Food Policy 140 (2026) 103083

Contents lists available at ScienceDirect

Food Policy

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

Review

Allergen regulations for non-prepacked foods in the food service sector: A global scoping review

Mariana Scudeller Vicentini [a], Carolina Neves Freiria [a], Jan Mei Soon-Sinclair [b], Iain Malcolm Ferris [c], Lisa Marie Winnall [c], Han Wen [d], Diogo Thimoteo da Cunha [a,*]

[a] Universidade Estadual de Campinas (UNICAMP), Faculdade de Ciências Aplicadas, Laboratório Multidisciplinar em Alimentos e Saúde, Pedro Zaccaria st, 1300, Limeira, SP 13484-350, Brazil
[b] University of Lancashire, School of Health Sciences, Social Work and Sport, PR1 2HE, UK
[c] University of Birmingham, School of Chemical Engineering, B15 9TT, UK
[d] University of North Texas, Department of Hospitality, Event, & Tourism Management, 1155 Union Circle #311100, Denton, TX, United States

ARTICLE INFO

Keywords:
Regulations
Food allergy
Restaurants
Law
Standard
Training

ABSTRACT

Food hypersensitivity is rising worldwide, with strict avoidance of specific foods currently the only effective strategy for affected individuals. Regulatory frameworks have been introduced to support allergic consumers; however, regulations addressing non-prepacked foods within the food service sector remain underexplored. This scoping review, conducted using an adapted PRISMA methodology, systematically mapped 83 regulatory documents relating to food allergen management in non-prepacked foods across various global jurisdictions. Five principal themes were extracted from the legislation: (1) Presence of Information About Allergenic Ingredients. (2) Presence of Information Requesting Consumers to Declare Their Allergies. (3) Training and Education of Food Business Operators or Staff. (4) Existence of an Action Plan in Case of Anaphylaxis. (5) Existence of Food Allergen Management System or Individualised Plans. Most regulatory initiatives were located in high-income countries, underscoring a marked deficit in protections within low- and middle-income settings. Despite recent improvements, critical gaps persist in regulatory coverage, enforcement, and equity, potentially limiting the protection available to vulnerable consumers. This review offers a comparative framework for international policy development and identifies priority areas for strengthening allergen management in food service environments. The findings are intended to inform policy-makers and guide future research aimed at improving safety, regulatory inclusivity, and equitable access for allergic consumers eating away from home.

1. Introduction

Food allergy is a disease (FARE, 2025) with immunoglobulin E-mediated (IgE-mediated) and non-IgE-mediated mechanisms that can cause various harmful effects on the body, affecting the skin, gastrointestinal tract, and respiratory system. In more severe cases, it can lead to anaphylaxis, which may be fatal (Sicherer & Sampson, 2010). Although immunotherapy is being tested as a possible treatment, there is currently no cure. The only way to prevent allergic reactions is to avoid consuming the triggering foods (Barshow et al., 2024).

According to the World Health Organization, around 220 million people worldwide suffer from food allergies (World Health Organization, 2024), and this number continues to rise (Chang et al., 2023). Prevalence varies by region: 4.2% in Asia, 3.2% in the Americas, 4.8% in Europe, 1.6% in Africa, and 7.5% in Oceania (Feng et al., 2023). Common allergens include dairy, eggs, fish, seafood, nuts, peanuts, soy, and wheat-based products. However, their prevalence varies according to regional dietary patterns (Muthukumar et al., 2020). For example, the rate of anaphylaxis to shellfish is 5.12% in the Philippines (Shek et al., 2010), compared to just 0.7% in the USA (Sicherer & Sampson, 2010). People with food hypersensitivity and autoimmune diseases, such as coeliac disease, also face challenges in managing their diet safely (Caio et al., 2019; Muthukumar et al., 2020). Like those with wheat allergies, coeliac patients must exclude wheat and gluten-containing products from their diet (Cabanillas, 2020). The prevalence of coeliac disease in the general population is 1%, and it can occur at any age (Caio et al.,

* Corresponding author at: Pedro Zaccaria st, 1300, Limeira, SP 13484-350, Brazil.
E-mail addresses: m252321@dac.unicamp.br (M.S. Vicentini), cfreiria@unicamp.br (C.N. Freiria), jmsoon-sinclair@uclan.ac.uk (J.M. Soon-Sinclair), i.ferris@bham.ac.uk (I.M. Ferris), l.m.winnall@bham.ac.uk (L.M. Winnall), han.wen@unt.edu (H. Wen), dtcunha@unicamp.br (D.T. da Cunha).

https://doi.org/10.1016/j.foodpol.2026.103083
Received 13 June 2025; Received in revised form 18 March 2026; Accepted 20 March 2026
Available online 31 March 2026

2019) with diverse symptoms ranging from chronic diarrhoea, weight loss, and abdominal distension to stunted growth, anaemia, and other symptoms that can affect any organ or body system (Catassi & Fasano, 2008).

Consumers with food hypersensitivity, and their caregivers, face challenges in making safe and informed food choices—particularly outside the home. To protect their health, several countries have implemented regulations on allergen labelling and communication (Chang et al., 2023). However, most of these focus on prepackaged foods. People with food allergies also require information in settings where non-prepackaged food is sold, such as restaurants and online delivery applications. These settings may also include cafés, school and workplace canteens, hospitals, care homes, delicatessens, bakeries, and street food outlets, all of which play a significant role in daily dietary intake yet present distinct challenges for allergen communication. These regulations are essential not only for consumer safety but also for promoting equitable access to adequate nutrition, aligning with Sustainable Development Goals 10 (reducing inequalities) and 12 (responsible consumption and production) (United Nations, 2025).

Despite some existing legislation, food-allergic reactions from food service meals are increasing (Bailey et al., 2011; Soon, 2020), and fatal cases continue to be reported (Dominguez et al., 2024). In 2016, Natasha Ednan-Laperouse died after eating a prepacked sandwich which was made on the premises from which it was sold (prepacked for direct sale) and therefore exempt from labelling information directly on the product. Natasha's parents campaigned for improved labelling requirements CNN, 2019; Natasha Allergy Research Foundation, 2025) and resulted in the UK's 2021 requirement for full ingredient labelling on prepacked for direct sale (PPDS) foods (UK Statutory Instruments, 2019 No. 1218). In 2017, Owen Carey died after consuming buttermilk-marinated chicken, despite informing staff of his dairy allergy. This tragedy led to the Owen's Law campaign, advocating for written allergy information to be provided proactively, though it has not yet been passed into law (Food Standards Agency, 2022). Similarly, Sabrina Shannon's 2003 death in an Ontario school, due to cross-contact, led to Sabrina's Law (Government of Ontario, 2005), which mandates that schools implement anaphylaxis policies and personalised management plans (Food Allergy Canada, 2025). Yet many regions still lack comparable legislative measures.

Implementing regulation is a fundamental step towards improving food safety and risk communication. However, despite stricter laws, the food service industry faces major organisational barriers that hinder compliance. Food services, in particular, deal with greater complexity than standardised food manufacturing operations (Dominguez et al., 2024). Allergic reactions may result from various issues, including poor staff training, miscommunication with allergic customers (Carter et al., 2020; Soon, 2020), inaccurate supplier labelling, cross-contamination, or gaps in allergen management for online sales and deliveries (Codex Alimentarius, 2020). High employee turnover, time pressure (Soon, 2020), and limited financial resources (Dominguez et al., 2024) further exacerbate these risks. The rise in delivery-based models compounds the challenge, as many such operations work in confined spaces, using shared utensils and under significant time constraints (Soon, 2018). As a result, dining out or ordering from takeaways can be particularly risky for individuals with food allergies (Figueroa-Gómez et al., 2024; Nasseredine et al., 2021), especially where specific regulations are lacking (Dominguez et al., 2024).

While these challenges are well recognised, there remains a notable lack of comprehensive and comparative research on how different countries regulate allergen management in food services — especially for non-prepackaged foods served in restaurants, cafeterias, and delivery operations. Most existing studies focus on prepackaged goods or national case studies, offering limited insight into the broader global regulatory landscape. As a result, we lack a clear understanding of how laws and regulations differ in scope, implementation, and enforcement, or how effectively they protect allergic consumers across diverse contexts. This study fills this gap by systematically mapping and analysing allergen-related regulations in the food service industry across several countries. It aims to provide key insights for policymakers, highlight regulatory inconsistencies, and support the development of inclusive and enforceable food safety frameworks. The findings are expected to benefit not only public health authorities and legislators, but also food service stakeholders seeking to improve their practices in increasingly complex and high-risk environments.

