SEMINÁRIO REGIONAL

FORMAÇÃO E VALORIZAÇÃO DE QUEM ALIMENTA O BRASIL

PARA NUTRICIONISTAS E MERENDEIRAS DA ALIMENTAÇÃO ESCOLAR

SEGURANÇA DOS ALIMENTOS

Por: Gleyson Moura dos Santos

pnae ALIMENTAÇÃO ESCOLAR NOTA 10 | INSTITUTO FEDERAL Sul de Minas Gerais | ITAIPU BINACIONAL | fnde | MINISTÉRIO DA EDUCAÇÃO | GOVERNO FEDERAL BRASIL UNIÃO E RECONSTRUÇÃO

Qual a importância do tema Segurança dos Alimentos no ambiente escolar?

Contextualização

- A cantina escolar pode servir como um **importante espaço** para a **promoção da nutrição e da saúde**.

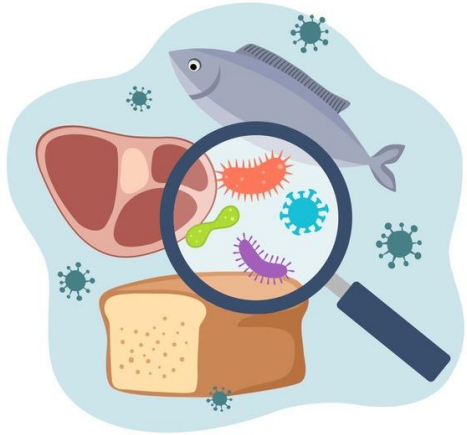
- Papel fundamental na **segurança alimentar e nutricional** e no Direito Humano à Alimentação Adequada (DHAA).

Deve ser dada prioridade a esses locais!!!!

⇩ Doenças de Transmissão Hídrica e Alimentar (DTHA).

(WOGNSKI et al., 2021)

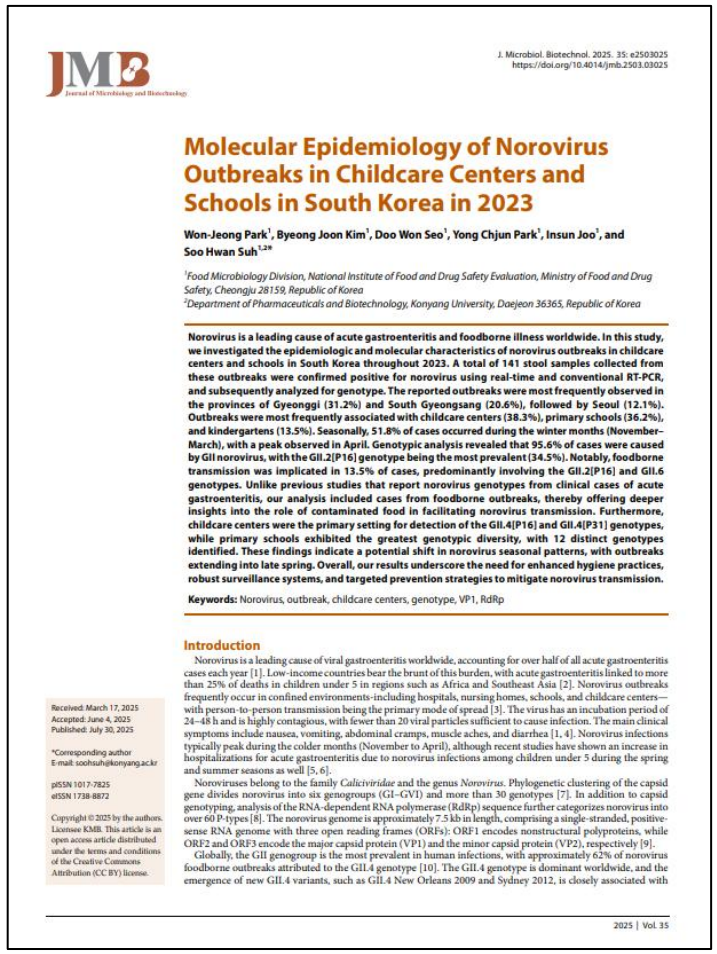
Contextualização



- Mais de 40 milhões de estudantes atendidos pelo PNAE.
- Mais de 200 doenças podem ser transmitidas por alimentos.
- As **crianças menores de 5 anos,** carregam 40% da carga de DTHA, com 125.000 mortes a cada ano.
- Entre os locais com maior ocorrência de DTHA está o **ambiente escolar.**

BRASIL (2025); FNDE (2020).

