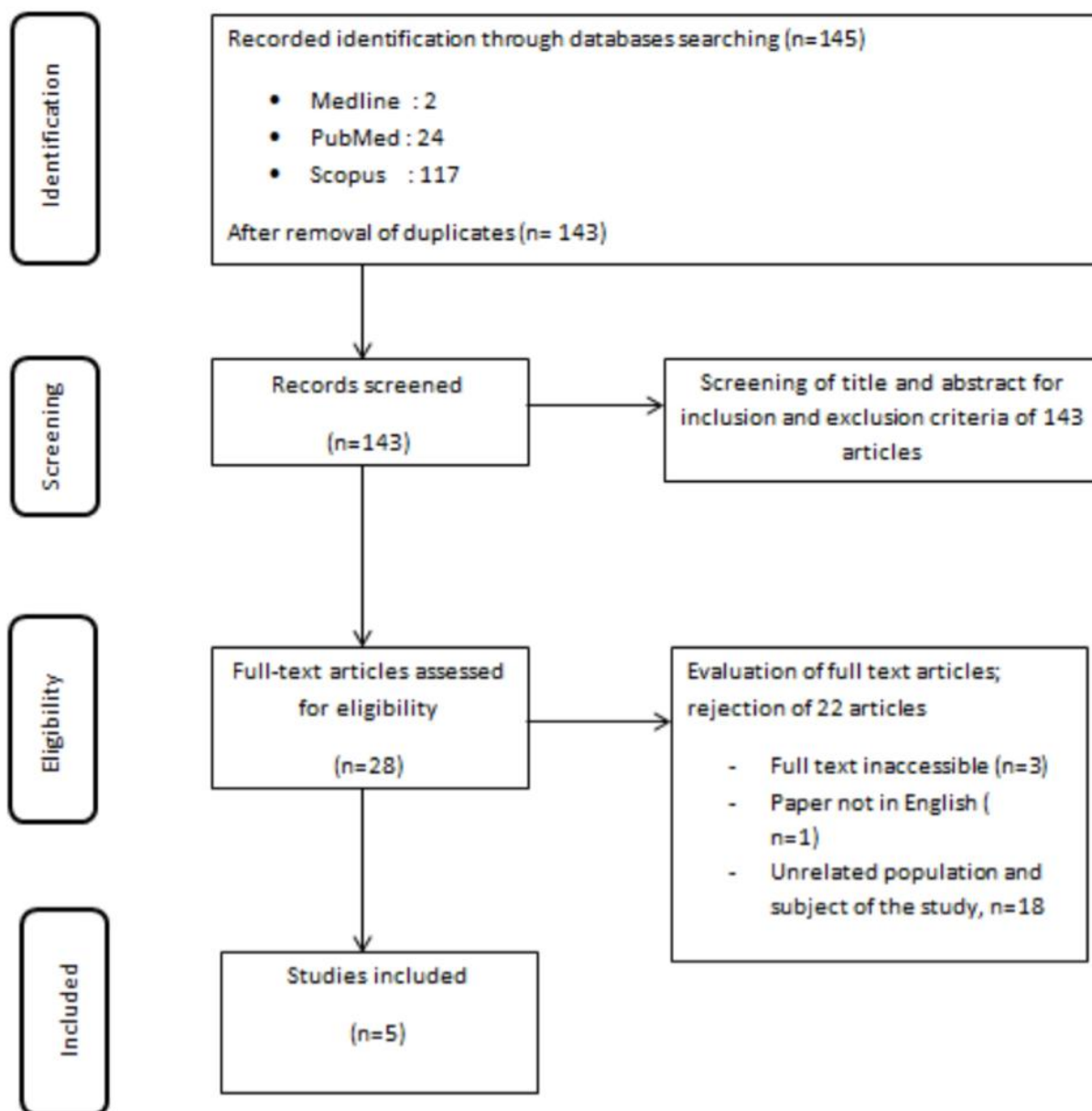
#### 3.1 Description of included studies

The database search identified 143 records (Figure 1). After removal of duplicates ( $n = 2$ ), 141 records were screened by title and abstract. Twenty-eight full-text articles were assessed for eligibility, of which five studies published between 2008 and 2011 met the inclusion criteria and were included in the systematic review and meta-analysis.