2. Methods

This scoping review aimed to identify and synthesise current laws and regulations concerning allergen management in food service settings selling non-prepacked foods, including disclosure practices, staff training, and emergency preparedness.

Scoping reviews are designed to map the breadth of existing evidence, particularly in areas where concepts are complex or emerging. They do not aim to evaluate the quality of evidence, as in systematic reviews, but instead offer an overview of what has been studied and where gaps exist (Pham et al., 2014). A scoping review also differs from systematic review in terms of the research questions posed, as it typically addresses broader or more open-ended questions (Arksey and O'malley, 2005). This review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR), using the 20-item checklist to ensure methodological rigour (Tricco et al., 2018). The full checklist is provided in the supplementary material (Table S1).

2.1. Research question

This scoping review was guided by two questions:

1. What are the current regulations concerning food allergy information for non-prepackaged foods and meals sold in the food service sector?
2. How do different countries or regions address the needs of allergic consumers through legislation targeting non-prepackaged foods in food service settings?

To operationalise these questions and guide the search strategy, the Population, Concept, and Context (PCC) framework was applied. The review focuses on the concept of regulations for food allergen information within the context of the food service sector for non-prepackaged foods, considering a global population of countries and regions with established food safety legislation.

2.2. Data sources and search strategy

A multi-faceted search strategy was employed, prioritising the retrieval of grey literature, which constitutes the primary source for legal and regulatory documentation. This approach aligns with best-practice recommendations for policy reviews, as governmental regulations and guidance are often not indexed in traditional academic databases (Godin et al., 2015; Paez, 2017). The initial search was conducted in early December 2024 and subsequently updated in July 2025 and March 2026 to capture any new or revised documents.

The primary search for grey literature targeted official government websites, food safety agencies, and non-governmental organizations (NGOs) relevant to allergy stakeholders. Google Search was systematically used to identify these sources, a method recognised by PRISMA as a key component for locating information not published elsewhere (Rethelefsen et al., 2021). A comprehensive list of the over 78 government, food safety agency, and stakeholder websites that were systematically searched is provided in Supplementary Table S2.

Documents were included if they referenced any legal requirement concerning allergen information in non-prepackaged food sold by food service establishments, whether at the national, regional, state, or

municipal level. No restrictions were applied to the country or jurisdiction. Searches were conducted in English, Portuguese and Spanish. To minimise language bias and capture relevant regulations globally, the review team conducted targeted searches for allergen control laws and guidance in all high-income countries and BRICS nations, recognising their increased likelihood of having formal legal frameworks on this topic. When regulations were published in other languages, artificial intelligence tools (ChatGPT and Gemini) were used to assist with translation. No language exclusion criteria were applied.

To complement the grey literature search, a systematic search of academic databases was performed to identify articles that cited or discussed relevant legislation. The databases included Scopus, PubMed, Web of Science, Embase, LILACS, and SciELO. The search strategy was tailored for each database based on the PCC framework (Supplementary Table S3). A second round was done using Overton index (largest database of policy documents and grey literature) using the same syntax used in Scopus.

Documents were included if they mentioned any form of legislation, guideline, or act related to the management of food allergens for non-prepackaged foods in food service settings, at any jurisdictional level (national, regional, or municipal). Documents were excluded if they focused exclusively on prepackaged foods or if the full text was not accessible.

To ensure completeness, a final cross-check was conducted in April and October 2025 using the o4-mini-high model (ChatGPT – OpenAI), a large language model optimised for structured retrieval. The prompt, written in English, included a list of the 69 regulations already identified and instructed the model to search for additional relevant documents through official government websites, scientific articles, environmental health agency portals, and reputable news sources. The model was run using default parameters (temperature = 0.7, top_p = 1.0, max_tokens = 4096, frequency_penalty = 0.0, presence_penalty = 0.0). This step aimed to identify potentially overlooked regulations and enhance the comprehensiveness of the review. An additional four regulations were found in this step.

2.3. Data extraction and synthesis

References identified from the academic database search were imported into the Rayyan software (Ouzzani, et al, 2016) for screening. Two reviewers (CNF and MSV) independently screened the titles and abstracts of all identified articles against the study's inclusion and exclusion criteria, achieving a 95.5% agreement rate. Articles that passed this initial stage were retrieved for full-text analysis, which was conducted to identify any mention or citation of existing legislation.

All included regulatory documents were reviewed in full and relevant information was extracted into a structured spreadsheet. The recorded fields included: country or jurisdiction, title and legal reference of the regulation, year of publication or enforcement, administrative level (e.g., national, regional, municipal), type of instrument (e.g., law, decree, ordinance, guideline), specific provisions regarding food allergen management in non-prepackaged foods.

A qualitative thematic content analysis was then conducted to classify the key components of each regulation. This analysis followed Bardin's classic framework (Bardin, 1977) and was adapted in line with recent applications in regulatory scoping reviews (e.g., Bingham, 2023). The coding was inductive, allowing themes to be identified from the data rather than being imposed a priori.

The analysis involved the following steps: (1) Pre-analysis: Familiarisation with the material and initial identification of meaningful units of information (phrases, clauses, or full sentences). (2) Coding: Descriptive codes were assigned to regulatory features addressing allergen-related practices. (3) Categorisation: Codes were grouped into broader thematic categories based on similarity and regulatory intent. (4) Synthesis: Final themes were refined to represent the dominant regulatory themes across jurisdictions.

The resulting five themes were: (1) Presence of Information About Allergenic Ingredients. (2) Presence of Information Requesting Consumers to Declare Their Allergies. (3) Training and Education of Food Business Operators or Staff. (4) Existence of an Action Plan in Case of Anaphylaxis. (5) Existence of Food Allergen Management System or Individualised Plans.

Each document was coded independently by one researcher, and a second researcher, who was not involved in the initial coding, independently coded a random sample of 22% (18 of 83) of the included documents (Halpin, 2024). The initial codes and the second coder's codes were then compared, and any discrepancies were resolved through discussion with a third researcher to refine the codebook definitions. The level of initial agreement was high (Cohen's Kappa = 0.817 95% confidence interval from 0.63 to 0.99), providing confidence in the reliability of the overall coding. Where regulations addressed multiple dimensions, they were classified accordingly under more than one theme.

3. Results

3.1. General findings

The initial database search, completed in July 2025, yielded 903 citations. After removing duplicates, 598 records were retrieved for title and abstract screening. Of those, 486 records were excluded for not meeting the inclusion criteria.

A total of 112 full-text articles were assessed for eligibility, from which 50 were excluded, with the main reason being that they did not present laws regarding allergens in food service establishments. The remaining articles (n = 62) and the 34 legal documents identified from them are detailed in Supplementary Table S4. After removing 24 duplicate documents already found in the grey literature, 10 unique documents were included from this search. Furthermore, 71 documents were included from the Overton index and from a targeted Google search for grey literature and Chat GPT.

There was a 95.5% agreement between the two reviewers (CNF and MSV). Conflicts were resolved through a consensus meeting with a third author (DTC). The final number of documents included in this review was 83 (Table 1). A summary of the screening process is illustrated in Fig. 1.

In total, 83 legal and regulatory documents addressing food allergen requirements for non-prepackaged foods and meals in food services were identified. These documents encompass a variety of legal instruments, including 36 state laws, 16 national regulations, 9 municipal laws, 3 provincial laws, 2 county ordinances, 4 standards, 5 federal laws, 2 manuals, 2 circulars, 2 decrees, and 2 acts. A significant number of these regulations originate from individual U.S. states, reflecting the decentralised nature of food safety governance in the United States. Additional regulations were identified from countries in the European Union (including overarching EU regulations and local adaptations), as well as from the United Kingdom, Brazil, Argentina, Canada, Saudi Arabia, Norway, Switzerland, Dubai, Australia, New Zealand, India, South Korea, Lithuania, Italy, Peru and South Africa. Documents dating back to 2004 can be found in the United States (U.S. Food & Drug Administration, 2004), the European Union, and the United Kingdom (European Union, 2004); however, these are more general in their approach to the topic. The earliest specific regulation identified was Sabrina's Law, enacted by the province of Ontario, Canada, in 2005, which requires public schools to implement anaphylaxis policies. Fig. 2 presents a visual summary of the global distribution of allergen-related regulations in food service settings.