Dados da Literatura



J. Microbiol. Biotechnol. 2025. 35: e2503025
https://doi.org/10.4014/jmb.2503.03025

Molecular Epidemiology of Norovirus Outbreaks in Childcare Centers and Schools in South Korea in 2023

Won-Jeong Park[1], Byeong Joon Kim[1], Doo Won Seo[1], Yong Chjun Park[1], Insun Joo[1], and Soo Hwan Suh[1,2*]

[1]Food Microbiology Division, National Institute of Food and Drug Safety Evaluation, Ministry of Food and Drug Safety, Cheongju 28159, Republic of Korea
[2]Department of Pharmaceuticals and Biotechnology, Konyang University, Daejeon 36365, Republic of Korea

Norovirus is a leading cause of acute gastroenteritis and foodborne illness worldwide. In this study, we investigated the epidemiologic and molecular characteristics of norovirus outbreaks in childcare centers and schools in South Korea throughout 2023. A total of 141 stool samples collected from these outbreaks were confirmed positive for norovirus using real-time and conventional RT-PCR, and subsequently analyzed for genotype. The reported outbreaks were most frequently observed in the provinces of Gyeonggi (31.2%) and South Gyeongsang (20.6%), followed by Seoul (12.1%). Outbreaks were most frequently associated with childcare centers (38.3%), primary schools (36.2%), and kindergartens (13.5%). Seasonally, 51.8% of cases occurred during the winter months (November–March), with a peak observed in April. Genotypic analysis revealed that 95.6% of cases were caused by GII norovirus, with the GII.2[P16] genotype being the most prevalent (34.5%). Notably, foodborne transmission was implicated in 13.5% of cases, predominantly involving the GII.2[P16] and GII.6 genotypes. Unlike previous studies that report norovirus genotypes from clinical cases of acute gastroenteritis, our analysis included cases from foodborne outbreaks, thereby offering deeper insights into the role of contaminated food in facilitating norovirus transmission. Furthermore, childcare centers were the primary setting for detection of the GII.4[P16] and GII.4[P31] genotypes, while primary schools exhibited the greatest genotypic diversity, with 12 distinct genotypes identified. These findings indicate a potential shift in norovirus seasonal patterns, with outbreaks extending into late spring. Overall, our results underscore the need for enhanced hygiene practices, robust surveillance systems, and targeted prevention strategies to mitigate norovirus transmission.

Keywords: Norovirus, outbreak, childcare centers, genotype, VP1, RdRp

Introduction

Norovirus is a leading cause of viral gastroenteritis worldwide, accounting for over half of all acute gastroenteritis cases each year [1]. Low-income countries bear the brunt of this burden, with acute gastroenteritis linked to more than 25% of deaths in children under 5 in regions such as Africa and Southeast Asia [2]. Norovirus outbreaks frequently occur in confined environments-including hospitals, nursing homes, schools, and childcare centers—with person-to-person transmission being the primary mode of spread [3]. The virus has an incubation period of 24–48 h and is highly contagious, with fewer than 20 viral particles sufficient to cause infection. The main clinical symptoms include nausea, vomiting, abdominal cramps, muscle aches, and diarrhea [1, 4]. Norovirus infections typically peak during the colder months (November to April), although recent studies have shown an increase in hospitalizations for acute gastroenteritis due to norovirus infections among children under 5 during the spring and summer seasons as well [5, 6].

Noroviruses belong to the family *Caliciviridae* and the genus *Norovirus*. Phylogenetic clustering of the capsid gene divides norovirus into six genogroups (GI–GVI) and more than 30 genotypes [7]. In addition to capsid genotyping, analysis of the RNA-dependent RNA polymerase (RdRp) sequence further categorizes norovirus into over 60 P-types [8]. The norovirus genome is approximately 7.5 kb in length, comprising a single-stranded, positive-sense RNA genome with three open reading frames (ORFs): ORF1 encodes nonstructural polyproteins, while ORF2 and ORF3 encode the major capsid protein (VP1) and the minor capsid protein (VP2), respectively [9].

Globally, the GII genogroup is the most prevalent in human infections, with approximately 62% of norovirus foodborne outbreaks attributed to the GII.4 genotype [10]. The GII.4 genotype is dominant worldwide, and the emergence of new GII.4 variants, such as GII.4 New Orleans 2009 and Sydney 2012, is closely associated with

Received: March 17, 2025
Accepted: June 4, 2025
Published: July 30, 2025

*Corresponding author
E-mail: soohsuh@konyang.ac.kr

pISSN 1017-7825
eISSN 1738-8872

Epidemiologia molecular de surtos de norovírus em creches e escolas na Coreia do Sul em 2023.

- O norovírus é um dos principais causadores de surtos em creches e escolas na Coreia (ambientes reúnem muitas pessoas em espaços fechados).