All included studies achieved a STROBE reporting score  $\geq 14$ , indicating adequate reporting transparency according to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist (Moher, 2007). However, STROBE evaluates the transparency and completeness of reporting rather than to determine study eligibility and methodological risk of bias. It does not formally assess selection bias, measurement validity, or confounding, which should be interpreted with caution. In

addition, methodological differences across studies including variations in sampling approaches, recall periods, and symptom definitions may influence prevalence estimates and limit direct comparability between study settings.

The distribution of participants across countries was uneven, with one study contributing a substantially larger proportion of the total sample size. Such sample size imbalance may influence pooled prevalence estimates and reduce the precision of country-level comparisons. Furthermore, differences in survey design, sampling frames, and recall periods across studies may contribute to variability in reported prevalence. Although the studies were conducted in multiple countries, the overall number of included studies and children were limited, and geographic representation was largely confined to Caribbean settings and China.



**Figure 1.** PRISMA flow diagram of the literature screening process [17]

### *3.2 Characteristics of included studies*

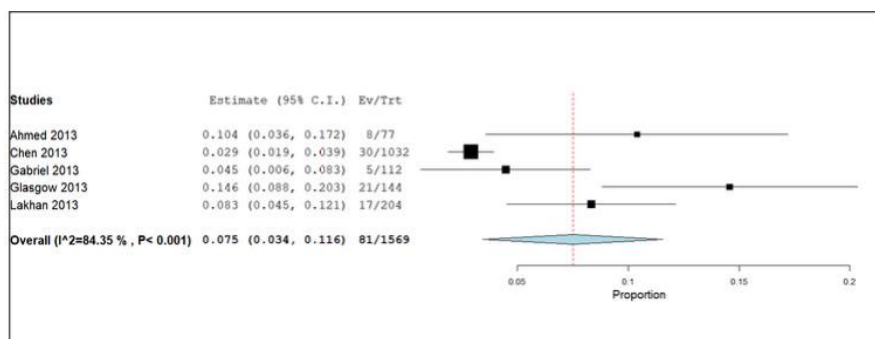
A total of 2,830 children from six countries were included in the pooled analysis. Overall, 1,568 children were aged 1–4 years and 1,262 children were aged 5–14 years. The distribution of countries involved is as follows: Dominica included 77 children aged 1–4 years and 20 children aged 5–14 years. A study from China included 1,031 children aged 1–4 years and 1,031 children aged 5–14 years. A study from the Eastern Caribbean included 112 children aged 1–4 years and 40 children aged 5–14 years. A study from Grenada included 144 children aged 1–4 years and 81 children aged 5–14 years. In addition, a study conducted in Trinidad and Tobago included 204 children aged 1–4 years and 90 children aged 5–14 years.

### *3.3 Prevalence of Foodborne Illness*

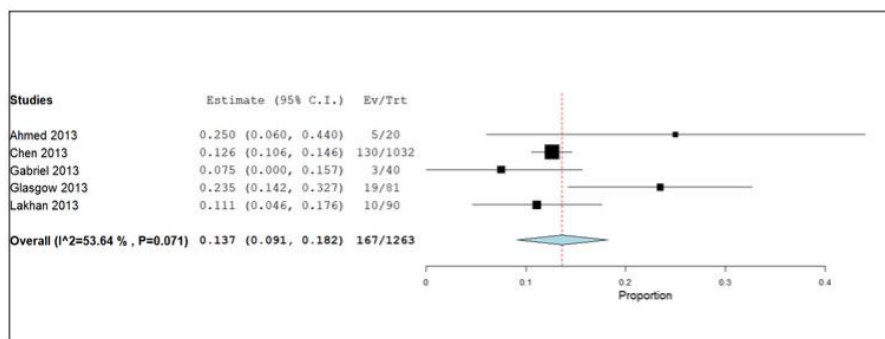
Across included studies, outcomes were based on self-reported episodes of acute gastroenteritis (AGE) recorded over varying recall periods, most commonly four weeks. Case definitions were not standardised and generally captured diarrhoeal or gastrointestinal symptoms without laboratory confirmation of foodborne origin. A symptom-based definition of gastroenteritis is widely used in population surveys (MOH, 2006), but such definitions cannot reliably attribute illness to foodborne transmission. Accordingly, pooled estimates should be interpreted as the prevalence of self-reported AGE potentially attributable to foodborne exposure rather than confirmed foodborne disease prevalence. The pooled prevalence among children aged 1–4 years was 7.5% (95% CI: 3.4–11.6) (Figure 2), while among children aged 5–14 years it was higher at 13.7% (95% CI: 9.1–18.2) (Figure 3). Prevalence varied across settings (Table 1), likely reflecting differences in recall periods, case definitions, healthcare access, environmental exposures, and study methodology rather than true incidence differences alone.