The 83 documents included in this review were categorised into five thematic groups based on their regulatory scope, as shown in Fig. 3 and detailed on Sections 3.3–3.7.

Fig. 4 summarises the distribution of regulatory documents according to five key themes identified in this review. Given that documents

Table 1
Summary of the main laws and regulation related to the management of allergenic foods in food services in different countries (organised by continent).

Type	Scope	Local	Year	Reference
Act	Guarantees consumer rights to clear and comprehensible information, including risks from allergens in served meals	South Africa	2008	Republic of South Africa, 2009
Regulation	Requires allergen information to be available on request at the point of sale for ready-to-eat foods	South Africa	2010	Republic of South Africa, 2010
Municipal law	Requires allergen management system; trained staff; allergen disclosure (written, icon-based, or verbal); and pre-sale information in digital or phone orders	Dubai	2023	Government of Dubai, 2023
Standard	Restaurants must inform consumers about allergens on menus; allergens, vegetarian, and nutritional symbols may be used	India	2020	Malhotra Gaur and Khan, 2022
Regulation	Menus (physical or digital) must include clear allergen warnings for consumers	Saudi Arabia	2018	Saudi Food and Drug Authority, 2018
Act	Requires allergen labelling for child-preferred foods (e.g., bakery, ice cream, burgers, pizza) in franchise food chains with 50+ stores; allergen info must be displayed in-store and online, and provided via leaflets or stickers for phone orders.	South Korea	2021	Ministry of Government Legislation, 2023
Regulation	Substances that may cause allergies or intolerances must be clearly communicated to consumers in a legible and visible manner.	Turkey	2017	Ministry of Food, Agriculture and Livestock, 2017
Regulation	Food handlers must receive training and be supervised in a manner appropriate to their duties. Therefore, they should be adequately trained in allergen management to ensure food safety. In addition, Regulation (EC) No 852/2004, amended in 2021 (Regulation EU No 2021/382), requires that equipment, conveyances and containers used for the processing, handling, transport or storage of allergenic substances listed in Annex II to Regulation (EU) No 1169/2011 must not be used for other foods unless visibly free from allergen residues after proper cleaning and checking procedures. Although this amendment does not apply to the UK post-Brexit, it underscores the importance of operational practices to prevent cross-contamination.	European Union and United Kingdom	2004	European Union, 2004European Union, 2011European Union, 2021
Regulation	Requires allergen information for non-prepacked foods; each member state defines how this must be communicated	EU, Iceland, Liechtenstein, Norway, Macedonia, Switzerlandand UK	2011	European Union, 2011
Regulation	Allergen info must be provided in writing or verbally before sale; for remote sales, info must be available before purchase and at delivery	Croatia	2014	Narodne novine, 2014
Regulation	Allergen info must be clearly written and accessible; in remote sales, disclosed before purchase and at delivery	Ireland	2014	Department of Health, 2014
Ministerial circular	Declares generic signs (cartello unico) insufficient; requires allergen info per item, visible via menu, label, board, or digital display	Italy	2015	Republique Italienne, 2015
Federal Law	Requires food businesses to provide mandatory allergen information for non-prepackaged foods, offering flexibility in the communication method (written or verbal) provided it is supported by a robust and verifiable tracking system	France	2015	French Government, 2015.
Federal Law	It requires public canteens (such as those in schools and hospitals) to provide gluten-free meals to people with coeliac disease upon request	Italy	2005	Italy, 2005
Interministerial circular	Mandates a formal Individualised Care Plan (PAI) for students with food allergies that specifies meal arrangements—either as a specially provided canteen meal or a family-provided one—and includes a required Emergency Action Plan authorizing staff to administer life-saving medication.	France	2021	France, 2021
Legislative decree	Mandates dish-by-dish allergen disclosure on menus in all food service establishments; penalties range from €3,000 to €24,000 for non-compliance	Italy	2017	Republique Italienne, 2017
Standard	Allergen info must be clear, written or electronic, and eliminate ambiguity	Lithuania	2014	Lietuvos Respublikos Sveikatos Apsaugos Ministras, 2014
Manual	Allergen info must be written or verbal; signage must indicate verbal availability	Netherlands	2020	Nederlandse Voedsel- en Warenautoriteit, 2020
Regulation	Requires written allergen disclosure for dine-in and delivery; verbal info is supplementary only	Norway	2014	Ministry of Health and Care Services, Ministry of Agriculture and Food, Ministry of Trade, Industry and Fisheries, 2014
Regulation	Allergen info can be written or verbal; verbal info must be indicated via signage	Switzerland	2016	Schweizerische Eidgenossenschaft, 2016
Regulation	Requires allergen info for unpackaged foods but can be provided in any manner the food business chooses including label, sign, menu, or verbally; where provided verbally consumers must be made aware that the information is available such as via signage.	England, Wales, Northern Ireland, Scotland	2014	UK Statutory Instruments, 2014b
Regulation	Requires full ingredient list with allergens highlighted on Prepacked for Direct Sale (PPDS) foods	England, Wales, Northern Ireland	2019	UK Statutory Instruments, 2019
Regulation	Non-prepacked foods may require labelling that includes allergen disclosures	Canada	2016	Government of Canada, 2016

(*continued on next page*)

Table 1 (*continued*)

Type	Scope	Local	Year	Reference
Regulation	Information on allergens in non-prepacked foods must be provided either in writing or verbally, provided that written details are readily available upon request.	Germany	2017	Gesetze im Internet, 2017
Regulation	Food services must declare allergens to customers before the purchase, either in writing or verbally by staff who have access to precise and written information	Serbia	2017	Legal Information System of the Republic of Serbia, 2017
Manual	Parents of children with food allergies must provide a medical certificate so that the school staff can develop an individualised plan. In cases of complex allergies, meals must be provided by the parents to the school.	Canton of Geneva	2024	GIAP, 2024
Royal decree	Allergen info must be written or verbal in food services	Spain	2015	Gobierno de España, 2015
Provincial law	Requires public schools to adopt minimum standards for anaphylaxis policy	Canada – Alberta	2020	Legislative Assembly of Alberta, 2019
Provincial law	Requires schools to have anaphylaxis policies and individual plans	Canada – Ontario	2005	Government of Ontario, 2005
Provincial law	Mandates the continuous on-site presence of at least one certified food handler, whose certification from a government-recognised program must include comprehensive training in allergen management.	Canada – Ontario	2017	Government of Ontario, 2017
Federal law	Voluntary guidelines for managing food allergies and anaphylaxis in educational settings	USA	2017	U.S. Food & Drug Administration, 2017
Federal law	Requires food workers to be trained in allergen awareness and safety	USA	2022	U.S. Food & Drug Administration, 2022
State law	Requires allergen awareness posters, menu disclosures, certified managers, and a public health program	USA – Massachusetts	2009	General Court of the Commonwealth of Massachusetts, 2009
Municipal law	Requires allergen awareness posters in restaurants for employee education	USA – Minnesota (Saint Paul)	2010	Allergen awareness, 2010
Municipal law	Requires food employees to be trained in allergen safety and awareness	USA – District of Columbia	2012	Department of Health, 2012
State law	Employees must be trained in food safety, including allergen awareness	USA – Wyoming	2012	Wyoming Department of Agriculture, 2012
State law	Requires training in food safety, including allergen awareness	USA – Maine	2013	Department of Health Human Services,& Department of Agriculture, Conservation and Forestry, 2013
State law	Requires food employee training in allergen safety and food safety	USA – Nevada	2013	Nevada Administrative Code, 2013
State law	Requires certified food safety managers to complete allergen training	USA – Michigan	2014	State of Michigan, 2014
State law	Requires basic allergen training for managers and employees; symptom identification included	USA – Florida	2015	State of Florida, Department of Business and Professional Regulation, Division of Hotels and Restaurants, 2015
State law	Encourages customers to notify staff of allergies; mandates staff training course listings	USA – Maryland	2015	Maryland General Assembly, 2015
State law	Requires allergen training standards in restaurant regulation	USA – Virginia	2015	Virginia Department of Health, 2015
County ordinance	Requires allergen training for food employees and test completion	USA – Maryland (Montgomery)	2016	Montgomery County, 2016
State law	Requires allergen awareness training as part of employee food safety training	USA – Oklahoma	2016	Oklahoma State Department of Health, 2016
State law	Food employees must be trained in allergen and food safety as per duties	USA – Hawaii	2017	Hawaii Department of Health, & Hawaii Administrative Rules, 2017
State law	Mandates training in food safety and allergen awareness for employees	USA – Alabama	2018	Alabama State Board of Health, 2018
State law	Requires certified food managers to undergo allergen training within 30 days and every 3 years	USA – Illinois	2017	Illinois General Assembly, 2017
State law	Encourages customers to notify staff of allergies; the employee who receives information about allergies must notify the trained person in charge	USA – Illinois	2019	Illinois General Assembly, 2019
State law	Requires food employees to be trained in allergen safety as part of food safety duties	USA – Minnesota	2017	Minnesota Department of Health, 2017
State law	Requires allergen awareness training as part of food safety training	USA – Tennessee	2018	Tennessee Department of Health, 2018
State law	Requires allergen education in food handler training	USA – California	2019	State of California, 2019
State law	Requires training in food safety and allergen awareness for employees	USA – Delaware	2019	Delaware Department of Health and Social Services, 2019
State law	Requires allergen safety awareness in food safety training for employees	USA – Idaho	2019	Idaho Department of Health and Welfare, & Division of Public Health, 2019
State law	Requires employees to be trained in allergen safety and food safety	USA – Wisconsin	2020	State of Wisconsin, & Department of Agriculture, Trade and Consumer Protection, 2020
State law	Requires food allergy awareness in restaurants and online food ordering	USA – New York	2021	State of New York, 2021
State law	Employees must be trained in food safety, including allergen awareness	USA – Arkansas	2022	Arkansas State Board of Health, 2022
State law	Requires training in allergen and food safety practices for food employees	USA – Kansas	2022	Kansas Department of Agriculture, 2022
State law	Requires allergen awareness notices in food services and menus	USA – New Hampshire	2022	New Hampshire Department of Health and Human Services, 2022