- Os **alimentos contaminados podem ser um meio importante de transmissão.** Por isso, é fundamental manter a **higiene rigorosa, investir em sistemas de monitoramento.**

Dados da Literatura

Food Research International 214 (2025) 116645

Contents lists available at ScienceDirect

Food Research International

journal homepage: www.elsevier.com/locate/foodres

Foodborne outbreak of enterotoxigenic *Staphylococcus aureus* at a school in Hebei, China

Xiaoyu Zheng [a,b,1], Shengnan Liang [a,1], Liang Wen [a,1], Hui Wang [a], Yuchao Bai [a], Yang Wang [a], Luyao Cao [a], Dingchen Li [a], Jinpeng Guo [a], Yong Chen [a], Changjun Wang [a,b], Xiong Liu [a,*], Chuanfu Zhang [a,**]

[a] Chinese PLA Center for Disease Control and Prevention, Beijing 100071, China
[b] Zhengzhou University College of Public Health, Zhengzhou 450002, China

ARTICLE INFO

Keywords:
Staphylococcus aureus
Enterotoxins
Food poisoning
Antibiotic resistance
MLST
Spa type

ABSTRACT

In 2024, a *S. aureus* foodborne illness outbreak in Hebei Province, China, affected 61 out of 563 individuals (10.84 % prevalence), causing symptoms like diarrhea, vomiting, abdominal pain, and nausea. A case-control study implicated roujiamo, a breakfast item, as the suspected vehicle (OR = 34.81, 95 % CI: 2.07–585.30, $P < 0.001$). Laboratory analyses identified *S. aureus* in samples collected from patients, kitchen workers, food, and the environment. Three strains, belonging to ST6 and *spa* type t701, were isolated and characterized. They showed resistance to penicillin, harbored many virulence genes including *sea*, and clustered closely in phylogenetic analysis. Notably, the *sea* gene was located on an intact prophage element that may enhance its pathogenic potential and pose new clinical challenges. The outbreak was due to *S. aureus* contamination in roujiamo caused by unsafe kitchen practices. Improved food safety supervision and worker education are needed to prevent future outbreaks.

1. Introduction

Foodborne diseases remain a major public health problem worldwide, including in China, primarily caused by food contamination with harmful bacteria, viruses, parasites, toxins or chemicals (Lee & Yoon, 2021; Pires et al., 2021; Todd, 2020). Of these, *Staphylococcus aureus* enterotoxin (SEs) intoxication is a common important cause of food poisoning.

According to statistics from the Centers for Disease Control and Prevention, a total of 12,139 illnesses caused by *Staphylococcus aureus* (*S. aureus*) occurred in the United States from 1998 to 2020 (Li et al., 2024). Moreover, *S. aureus* was among the top 10 pathogens responsible for the most hospitalizations during foodborne and waterborne outbreaks in 36 European countries in 2018 (European Food Safety Authority and European Centre for Disease Prevention and Control (EFSA and ECDC), 2019); and in China it is the third highest number of food poisoning incidents (Liu et al., 2022), from 2003 to 2017, 10,174 *S. aureus* contamination-induced foodborne disease outbreaks were reported in China, accounting for 10.2 % of bacteria-induced disease (Li et al., 2020).

S. aureus is widespread in nature, has low nutritional requirements and is highly resistant to adverse environments (Le et al., 2021; Wu et al., 2018). The pathogen is found in 20–60 % of the human population and one to two-thirds of these carriers harbor enterotoxigenic strains (Fernandes et al., 2022; Pinchuk et al., 2010). People colonized with *S. aureus* asymptomatically, who handle food can introduce bacteria into the food chain, with subsequent SEs production resulting in *S. aureus* food poisoning (SFP) (Kadariya et al., 2014). Thus, SFP is often associated with highly manually handled food (Fernandes et al., 2022;). Trace SEs levels may cause food poisoning, with abrupt onset of nausea, vomiting, abdominal pain, dizziness, diarrhea, chills, weakness, and fever (Hennekinne et al., 2012; Tarekgne et al., 2016). Occasionally it can be severe enough to warrant hospitalization, particularly among the group of YOPIs (young, old, pregnant, immunosuppressed persons) (Murray, 2005). SEs include five typical serological types: SEA, SEB, SEC, SED, and SEE. SEA is the predominant type causing global SFP,

* Correspondence to: Chinese PLA Center for Disease Control and Prevention, Beijing 100071, China.
** Correspondence to: Chinese PLA Center for Disease Control and Prevention, Beijing 100071, China.
E-mail addresses: liuxiong714@163.com (X. Liu), hnzcf@126.com (C. Zhang).
[1] These authors contribute equally to this work.