**Table 1.** Pooled prevalence of AGE and 95% confidence interval by subgroup analysis by age group

Reference	Country	Age	Total Sample Size	Total Food Poisoning	Prevalence	95% C.I.	Study Duration	Types of Microbes	Source	Symptom
(Ahmed et al., 2013)	Dominica	1-4 years old	77	8	10.4%	4.6 - 19.4	2009-2010	<i>Norovirus, Giardia, Salmonella, and Shigella</i>	-	-
(Chen et al., 2013)	China	1-4 years old	1031	30	2.90%	2.3 - 3.4	2010-2011	-	Contaminated food, water, and contact with infected person	Diarrhoea, Bloody diarrhoea, Vomiting
(Gabriel et al., 2013)	Eastern Caribbean	1-4 years old	112	5	4.50%	1.5 - 10.2	2008	-	-	Fever, blood in stool, abdominal pain, headache, nausea
(Glasgow et al., 2013)	Grenada	1-4 years old	144	21	14.60%	9.3 - 21.4	2008-2009	<i>Salmonella, Shigella, Campylobacter, and Norovirus</i>	Contaminated food and water	Diarrhoea, Vomiting, abdominal pain, headache, nausea
(Lakhan et al., 2013)	Trinidad and Tobago	1-4 years old	204	17	8.30%	4.9 - 13.0	2008-2009	<i>Salmonella, Shigella, Rotavirus, and Norovirus</i>	-	Diarrhoea, Vomiting, abdominal pain, headache, fever
(Ahmed et al., 2013)	Dominica	5-14 years old	20	5	25%	8.7 - 49.1	2009-2010	<i>Norovirus, Giardia, Salmonella, and Shigella</i>	-	-
(Chen et al., 2013)	China	5-14 years old	1031	130	12.60%	11.1 - 14.1	2010-2011	-	Contaminated food, water, and contact with infected person	Diarrhoea, Bloody diarrhoea, Vomiting
(Gabriel et al., 2013)	Eastern Caribbean	5-14 years old	40	3	7.50%	1.6 - 20.4	2008	-	-	Fever, blood in stool, abdominal pain, headache, nausea
(Glasgow et al., 2013)	Grenada	5-14 years old	81	19	23.50%	14.8-34.2	2008-2009	<i>Salmonella, Shigella, Campylobacter and norovirus</i>	Contaminated food and water	Diarrhoea, Vomiting, abdominal pain, headache, nausea
(Lakhan et al., 2013)	Trinidad and Tobago	5-14 years old	90	10	9.50%	4.7-16.8	2008-2009	<i>Salmonella, Shigella, Rotavirus and Norovirus</i>	-	Diarrhoea, Vomiting, abdominal pain, headache, fever



**Figure 2.** The forest plot of the prevalence of foodborne disease among children 1-4 years old



**Figure 3.** The forest plot of the prevalence of foodborne disease among children 5-14 years old

### 3.4 Symptoms

Across the included studies, the spectrum of gastrointestinal symptoms was broadly consistent, although their relative frequency differed by setting. In the China study (Gabriel et al., 2013), vomiting was reported in 19.8% of cases, and 19.3% reported both diarrhoea and vomiting. Bloody diarrhoea was uncommon (2.7%). The mean duration of illness was 1.8 days, with slightly longer duration observed among children aged 1–4 years. Respiratory symptoms and bloody stools were consistently uncommon. Overall, symptom profiles did not allow reliable differentiation between foodborne and non-foodborne gastrointestinal illness.