(*continued on next page*)

Table 1 (*continued*)

Type	Scope	Local	Year	Reference
State law	Requires food workers to be trained in allergen and food safety practices	USA – Washington	2022	Washington State Department of Health, 2022
County ordinance	Requires signage and allergen training in food services	USA – New York –Westchester	2022	County of Westchester, 2022
State law	Mandates allergen posters, menu notices, and allergen training for food protection managers	USA – Connecticut	2023	State of Connecticut, 2023
State law	Requires allergen awareness posters in food establishments	USA – Texas	2023	State of Texas, 2023
State law	Requires food safety and allergen awareness training for food employees	USA – Colorado	2024	Colorado Department of Public Health and Environment & Division of Environmental Health and Sustainability, 2024
State law	Requires allergen training for managers and signage for consumer allergen awareness	USA – New Jersey	2024	New Jersey Revised Statutes, 2024
State law	Requires allergen awareness training as part of manager and employee duties	USA – Ohio	2024	Ohio Administrative Code, 2024
State law	Mandates training in food safety and allergen awareness for employees	USA – Oregon	2024	Oregon Health Authority, 2024
State law	Mandates allergen training for food managers and employees; awareness of symptoms required	USA – Pennsylvania	2024	Commonwealth of Pennsylvania, 2024
State law	Requires allergen awareness posters, menu notices, and designated managers	USA – Rhode Island	2024	Rhode Island Department of Health, 2024
Standard	Requires declaration of main allergens on or near unpackaged food, or upon customer request	Australia, New Zealand	2015	NSW Food Authority, 2015
Standard	Mandates that food businesses have a certified Food Safety Supervisor and trained food handlers, with both certification and training legally required to include comprehensive competencies in allergen identification, cross-contamination prevention, and customer communication.	Australia, New Zealand	2023	Food Standards Australia New Zealand, 2023
Federal Law	Requires food service establishments to provide a dedicated menu for people with coeliac disease, including clearly labelled gluten-free options available to consumers.	Argentina	2015	Congreso de la Nación Argentina, 2015
Municipal Law	Establishes the requirement that establishments selling or serving food and beverages must inform whether products contain gluten, with appropriate 'contiene TACC' or 'libre de TACC' signage.	Argentina – Buenos Aires	2019	Legislatura de la Ciudad de Buenos Aires, 2019a
Municipal Law	Requires that party halls and public or private events providing food offer at least one option suitable for special diets, including those with food allergies.	Argentina – Buenos Aires	2019	Legislatura de la Ciudad de Buenos Aires, 2019b
Municipal law	Requires gluten presence information in food services including buffets and self-service	Brazil – Rio de Janeiro (city)	2017	Câmara Municipal do Rio de Janeiro, 2017
Municipal law	Requires declaration of gluten, sugar, seafood, nuts, and egg allergens in food composition	Brazil – Rio Grande	2017	Câmara Municipal da Cidade de Rio Grande, 2017
Municipal law	Requires menu indications of gluten, lactose, sugar, and whether foods are diet/light	Brazil – Belo Horizonte	2018	Prefeitura Municipal de Belo Horizonte, 2018
Municipal law	Requires menu indication of gluten, lactose, and milk protein presence in restaurants, bars, hotels, and similar establishments	Brazil – Serra Negra	2025	Prefeitura Municipal de Serra Negra, 2025
State law	Menus must indicate presence of gluten, lactose, milk, fish, almonds, dyes, nuts, soy, egg, and crustaceans via icons	Brazil – Ceará	2022	Estado do Ceará, 2022
State law	Requires seafood allergen kits and visual allergy action plans in restaurants	Brazil – Piauí	2023	Estado do Piauí, 2023; Decreto no 22.679, de 17 de janeiro de, 2024
State law	Requires allergen info on menus (physical or digital) for lactose, gluten, and seafood	Brazil – Pará	2024	Estado do Pará, 2024
State law	Requires clear identification of allergens (including gluten, lactose, nuts, seafood, eggs, soy, etc.) in menus (digital or physical) in all food establishments	Brazil – Bahia	2025	Bahia, 2025
Regulation	Requires that, if a consumer reports being allergic or hypersensitive to a food, the kitchen must be notified to apply practices that prevent the use or cross-contact of the allergen in served dishes	Peru	2018	Ministerio de Salud de Perú, 2018

Disclaimer of liability: All information listed in the table above is believed to be accurate at the time provided. No warranty of accuracy is given by the authors. The authors will not be held liable for any improper or incorrect use of the information provided. Source: prepared by the authors.

could be classified under more than one theme, the total number of assignments (n = 92) exceeds the number of included documents (n = 83).The most frequently addressed theme was training and education of food business operators or staff (Theme 3; 39 documents), followed by requirements for information about allergenic ingredients (Theme 1; 34 documents). Fewer regulations dealt with requesting consumers to declare their allergies (Theme 2; 7 documents), the existence of food allergen management systems or individualised plans (Theme 5; 8 documents), and action plans for anaphylaxis (Theme 4; 4 documents). Seven regulatory documents were classified under more than one theme, indicating that they address multiple aspects of allergen management simultaneously (Fig. 3). Notably, the Dubai Food Code 2.0 appears in four out of the five thematic categories, reflecting their comprehensive approach that spans ingredient disclosure, consumer notification, staff training, and the implementation of allergen management systems.