https://doi.org/10.1016/j.foodres.2025.116645
Received 16 January 2025; Received in revised form 29 April 2025; Accepted 11 May 2025
Available online 12 May 2025
0963-9969/

Surto alimentar por *Staphylococcus aureus* em uma escola na China

- **61 estudantes** foram afetados (10,8% dos expostos), com sintomas típicos: diarreia, vômitos, dor abdominal e náuseas.
- O alimento implicado foi um “pão recheado com carne”.
- O estudo detalha como **falhas simples no dia a dia** da cozinha escolar podem levar a surtos de grande escala, e destaca a **necessidade de integrar cultura de segurança alimentar, boas práticas e vigilância epidemiológica.**

Dados da Literatura

Perfil Epidemiológico

GOV.BR/SAUDE
minsaude

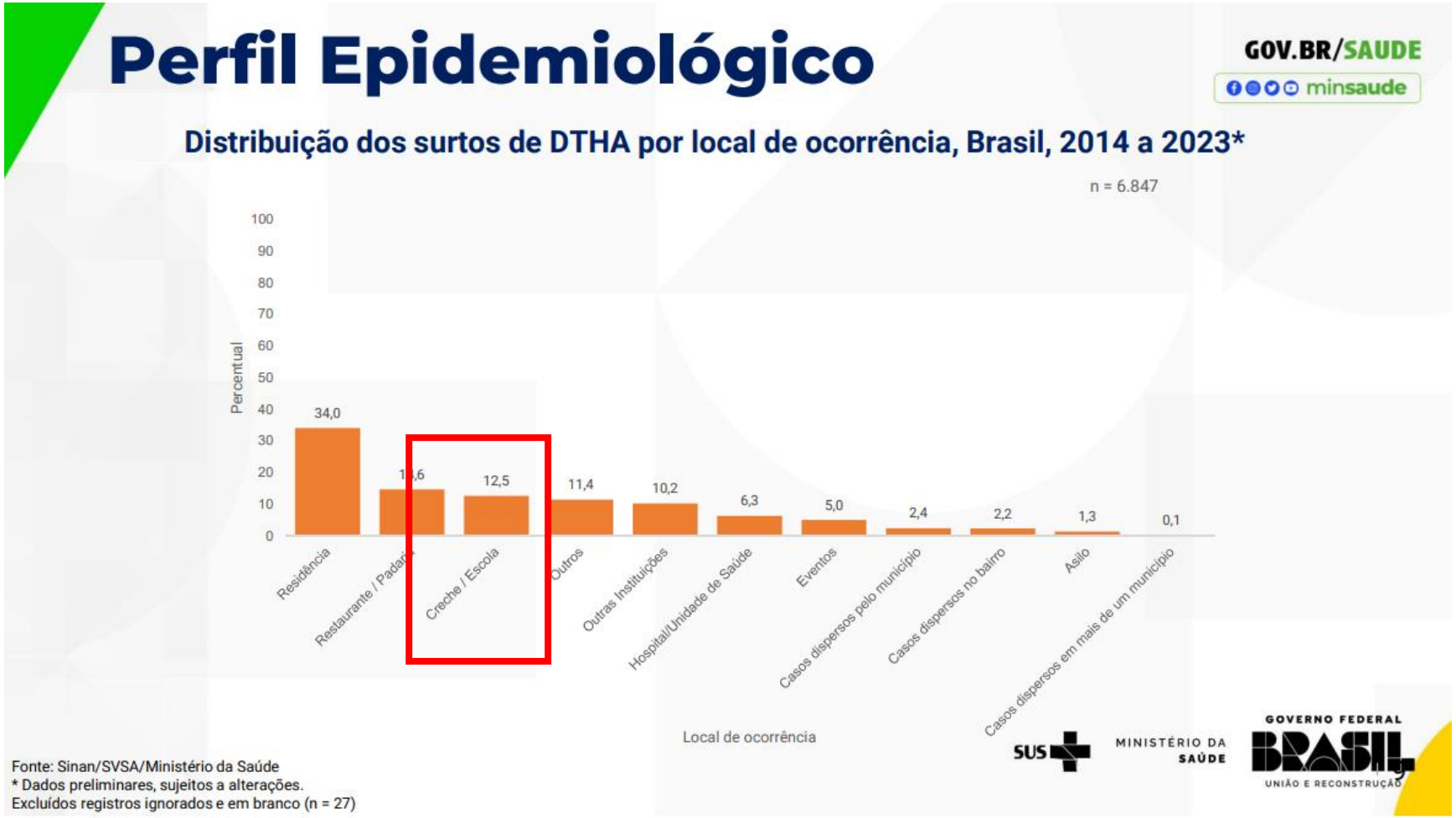
Série histórica de surtos de DTHA, Brasil, 2014 a 2023*