### 3.5 Source of foodborne gastrointestinal illness

Foodborne gastrointestinal illness is frequently associated with the consumption of contaminated food products and water, as well as contact with infected people. Across the included studies, contaminated food and water emerged as the main sources of foodborne gastrointestinal illness (include relevant references from the table). In contrast, a history of contact with sick people appeared to represent a less frequent but plausible route of transmission in a small number of studies from China (include two studies from China here). However, the source of foodborne gastrointestinal illness could not be determined in several studies (Ahmed et al., 2013, Gabriel et al., 2013 & Lakhan et al., 2013

Commonly implicated food categories include animal-derived products such as poultry, meat, eggs, and dairy products, as well as fresh produce, unpasteurised beverages, ready-to-eat foods, and street-vended foods (Palma et al., 2010). In many settings, improper food handling practices, inadequate refrigeration, cross-contamination during preparation, and poor hygiene among food handlers contribute

to the risk of pathogen transmission. Children may be particularly exposed to these risks through school meals, ready-to-eat snacks, and street foods, which are widely consumed in both urban and community settings. Although the included studies did not consistently report specific food exposures, these food categories have been widely identified in previous epidemiological investigations as common sources of foodborne illness.

### 3.6 Types of microorganism involved

Microbiological testing was reported only in a subset of studies. In Dominica, norovirus was identified as most common pathogen, followed by *Salmonella* spp., *Giardia* sp., and *Shigella* sp. Studies from Trinidad and Tobago and Grenada likewise reported *Salmonella* spp. and norovirus as predominant pathogens. *Imonella* spp. and *Shigella* spp. accounted for most detected pathogens in the Eastern Caribbean study. Across included studies, bacterial and viral pathogens predominated; however, inconsistent laboratory testing and limited microbiological coverage prevented pooled pathogen-specific analysis.

## 4. Discussion

In this review, the pooled prevalence estimates of foodborne disease–related gastrointestinal illness among children aged 1–14 years were derived from symptom-based reports of acute gastroenteritis (AGE). Overall, prevalence was higher in children aged 5–14 years (13.7%) than in those aged 1–4 years (7.5%), although substantial heterogeneity was observed across studies. Nonetheless, these findings should be interpreted with caution because of methodological variability, including differences in recall periods, sampling frames, questionnaire structure, and outcome definitions. Although several studies used symptom-based AGE definitions consistent with surveillance approaches (MOH, 2006), such definitions do not allow definitive attribution to foodborne transmission.

The observed heterogeneity in this review could likely reflect both contextual and methodological differences. Differences in recall periods (e.g., four-week vs. broader symptom reporting windows) may influence prevalence estimates due to recall bias and telescoping effects (Benjamin et al., 2013). Differences in healthcare access, caregiver reporting practices, and cultural perceptions of illness severity may further affect symptom reporting (Alimi, 2016 & Lamberti et al., 2015). Collectively, these methodological inconsistencies limit direct comparability and highlight the need for harmonised case definitions and standardised surveillance frameworks in future research.

### 4.1 Interpretation of Prevalence Estimates and Heterogeneity

In this review, geographic variation was evident, with higher prevalence reported in several Caribbean countries than in China. However, these differences must be interpreted cautiously. Sample sizes were markedly imbalanced across countries, with one study contributing a disproportionately large number of participants relative to others. Such imbalance may influence pooled estimates and widen uncertainty around smaller-country estimates, reducing precision and limiting comparability.

Differences in environmental and contextual factors may also have contributed to the observed variation in this review. Higher ambient temperatures and humidity in tropical climates may facilitate pathogen survival and replication in food, particularly in settings where refrigeration infrastructure is inconsistent. Variability in water quality, sanitation systems, regulatory enforcement of food safety standards, and informal street-vending practices may further influence the risk of contamination (FoodSafety.gov, 2025). Additionally, differences in surveillance intensity and study methodology between countries, including differences in sampling strategies and recall periods, may partly explain the observed

differences independent of true incidence.