3.2. Regional highlights

Several regulatory instruments identified in this review apply to multiple nations. One of the most prominent is Regulation (EU) No 1169/2011, which mandates that food business operators must provide clear and accurate allergen information to consumers, including for non-prepacked foods and foods sold via distance communication. While the regulation applies directly to prepacked foods, it allows each member state to define how allergen information for non-prepacked foods should be made available. Therefore, national implementation laws are required across the 27 EU member states, which include Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland,

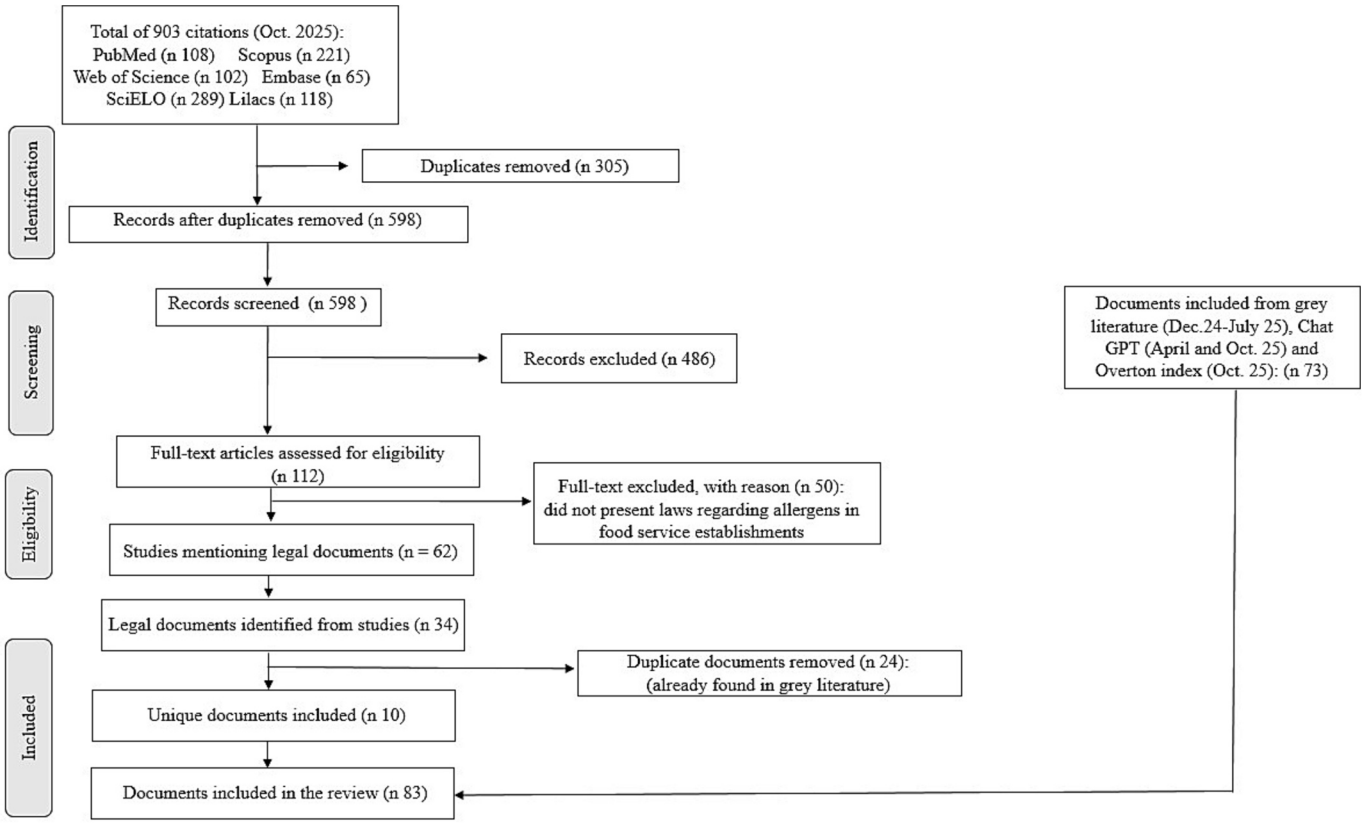

Fig. 1. Study selection process for the scoping review.

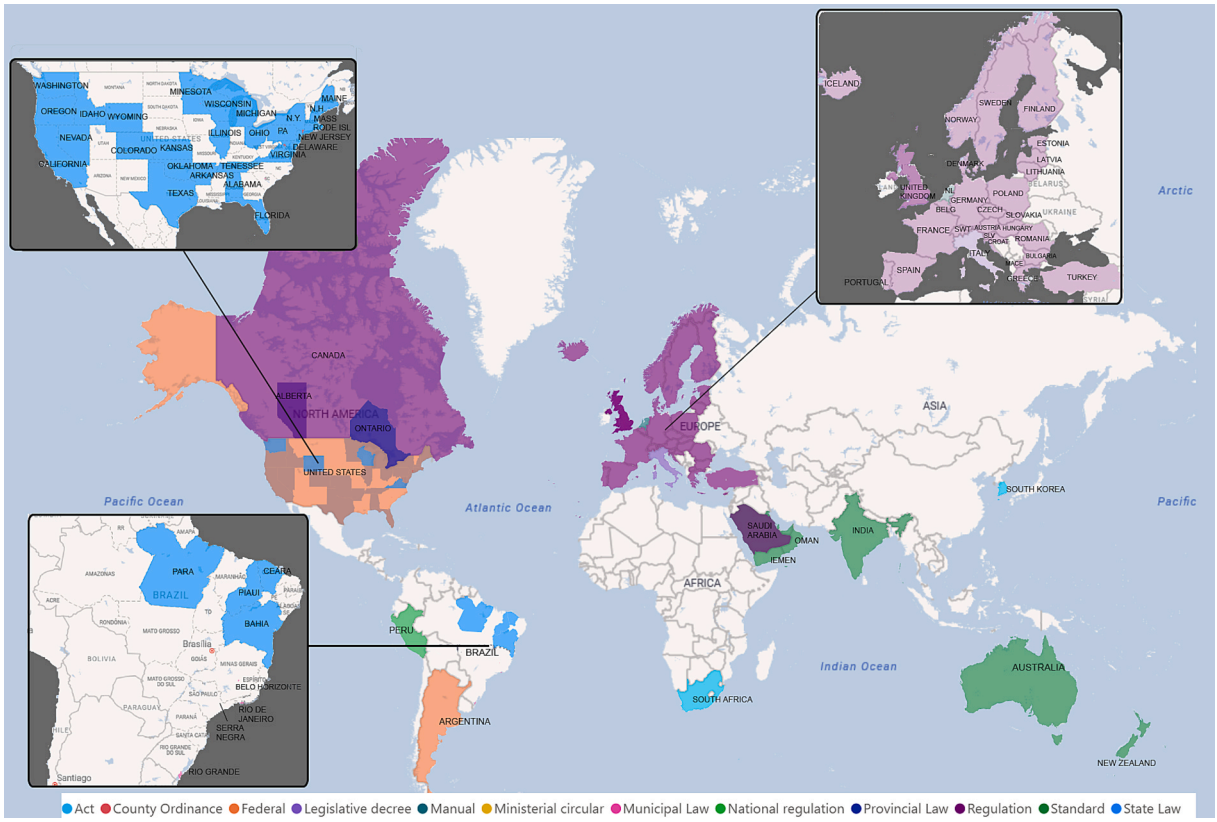

Fig. 2. Countries, States and cities with food allergy regulations in food services.