Ano	Nº de surtos	Nº de expostos	Nº de doentes	Nº de hospitalizado	Nº de óbitos	Letalidade
2014	886	124359	15700	2524	9	0,06
2015	673	37165	10676	1453	17	0,16
2016	538	200896	9935	1406	7	0,07
2017	598	47409	9426	1439	12	0,13
2018	597	57297	8406	916	9	0,11
2019	771	17388	9586	1301	10	0,10
2020	292	10548	4600	595	6	0,13
2021	546	17076	8278	639	10	0,12
2022	811	33977	14336	630	10	0,07
2023	1162	27854	19671	1443	31	0,16
Total	**6874**	**573969**	**110614**	**12346**	**121**	**0,11**

SUS
MINISTÉRIO DA SAÚDE
GOVERNO FEDERAL
BRASIL
UNIÃO E RECONSTRUÇÃO

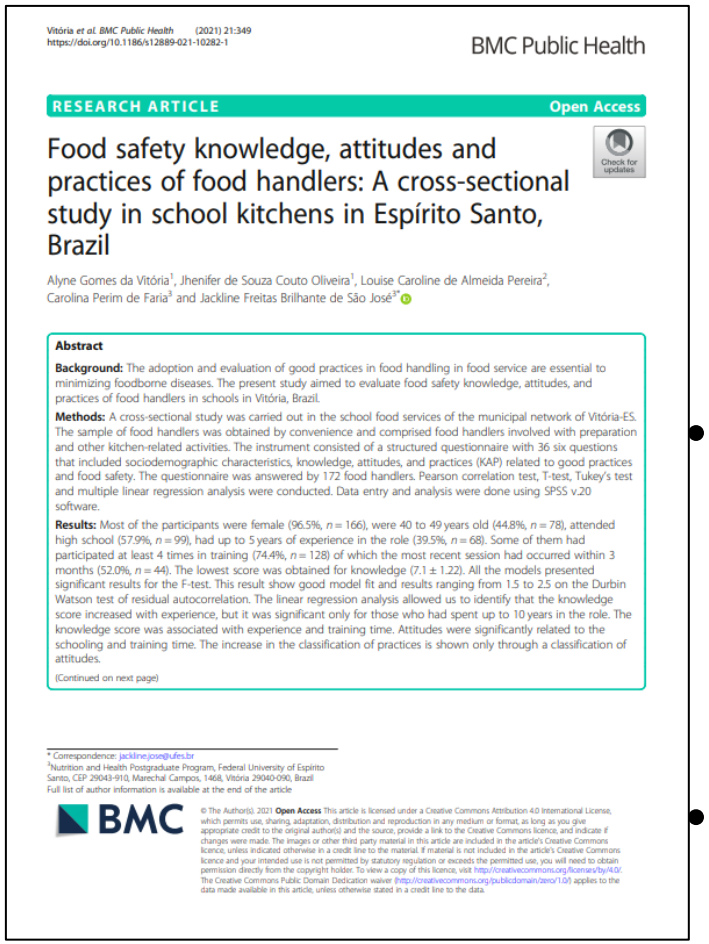
Fonte: Sinan/SVSA/Ministério da Saúde
* Dados preliminares, sujeitos a alterações.

Dados da Literatura



≈ 859 surtos!

Dados da Literatura



Vitória et al. BMC Public Health (2021) 21:349
https://doi.org/10.1186/s12889-021-10282-1

BMC Public Health

RESEARCH ARTICLE Open Access

Food safety knowledge, attitudes and practices of food handlers: A cross-sectional study in school kitchens in Espírito Santo, Brazil

Alyne Gomes da Vitória[1], Jhenifer de Souza Couto Oliveira[1], Louise Caroline de Almeida Pereira[2], Carolina Perim de Faria[3] and Jackline Freitas Brilhante de São José[3*]

Abstract

Background: The adoption and evaluation of good practices in food handling in food service are essential to minimizing foodborne diseases. The present study aimed to evaluate food safety knowledge, attitudes, and practices of food handlers in schools in Vitória, Brazil.

Methods: A cross-sectional study was carried out in the school food services of the municipal network of Vitória-ES. The sample of food handlers was obtained by convenience and comprised food handlers involved with preparation and other kitchen-related activities. The instrument consisted of a structured questionnaire with 36 six questions that included sociodemographic characteristics, knowledge, attitudes, and practices (KAP) related to good practices and food safety. The questionnaire was answered by 172 food handlers. Pearson correlation test, T-test, Tukey's test and multiple linear regression analysis were conducted. Data entry and analysis were done using SPSS v.20 software.