Differences in prevalence across countries may also reflect variation in host-related and demographic characteristics. Factors such as nutritional status, body weight, immune development, and baseline gut microbiota composition may influence susceptibility to enteric infections in children. For example, undernutrition or micronutrient deficiencies may impair immune responses and increase vulnerability to gastrointestinal pathogens. Genetic variability between populations may also affect immune responses to specific pathogens, although this relationship remains insufficiently studied in paediatric foodborne illness. Moreover, differences in dietary habits, food preparation practices, and commonly consumed food types across countries may influence exposure to contaminated foods. However, because these host and behavioural factors were not systematically measured across the included studies, their contribution to the observed differences in prevalence remains uncertain and warrants further investigation in future multicountry research.

#### *4.2 Risk Factors and Interpretation Beyond Age*

Although age-stratified analysis indicated a higher prevalence among older children, this review highlights substantial gaps in the systematic assessment of risk factors. Hygiene behaviours, food handling practices, socioeconomic conditions, and school or household environmental exposures were reported inconsistently and measured using non-standardised tools (Byrd-Bredbenner et al., 2010, Alimi, 2016 & Freeman et al., 2014). The lack of harmonised exposure definitions and inadequate adjustment of confounder precluded pooled effect estimation. Future studies should adopt validated instruments and pre-specified analytical frameworks to enable robust comparisons across settings and meta-analytic estimation of risk factors (MOH, 2006).

The higher prevalence observed among older children may reflect behavioural exposures, including greater autonomy in food choices, increased consumption of ready-to-eat and street-vended foods, and inconsistent hygiene practices (FoodSafety.gov, 2025, Alimi, 2016 & Byrd-Bredbenner et al., 2010). Conversely, younger children may be biologically more susceptible because of immature immune systems and closer environmental contact with caregivers and contaminated surfaces (FoodSafety.gov, 2025). However, causal inference cannot be established from the available data.

#### *4.3 Bias and Data Limitations*

Most included studies relied on self-reported gastrointestinal symptoms, which may introduce the possibility of recall bias and outcome misclassification. Caregivers may underreport mild episodes of illness or overreport severe episodes, and the accuracy of recall may vary according to episode severity and health literacy (Alimi, 2016 & Lamberti et al., 2015). Short recall periods may underestimate incidence, whereas longer recall windows may inflate prevalence because of memory decay or telescoping (Arnold et al., 2013 & Cantwell et al., 2010). These limitations likely contributed to the observed statistical heterogeneity.

Although the STROBE checklist was used to ensure reporting transparency (Von Elm et al., 2007), it does not evaluate methodological risk of bias. Potential biases related to participant selection, measurement validity, and confounding factors were not formally appraised using a dedicated tool such as the JBI critical appraisal instruments, and this limitation should be considered when interpreting the pooled estimates.

In addition, only PubMed and Scopus were searched, and neither grey literature nor regional databases was included. This may have increased the risk of publication bias and geographic skew (Page

et al., 2021). Given the small number of included studies, statistical tests for publication bias are likely to be underpowered and should therefore be interpreted with caution (Page et al., 2021 & Paez, 2017).

#### *4.4 Public Health and Policy Implications*

Despite these limitations, the findings have important implications for both global and national food safety strategies. The World Health Organization Global Food Safety Strategy 2022–2030 emphasises the need to strengthen surveillance systems, harmonise standards, and protect vulnerable populations, including children. Although the pooled estimates in this review derived mainly from symptom-based AGE rather than laboratory-confirmed foodborne infection, they nevertheless provide useful epidemiological benchmarks for burden estimation and priority setting.