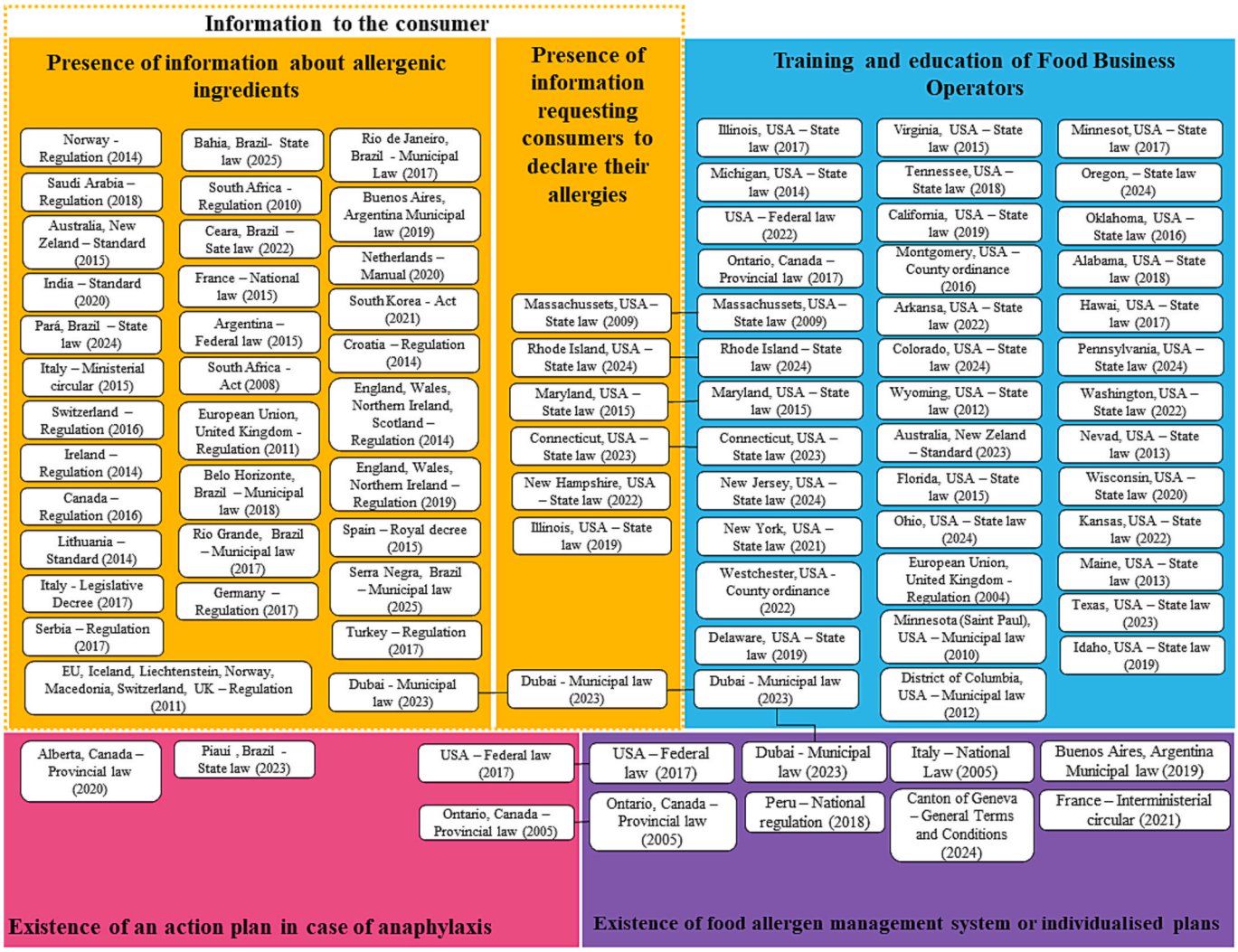

Fig. 3. Categorisation of regulations on food allergy in food service.

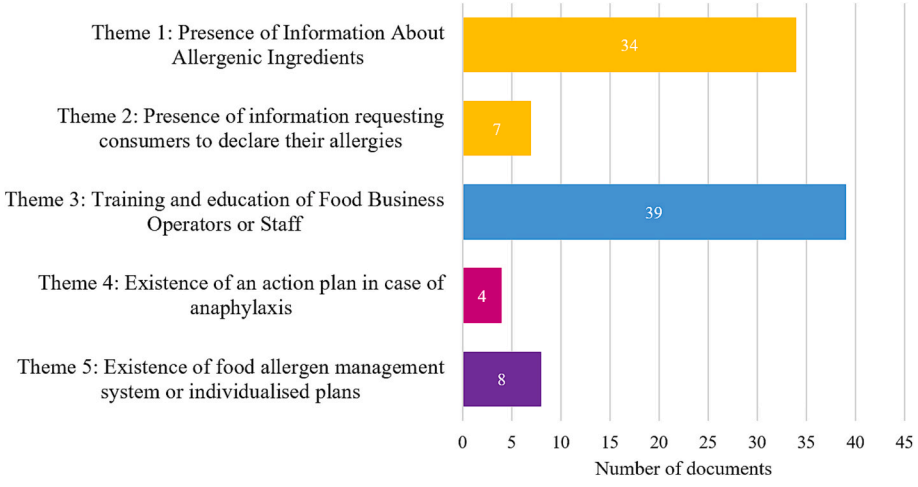

Fig. 4. Distribution of regulatory documents by qualitative theme.

France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, and Sweden (European Union, 2025; UK Statutory Instruments, 2014a). Additionally, although not EU members, Iceland, Liechtenstein, Norway, North Macedonia, Switzerland, and the United Kingdom have adopted or aligned with the provisions of this regulation (Food Allergy Research & Resource Program, 2024), further expanding its geographical scope.

Another example of a cross-national regulation is GSO CODEX STAN 80:2023, which was developed by the Gulf Cooperation Council (GCC) Standardization Organisation. This document is not listed in Table 1, as it has an advisory and non-mandatory nature; however, it is important for understanding actions at a cross-national level. The GSO includes the governments of the United Arab Emirates, Bahrain, Saudi Arabia, Oman, Qatar, Kuwait, and the Republic of Yemen (GCC Standardization Organization, 2025). This standard draws on Codex Alimentarius CXC 80-2020 (Codex Alimentarius, 2020) and sets out a series of recommendations for allergen control in food service environments, including cross-contact prevention and consumer communication.

3.3. Theme 1: presence of information about allergenic ingredients

A total of 34 documents mandating the provision of allergen information in food service settings were identified, comprising thirteen regulations, five municipal laws, three standards, three state laws, two acts, one legislative decree, one ministerial circular, one federal law, one manual, one national law, and one royal decree. These instruments generally stipulate that food business operators must clearly and visibly inform consumers about the presence of specific allergens in unpackaged foods. This theme is further divided into two sub-themes: i) written disclosure; and ii) verbal communication. Examples of menus and signage illustrating these practices are provided in the supplementary file.

Several international and regional frameworks emphasise the requirement for allergens disclosure. For instance, the standard adopted by members of the Gulf Standardisation Organisation (GSO)—including Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE—aligns with Codex Alimentarius guidelines and requires allergen information to be accessible both on-site and online, where applicable. An example of a menu used in the United Arab Emirates can be seen in Fig. S1. Figs. S2 and S3 show examples of a physical and an online menu used in Saudi Arabia, respectively. Similarly, national regulations in the Netherlands, Switzerland, the European Union, and Croatia mandate disclosure of the 14 most common allergens, which include the Codex 'Big 8′ plus celery, lupin, mustard, sesame, sulphites, and molluscs. While written formats are preferred, verbal communication is permitted in some cases, provided that a prominently displayed notice informs consumers that this information is available. Examples of menus can be seen in Figs. S4, S5, and S6 for England, Switzerland, and the Netherlands, respectively. In Croatia, this disclosure must occur prior to the completion of the sale (an example of a menu from Croatia can be seen in Fig. S7). Saudi Arabia adopts a comparable approach by requiring menus—physical or online—to include allergen warnings for the 14 major allergens. In the United Kingdom, the Food Information Regulations 2014 allows allergen information to be provided in various forms, including verbal communication, provided the consumer is clearly informed of its availability. These regulations also cover prepacked for direct sale (PPDS) foods, such as sandwiches prepared in advance of busy periods, which must be labelled with the name of the food and a comprehensive list of ingredients with allergens clearly highlighted (Fig. S8).

Other countries take a more prescriptive stance on the mode of communication. In Norway, allergen information must be presented in writing—on menus, notices, screens, or posters—with verbal communication allowed only as a supplement (Fig. S9). Ireland requires that this information be clear, legible, and provided in English or both English and Irish (Fig. S10), while Lithuania mandates written or electronic disclosure that prevents any ambiguity for the consumer. In some jurisdictions, the use of visual symbols and icons is permitted or encouraged to improve clarity. For example, Dubai allows the use of written formats, pictorial icons, or verbal disclosure upon request (Fig. S11). India mandates allergen information and permits icons, alongside requirements for indicating vegetarian status and nutritional values (Fig. S12). In Brazil, the state of Ceará requires allergen presence—such as gluten, lactose, milk, fish, almonds, colourings, soy, eggs, and crustaceans—to be identified with icons adjacent to menu items (examples of the symbols and a menu using the symbols can be seen in Figs. S13 and S14, respectively. Under the Australia New Zealand Food Standards Code, meals served in restaurants and cafés that are not prepackaged are exempt from full labelling requirements. However, businesses are still required to provide allergen information either clearly at the point of display or upon request (Fig. S15). This ensures that consumers with food allergies have access to relevant safety information, even in non-prepacked food service settings. For PPDS foods full allergen labelling is mandatory. These products must include a complete list of ingredients, with the presence of any of the following allergens clearly declared. The list incorporates the 'Big 8′ allergens identified by the Codex Alimentarius, as well as sesame seeds, lupin, and added sulphites when present at levels above 10 mg/kg.

The specific allergens that must be declared also vary. Some countries adhere closely to the Codex Alimentarius 'Big 8′, while others have tailored lists. In Brazil, the absence of a specific federal framework has created a legislative void, resulting in considerable regulatory heterogeneity as states and municipalities enact their own rules. This disparity is evident in the range of local mandates: the state of Pará, for example, requires disclosure of lactose, gluten, and seafood; Rio de Janeiro's regulations focus solely on gluten and its derivatives (Fig. S16); the municipality of Belo Horizonte's scope extends to gluten, lactose, sugar, and a food's classification as 'diet' or 'light' (Fig. S17); and Rio Grande do Sul mandates a broad list including gluten, sugars, seafood, oilseed, and eggs. In Argentina, the legal requirement centers specifically on gluten.