Results: Most of the participants were female (96.5%, $n = 166$), were 40 to 49 years old (44.8%, $n = 78$), attended high school (57.9%, $n = 99$), had up to 5 years of experience in the role (39.5%, $n = 68$). Some of them had participated at least 4 times in training (74.4%, $n = 128$) of which the most recent session had occurred within 3 months (52.0%, $n = 44$). The lowest score was obtained for knowledge (7.1 ± 1.22). All the models presented significant results for the F-test. This result show good model fit and results ranging from 1.5 to 2.5 on the Durbin Watson test of residual autocorrelation. The linear regression analysis allowed us to identify that the knowledge score increased with experience, but it was significant only for those who had spent up to 10 years in the role. The knowledge score was associated with experience and training time. Attitudes were significantly related to the schooling and training time. The increase in the classification of practices is shown only through a classification of attitudes.

(Continued on next page)

* Correspondence: jackline.jose@ufes.br
[3]Nutrition and Health Postgraduate Program, Federal University of Espírito Santo, CEP 29043-910, Marechal Campos, 1468, Vitória 29040-090, Brazil
Full list of author information is available at the end of the article

BMC

Conhecimento, atitudes e práticas sobre segurança dos alimentos de manipuladores: um estudo transversal em cozinhas escolares no Espírito Santo, Brasil.

- Os manipuladores de alimentos sabem o básico sobre segurança alimentar, mas em alguns pontos esse conhecimento é menor do que as atitudes e práticas que já realizam.
- A capacitação contínua nas escolas ajuda a transformar o que aprendem em comportamentos corretos no dia a dia da cozinha.

Dados da Literatura

Food Research International 196 (2024) 115027

Contents lists available at ScienceDirect

Food Research International

journal homepage: www.elsevier.com/locate/foodres

Understanding and evaluating risk perception, knowledge, and food safety self-reported practices of public-school students in Brazil

Sueny Andrade Batista [a,*], Elke Stedefeldt [b], Emanuele Batistela dos Santos [c], Eduardo Yoshio Nakano [d], Verônica Cortez Ginani [a], Raquel Braz Assunção Botelho [a]

[a] Department of Nutrition, School of Health Sciences, University of Brasília (UnB), Campus Darcy Ribeiro, Brasília 70910-900, Distrito Federal, Brasil
[b] Department of Preventive Medicine, Federal University of São Paulo (UNIFESP), São Paulo 04023-032, São Paulo, Brasil
[c] Department of Food and Nutrition, Federal University of Mato Grosso (UFMT), Cuiabá 78060-900, Mato Grosso, Brasil
[d] Department of Statistics, Institute of Exact Sciences, University of Brasília (UnB), Campus Darcy Ribeiro, Brasília 70910-900, Distrito Federal, Brasil

ARTICLE INFO

Keywords:
Adolescent
Children
Risk perception
Food safety
School Food Service

ABSTRACT

Foodborne diseases are a global burden. Actions to fight this group of diseases are necessary, especially for the younger demographic, which consists of consumers, food handlers, and the future workforce of the food chain. To this end, outlining the food safety profile of the target audience is imperative. Thus, this study aimed to understand and evaluate the risk perception, knowledge, and food safety self-reported practices of individuals between 5th and 9th grades (10 to 14 years old, considering the normal teaching flow) of public schools in the Federal District – Brazil. Instruments by Batista et al. (2023) and Brazil (2013) were used to achieve the objectives. The study included 1,420 students aged 9 to 17 (women – 50.6 %; n – 719) with a mean age of 11.9 years (±1.7) enrolled in 25 schools. It was observed that a more significant proportion of students attributed very low and low risk of Foodborne Diseases to the foods produced and served in School Food Services. The presence of optimistic bias, low perception of lethality, average knowledge, risky practices, and the gap between unsafe food knowledge and safe food handling/consumption practices were also identified. Correlations were identified between social vulnerability and risk perception (positive) and self-reported practices (negative). The results show the urgency of considering these individuals to ensure food safety, considering their vulnerability, reality, and the tools at their disposal.

1. Introduction

Foodborne Diseases (FBD) originate from more than 250 hazards, including microbiological threats like bacteria, viruses, parasites, and chemical contaminants that occur naturally or result from environmental pollution, food processing, packaging, transport, or storage. They are a significant public health issue. Each year, one in every ten people worldwide becomes ill after consuming contaminated food (WHO, 2015). Low – and middle-income countries lose US$110 in productivity and medical expenses annually from unsafe food. Furthermore, the FBD leads to a considerable burden of disability and mortality, in addition to impeding socioeconomic development, overburdening health systems, and harming national economies, tourism, and trade (FAO & WHO, 2022; WHO, 2022).