Targeted prevention strategies in school and childcare settings are also warranted. School-based hygiene promotion, improved access to handwashing facilities, and the integration of food safety education into school curricula remain evidence-based approaches (Paez, 2017 & Mbakaya et al., 2017). Behavioural interventions that incorporate risk perception and environmental assessment may further support the adoption and maintenance of protective practices (Freeman et al., 2014, Mamot et al., 2021 & Mamot et al., 2024). In parallel, strengthening surveillance through harmonised case definitions, consistent recall periods, and, where feasible, laboratory confirmation would improve comparability across studies and support implementation of global food safety strategies.

At the policy level, stronger enforcement of food safety regulations, particularly for ready-to-eat and street-vended foods remains critical. Improvement in water and sanitation infrastructure, harmonisation of hygiene standards for food vendors, and continuous training and certification of food handlers may all contribute to reducing the burden of foodborne illness.

#### *4.5 Strengths and Limitations*

A key strength of this review is that it highlights one of the first pooled prevalence estimates of foodborne disease-related gastrointestinal illness in children across Caribbean countries and China. Adherence to PRISMA guidelines, together with a structured evaluation of reporting quality using the STROBE checklist, improves transparency and supports reproducibility. In addition, the inclusion of two paediatric age groups allowed age-stratified comparisons with direct relevance to program initiative and the optimization of preventive interventions. These strengths, however, should be considered alongside several relevant limitations. The generalisability of the findings in our systematic review is constrained by the small number of included studies and the limited coverage of geographical areas. Significant heterogeneity in outcome definitions, together with reliance on self-reporting symptoms rather than laboratory-confirmed foodborne infection, may have introduced recall bias and outcome misclassification. Collectively, these limitations reduce comparability across settings, hinder causal inference, and reduce the broader generalizability of the findings.

#### *4.6 Future Research Directions*

Future studies should adopt harmonized and standardised case definitions that allow foodborne transmission to be distinguished from other causes of gastroenteritis. Where feasible, routine laboratory confirmation should be incorporated to improve diagnostic specificity and enable pathogen-level comparisons across countries. To establish causal inference and better inform intervention planning, longitudinal study designs and coordinated multi-country surveillance initiatives are needed.

## 5. Conclusion

This systematic review and meta-analysis provide pooled estimates of gastrointestinal illness potentially attributable to foodborne exposure, which a higher prevalence among older children. Continued strengthening of hygiene promotion and food safety education is needed to improve preventive measures in schools and childcare settings. Future efforts should also focus on improving surveillance using standardised case definitions and, where feasible, routine laboratory confirmation to generate more accurate, policy-relevant burden estimates and to support earlier outbreak detection.

## 6. Appendices

### Appendix 1

**Table 1.** Search items used for final search on 29th March 2022

No	Search Items	PubMed	Scopus	MEDLINE
#1	Food Poisoning OR Foodborne illness OR Food intoxication OR Foodborne diseases (Filter: Human, English)	5,139	12,032	2,614
#2	Prevalence OR Frequency (Filter: Human, English)	1,095,474	4,643,002	792,871
#3	student* OR young adult* OR adolescent* OR pupil OR child* OR kid* (Filter: Human, English)	1,774,794	1,895,364	520,228
#4	#1 AND #2 AND #3 (Filter: Human, English)	24	117	2

### Appendix 2

**Table 2.** Assessment of quality of included studies by STROBE Checklist

	1a	1b	2	3	4	5	6a	6b	7	8	9	10	11	12a	12b	12c	12d	12e	13a	13b	13c	14a	14b	14c	15	16a	16b	16c	17	18	19	20	21	22
Ahmed et al., 2013	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	0	1	0	1	1	1	1	1	1	1	1	1	0	0	1	1	1	0	0
Chen et al., 2013	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	0	1	0	1	1	1	1	1	1	1	1	1	0	0	1	1	1	0	0
Gabriel et al., 2013	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	0	1	0	1	1	1	1	1	1	1	1	1	0	0	1	1	1	0	0
Glasgow et al., 2013	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	0	1	0	1	1	1	1	1	1	1	1	1	0	0	1	1	1	0	0
Lakhan et al., 2013	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	0	1	0	1	1	1	1	1	1	1	1	1	0	0	1	1	1	0	0

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**Conflicts of Interest:** The authors declare no conflict of interest.

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