Several frameworks also address remote food sales, such as takeaways and delivery services. Dubai requires allergen information to be disclosed before the transaction is completed, either verbally or in writing. Similarly, Regulation 1169/2011 from the European Union mandates that allergen information be made available prior to the purchase and at the time of delivery. This information may be communicated in written form (e.g., on websites or menus) or verbally (e.g., by telephone). In the UK and European Union, allergen details for takeaway orders placed online or by phone must be available at two critical points: before the order is finalised and upon delivery, typically via printed menus, labels, or stickers. Following a similar principle, South Korea mandates that its list of 22 specified allergens must be clearly displayed on menus, online, and in leaflets for telephone orders.

3.4. Theme 2: presence of information requesting consumers to declare their allergies

Seven official documents—comprising six state laws, and one municipal law—mandate that food establishments display signs encouraging customers to disclose any food allergies. This regulatory approach has been widely adopted across several U.S. jurisdictions, including New Hampshire (Fig. S18), Massachusetts (Fig. S19), Rhode Island (Fig. S20), Maryland (Fig. S21), Connecticut (Fig. S22), and Illinois. Depending on the jurisdiction, the requirement may be met through notices on physical menus, wall-mounted signs, or information boards (Rhode Island Department of Health, 2012; General Court of the Commonwealth of Massachusetts, 2009; Maryland General Assembly, 2015; New Hampshire Department of Health and Human Services, 2022; State of Connecticut, 2023).

The regulation of New Hampshire is even more specific, as it provides recommended wording for this type of notice: 'Before placing your order, please inform your server if a person in your party has a food allergy' (New Hampshire Department of Health and Human Services, 2022).

Although not mandatory at the international level, encouraging consumers to disclose their food allergies is also endorsed in voluntary guidance. The Codex Alimentarius, through its CXC 80-2020 guidance, recommends the use of such signage as a best practice for food businesses, though it does not impose it as a legal obligation (Codex Alimentarius, 2020). Similarly, the UK Food Standards Agency (FSA)

promotes the display of notices inviting customers to disclose allergies or intolerances, aligning with the intent of Regulation (EU) No 1169/2011 (European Union, 2011; Food Standards Agency, 2024). An example of this signage can be seen in Fig. S23, and a representative EU menu featuring allergen prompts is provided in Fig. S24.

3.5. Theme 3: training and education of food business operators or staff

A total of 39 official documents addressing the training and education of catering staff in food service establishments were identified. These include 30 state laws, three municipal laws, two county laws, one standard, one regulation, and one federal law. This theme is further divided into four sub-themes: (i) person in charge of training; (ii) training of food service employees; (iii) government intervention in allergen handling; and (iv) awareness through informational posters.

It is important to note that while many jurisdictions mandate food safety training for food service workers, only a subset of these regulations explicitly address food allergy. In several countries, including the United States, food safety legislation includes general provisions on staff training and hygiene practices without specifically mentioning allergen management. However, given that food allergies represent a significant health hazard, allergen awareness should be considered an integral component of food safety training. For the purposes of this review, only regulations that explicitly mention food allergies were included.

Person in charge of training – In the United States, many states adhere to the Food Code issued by the U.S. Food and Drug Administration (FDA) (U.S. Food & Drug Administration, 2024), which provides comprehensive recommendations on food safety practices. An important requirement of the Food Code is that the person in charge of a food establishment must ensure that staff receive appropriate food safety training, including allergen awareness. This provision has been adopted by several states, including Wisconsin, Arkansas, Delaware, Colorado, Wyoming, Washington, Tennessee, Oregon, Ohio, Pennsylvania, Alabama, Hawaii, Idaho, Kansas, Maine, Nevada and the District of Columbia (municipal law). Under these regulations, managers are expected to understand the principles of food safety, including identifying the major food allergens and recognising the symptoms of food allergic reactions. This emphasis on training underscores the critical role of food safety education in mitigating food allergy reactions in food service establishments.

Training of food service employees – In addition to the U.S. Food Code, several jurisdictions — both within the U.S. and internationally — have implemented more extensive training and certification requirements for food service workers. Notable examples include Regulation (EU) 852/2004, the GSO Codex, regulations in Dubai and specific laws in U.S. states such as Maryland, Michigan, Virginia, Illinois, and California. The GSO Codex, for example, requires food service employees to know the establishment's menu, including allergenic ingredients and the risks of cross-contamination (GSO Codex Stab 80:2023, 2023). The Public Act 100–0367 in Illinois has included extensive information to define the topics, contents, and requirements for allergen awareness training in food service establishments. The contents include but are not limited to major food allergens, food allergy reactions symptoms, ways to prevent cross-contact, ways to communicate about food allergies with other personnel, and how to deal with food allergy related emergencies. In California, food service employees who have completed allergen training must carry a certification card as proof of their knowledge (State of California, 2019).

Government Intervention in Allergen Handling – Three US states have special obligations with regard to state intervention in the handling of allergens. Massachusetts requires the Department of Public Health to establish a'Food Allergy Friendly' programme in which restaurants voluntarily participate and meet minimum criteria, such as maintaining an on-site list of all ingredients used in their preparations and making this list available to customers (General court of the commonwealth of Massachusetts, 2009). Maryland requires the Department of Health and Mental Hygiene to maintain a list of food allergen courses and training programmes on its website (Maryland General Assembly, 2015). Virginia requires the state health department to provide food allergy training and distribute educational materials to restaurant employees (Virginia Department of Health, 2015).

Awareness Through Informational Posters – Several regulations emphasise employee awareness through informational posters. In many places in the U.S., food service establishments are required to display food allergy awareness posters in employee areas. This requirement is enforced in states such as Massachusetts, Rhode Island, Maryland, Michigan, New Jersey, New York, Connecticut, Texas and the city of Saint Paul, Minnesota. New York State provides specific guidelines for poster content, which must include the following: Procedures to follow when a customer reports an allergy; Measures to avoid cross-contamination; and Emergency protocols for allergic reactions, including when to call 911. In addition, the information on these posters must be available in English and other languages to ensure accessibility to diverse populations (State of New York, 2021). Connecticut requires its employees to certify in writing that they have read and understand the information on the posters (State of Connecticut, 2023). Examples of these posters, which are recommended for use in Massachusetts, Rhode Island, Maryland, Michigan, Texas, New York, New Jersey, and Connecticut, can be found in Figs. S25, S26, S27, S28, S29, S30, S31, and S32, respectively. These posters serve as practical tools to reinforce food safety protocols and ensure that employees are well-informed about allergen handling.

3.6. Theme 4: existence of an action plan in case of anaphylaxis

Four official documents were identified that address action plans for anaphylaxis, including one state law from Brazil, two provincial laws from Canada, and one federal law from the United States.

In the Brazilian state of Piauí, catering establishments that sell products containing seafood or its derivatives are required to maintain and provide access to emergency medicine kits for the management of food allergic reactions. These establishments must also display information regarding the symptoms of food allergy and the availability of the emergency kit (Estado do Piauí, 2023). Furthermore, a poster detailing the anaphylaxis action plan must be visibly displayed within the restaurant premises (Decreto no 22.679, de 17 de janeiro de, 2024). An example of this poster is shown in Fig. S33.

In Canada, the provinces of Ontario and Alberta have enacted legislation mandating the development of anaphylaxis management plans in public schools to protect students with food allergies (Government of Ontario, 2005; Legislative Assembly of Alberta, 2019). Alberta's legislation builds upon Sabrina's Law, initially established in Ontario, and sets out minimum requirements including: risk-reduction strategies for allergic students, a communication protocol for the school community, mandatory training for school staff, identification procedures for students with allergies, and the provision of epinephrine auto-injectors (Food Allergy Canada, 2019).

In the United States, the federal Food Safety Modernization Act (FSMA) includes voluntary guidelines for anaphylaxis management in schools and early childhood education settings (U.S. Food & Drug Administration, 2017). Also, since 2003, the US Federal Aviation Administration regulations have required all commercial airliners in the U.S. to carry epinephrine in their onboard Emergency Medical Kits —typically in vial form, intended for administration via syringe by a medically trained person (U.S. Federal Aviation Administration, 2003).