An approach that considers young consumers to FBD has excellent potential for investment in health and well-being (Batista et al., 2023; Sheehan et al., 2017). When addressing young consumers, it is necessary to consider that children and adolescents are in a cognitive phase that facilitates the development of food hygiene habits. They also have characteristics that make them multipliers and influencers of behaviors, information, and practices in the domestic environment. They help to prepare food and meals and will be future handlers at any stage of the food chain (Berge et al., 2016; Chu et al., 2014; Young et al., 2018).

The food handler is an essential actor at all stages of the supply chain, and their poor practices are related to most FBD cases (Medeiros et al., 2017; Mellou et al., 2019; Mengist et al., 2018; Nasrolahei et al., 2017). Given this central role, studies show that these individuals' food safety (FS) knowledge is poorly translated into appropriate handling practices (Baptista et al., 2020; de Andrade et al., 2019; Osei Tutu et al., 2019). Studies carried out with different groups of consumers (adult seafood consumers, children, adolescents, primary food preparers in families with young children, and adult consumers – handlers of the final stages)

* Corresponding author.
E-mail address: subatistanutricionista@gmail.com (S. Andrade Batista).

https://doi.org/10.1016/j.foodres.2024.115027
Received 6 March 2024; Received in revised form 16 July 2024; Accepted 1 September 2024
Available online 6 September 2024

Compreensão e avaliação da percepção de risco, do conhecimento e das práticas autodeclaradas de segurança dos alimentos entre estudantes de escolas públicas no Brasil.

- Os estudantes consideraram que a **chance de contrair** uma DTA a partir do consumo de alimentos preparados na escola era **muito baixa ou baixa** (67,1%; n= 952).

- Avaliaram a gravidade desse risco como **inexistente ou pouco significativa** (69%; n = 979).

Principais Riscos na Escola?

- Infraestrutura inadequada das cozinhas escolares.
- Equipamentos insuficientes ou domésticos.
- Complexidade do cardápio.
- Alterações frequentes de cardápio por falta de insumos.
- Número reduzido de manipuladores de alimentos.
- Comportamentos inseguros dos manipuladores.

(ARAÚJO et al., 2025)

Muito Além do que Aparece: o Iceberg da DTHA

Cultura de Segurança dos Alimentos (CSA)

Um construto de longo prazo existente no nível organizacional relacionado às crenças, comportamentos e premissas profundamente enraizadas que são aprendidas e compartilhadas por todos os colaboradores, que impactam o desempenho da segurança dos alimentos da organização.

É bastante útil para guiar as decisões do cotidiano, as ações e os comportamentos, permitindo assim uma produção mais segura

SEWARD; BOBMEIER; BARON (2012); SHARMAN; WALLACE; JESPERSEN (2020)

As cinco Dimensões da Cultura de Segurança de Alimentos Segundo o Posicionamento da Iniciativa Global da Segurança dos Alimentos (GFSI)

As cinco Dimensões da Cultura de Segurança de Alimentos Segundo o Posicionamento da Iniciativa Global da Segurança dos Alimentos (GFSI)

Visão e Missão

- Estrutura organizacional, Valores e Propósitos
- Definições de Diretrizes e Expectativas
- Liderança e Comunicação

Pessoas

- Partes interessadas
- Governança
- Comunicação
- Organização do Aprendizado
- Incentivos, Recompensas e Reconhecimento

Consistência

- Senso de responsabilidade
- Medição de desempenho
- Documentação

Adaptabilidade

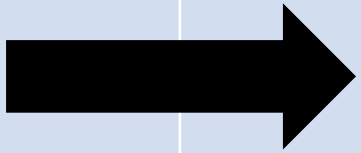
- Expectativa de Segurança dos alimentos e estado atual
- Agilidade
- Mudança, Gerenciamento de crises e Soluções de Problemas

Percepção dos perigos e riscos

- Informações e Educação sobre Riscos Fundamentais
- Envolvimento dos colaboradores
- Verificar a percepção de perigos e riscos

Cultura de Segurança dos Alimentos (CSA)

CULTURA REATIVA	CULTURA PROATIVA
Inspeção Punição Resolução de problemas baseada em surtos Contaminação Desperdícios Adoecimento Acidentes de trabalho	Prevenção Valorização Comunicação Dados alimentando melhorias



GRIFFITH; LIVESEY; CLAYTON (2010); YIANNAS (2016).

Papel da Nutricionista

- Planejar cardápios considerando estrutura e equipe.
- Realizar análise de risco e capacitações práticas.
- Participar de projetos de obras e compras (licitações).
- Defender dimensionamento adequado de profissionais.

(OLIVEIRA; GERMANO, 2016)

Papel das Merendeiras

- Executar boas práticas no preparo e distribuição.
- Registrar ocorrências de risco sanitário.
- Organizar o ambiente e separar cru/cozido.
- Ser agente de saúde e educação na escola.

(OLIVEIRA; GERMANO, 2016)

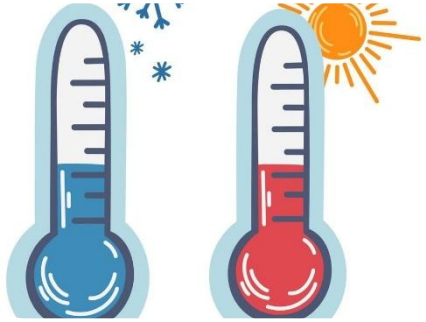
BOAS PRÁTICAS ESSENCIAIS

Higienização correta das mãos

Uso de uniforme completo

Higienização de frutas e verduras

Descongelamento seguro



Controle de temperaturas

Uso de checklist

BRASIL (2004).

“Segurança dos alimentos não é apenas técnica, é cuidado com a vida. Cada refeição servida com atenção e responsabilidade é um ato de proteção e amor às nossas crianças!”


PET
Universidade Federal do Piauí
FNDE
Fundo Nacional de Desenvolvimento da Educação
Programa de Pós-Graduação em Alimentos e Nutrição
PPGAN
BOAS PRÁTICAS NA MANIPULAÇÃO DE ALIMENTOS:
UM FOCO NA ALIMENTAÇÃO ESCOLAR
Cecilia Maria Resende Gonçalves de Carvalho
Amanda Caroline Bandeira França
Bianca Lourrany dos Santos Silva
Gleyson Moura dos Santos
Isadora Oliveira Matos Moutinho
Natanael Alison Carvalho Rodrigues
Martha Teresa Siqueira Marques Melo
ACADÊMICA
Editorial

REFERÊNCIAS

- ARAÚJO, E. J. S. *et al.* Supercritical fluid impregnation - An eco-friendly technique for the functionalization of bioaerogel with phenolic compounds from passion fruit waste. **Food Research International.** v. 214, n. 1, p. 116637, 2025.
- BRASIL. Agência Nacional de Vigilância Sanitária. **Resolução RDC nº 216, de 15 de setembro de 2004.** Dispõe sobre Regulamento Técnico de Boas Práticas para Serviços de Alimentação. Brasília, 2004.
- BRASIL. Fundo Nacional de Desenvolvimento da Educação (FNDE). **Resolução CD/FNDE nº 6, de 8 de maio de 2020.** Dispõe sobre o atendimento da alimentação escolar aos alunos da educação básica no âmbito do PNAE. Brasília, 2020.
- BRASIL. Ministério da Saúde. **Situação epidemiológica**. Brasília, DF: Ministério da Saúde, [2025]. Disponível em: https://www.gov.br/saude/pt-br/assuntos/saude-de-a-a-z/d/dtha/situacao-epidemiologica. Acesso em: 10 set. 2025.
- GRIFFITH, C. J.; LIVESEY, K. M.; CLAYTON, D. A. The assessment of food safety culture. **British Food Journal,** v. 112, n. 4, p. 439–456, 2010.
- OLIVEIRA, A. B. A.; GERMANO, P. M. L. **Boas práticas em alimentação coletiva:** da teoria à prática. São Paulo: Senac, 2016.
- SEWARD, S.; DOBMEIER, N.; BARON, M. Assessing the food safety culture of a manufacturing facility. **Institute of Food Technololy.** v. 66, n. 1, p. 44- 47, 2012.
- SHARMAN, N.; WALLACE, C. A.; JESPERSEN, L. Terminology and the understanding of culture, climate, and behavioural change – Impact of organisational and human factors on food safety management. **Trends in Food Science & Technology,** v. 96, n. 1, p. 13–20, 2020.
- WOGNSKI, A. C. P. *et al.* Commercialization of food in school canteens. **Brazilian Journal of Food Technology,** v 22, n. 1, p. e2018198, 2019.
- YIANNAS, F. **Food Safety = Behavior: 30 Proven Techniques to Enhance Employee** Compliance. Springer, 2016.

Obrigado!!!

moura.gleyson@mail.uft.edu.br

pnae ALIMENTAÇÃO ESCOLAR NOTA 10 | INSTITUTO FEDERAL Sul de Minas Gerais | ITAIPU BINACIONAL | fnde | MINISTÉRIO DA EDUCAÇÃO | GOVERNO FEDERAL BRASIL UNIÃO E RECONSTRUÇÃO