3.7. Theme 5: existence of food allergen management system or individualised plans

Eight documents were identified that explicitly address the implementation of food allergen management systems or individualised plans. These include two municipal laws, one provincial law, one federal law,

one national regulation, one general terms and conditions, one interministerial circular, and one national law. Unlike broader food safety regulations, three of these documents provide clear guidance on how allergen control measures should be developed and implemented.

Sabrina's Law in Ontario (Canada) is the only regulation mandating the creation of individualised anaphylaxis plans for each student at risk (Food Allergy Canada, 2025a). However, this requirement is specific to the school setting. In contrast, both the Dubai legislation and the GSO Codex require food service establishments to establish allergen management systems (GSO Codex Stan 80:2023, 2023; Government of Dubai, 2023).

The Dubai framework outlines several essential components, including the assessment of raw materials for allergenic content, risk assessment to prevent cross-contact, validation and verification of production processes, verification of cleaning procedures, communication strategies, and documentation of allergen-related actions. It also mandates that employees undergo allergen management training prior to starting work (Government of Dubai, 2023).

Similarly, the GSO Codex defines procedures for menu management, sourcing ingredients with known allergenic profiles, recording allergenic content, and implementing cleaning practices to avoid cross-contamination. It recommends assigning a staff member responsible for allergenic foods or, where this is not feasible, ensuring rigorous hand hygiene. The standard also emphasises training as a core element of allergen management (GSO Codex Stab 80:2023, 2023).

Other legal frameworks address specific operational requirements. In Argentina, Buenos Aires Law 6.296 focuses on menu availability, requiring that venues for public or private events provide at least one option suitable for special diets, including food allergies. Taking a different approach focused on real-time communication, a Peruvian regulation mandates a clear protocol for when a consumer declares an allergy: the kitchen must be formally notified to implement specific procedures aimed at preventing cross-contact with the identified allergen.

Although not allergen-specific, one document—namely the U.S. Federal Food Safety Modernization Act (FSMA)—provides voluntary guidelines for anaphylaxis management in schools, early childhood education settings, and other relevant institutions (U.S. Food & Drug, 2017).

In addition, although not always explicitly stated, some jurisdictions incorporate allergen management within general food safety systems based on the Hazard Analysis and Critical Control Points (HACCP) approach. In these cases, allergens are treated as chemical hazards, and their control may be embedded in procedures for hazard identification, risk mitigation, and staff training.

4. Discussion

4.1. Geographic inequalities and regulatory gaps

This review identified 83 allergen-related regulations across different countries, regions, and states, classified into five thematic categories. While high-income countries—particularly in Europe, North America, and Oceania—have developed more comprehensive frameworks, significant regulatory gaps remain globally. Only one country in Africa and a few jurisdictions in South America (mostly subnational) were found to have specific legislation addressing food allergies in food service settings.

Brazil exemplifies this fragmented landscape. The country lacks a specific federal regulation for allergen disclosure in food services, resulting in considerable variation across states and municipalities. This fragmentation poses challenges for consumers, who encounter inconsistent information, and for food businesses, which must comply with overlapping or conflicting rules. Efforts to address this gap include a proposed federal bill (PL 246/2025) and the use of ANVISA RDC 26/2015—originally designed for prepacked foods—as a benchmark in new state-level laws, such as in Bahia (Brazil, 2025; Bahia, 2025). On the other hand, the Dubai Food Code provides an example of a more holistic approach. It outlines a full allergen management system, including risk assessment, ingredient identification, control measures, monitoring, corrective actions, and record-keeping. Similarly, the GSO Codex (Stab 80:2023) integrates procurement, cross-contamination prevention, staff training, and menu labelling into a comprehensive framework for allergen safety.

The predominance of regulatory initiatives in high-income countries must be contextualised by the structural barriers faced by low- and middle-income countries (LMICs). In many LMICs, food allergy remains an under-recognised public health issue, partly due to the absence of reliable epidemiological data and the lack of allergy as a defined medical specialty (El-Gamal et al., 2019). This impairs diagnosis, reporting, and policy prioritisation. Additional barriers include under-resourced healthcare systems, limited training for health professionals, and scarce public education campaigns. Allergen labelling is often absent or poorly enforced, and high illiteracy rates further undermine the accessibility of food safety information (Grace, 2015; El-Gamal et al., 2019).

These challenges are amplified in informal food markets, which account for up to 60–90% of food sales in sub-Saharan Africa (Grace, 2015). In these contexts, food safety practices are based more on visual cues and trust than regulatory standards, and small-scale vendors often lack the capacity or incentives to adopt allergen control measures. Regulatory inertia may also reflect economic resistance from food industry stakeholders, especially where stricter legislation could impose additional costs or require substantial operational changes (Lacy-Nichols & Williams, 2021; Nestle, 2013). To overcome these barriers, multistakeholder strategies are needed. At the governmental level, municipal governments could offer tax incentives to SMEs adopting digital allergen tracking, following successful models used to promote hygiene in informal markets (Adeosun et al., 2023; Jaffee and Henson, 2024). Research on food safety in informal markets of LMICs demonstrates that alternative strategies focused on municipal institutions and involving multisectoral interventions are necessary to complement national controls (Jaffee & Henson, 2024). In parallel, allergen management could be embedded within broader food safety schemes—such as Codex CXC 80–2020—minimising the need for standalone regulatory systems while leveraging existing frameworks (Codex Alimentarius, 2020).

Notably, the absence of specific allergen regulation is not limited to LMICs. Several high-income nations—including Japan, Chile, Uruguay, China and the Russian Federation—also lack binding food service-specific legislation. Japan, for example, promotes a voluntary approach: the Consumer Affairs Agency (CAA) provides multilingual educational materials and guidance to encourage allergen disclosure, but does not impose penalties for non-compliance (Akiyama & Adachi, 2021; CAA, 2024). These policy choices may reflect differences in institutional capacity, regulatory philosophy, or the relative visibility of allergic consumers in public discourse, though the specific reasons were not investigated in this review.

Notably, China — the world's most populous country and a BRICS member — currently has no binding regulation specifically addressing allergen management for non-prepackaged foods in food service settings. While the newly published GB 7718-2025 ((National Health Commission of the People's Republic of China & State Administration for Market Regulation, 2025) standard introduces mandatory allergen labelling for prepackaged foods from March 2027, no equivalent requirement exists for restaurants and similar establishments, reinforcing the pattern of regulatory gaps observed in large emerging economies.

In this context, international organisations such as the Codex Alimentarius and the World Health Organisation play a critical role in promoting regulatory convergence and supporting countries with limited infrastructure. Their guidance serves as a foundation for harmonising allergen control efforts worldwide, particularly in the out-of-home food sector, and may help to reduce the growing global

inequities in the protection of food-allergic individuals.

4.2. Challenges in implementation

Despite the existence of regulations, there are significant gaps between established policies and their practical implementation across jurisdictions. For instance, a study in Ireland found that only 16% of food businesses audited provided accurate allergen labelling (Donovan et al., 2018). In the UK, an audit of 65 fast food takeaway outlets found that over 70% were non-compliant with allergen information legislation, representing a significant public health concern (Royal Society for Public Health RSPH, 2015). In the United States, a CDC report revealed that more than half of restaurant employees had never received food allergy training (Radke et al., 2016), despite expressing confidence in their ability to serve allergic consumers safely (Radke et al., 2017). Further research from England showed that 43% of businesses made only minimal efforts to control allergens, while 29% showed no allergen control measures at all (Bailey et al., 2011). Similarly, studies of independent restaurants in the U.S. found that less than half had written allergy protocols, and over half of food handlers lacked specific training (Ahuja & Sicherer, 2007).

These findings illustrate that regulation, while essential, is only the first step in protecting consumers with food allergies. The consistent implementation of allergen-related policies remains a significant public health challenge, shaped by organisational, cultural, and economic barriers that transcend legal mandates. For example, training and education requirements appeared in a significant portion of the identified regulations. However, studies suggest that training alone is not sufficient to ensure compliance or safe practice. In a survey of 278 U.S. restaurants, fewer than half of employees had received training on food allergies (Radke et al., 2017)(), despite many states mandating it. Broader studies have shown that food service workers often hold misconceptions—such as confusing lactose intolerance with milk allergy, believing allergens can be removed from dishes after preparation, or assuming cooking neutralises allergenic proteins (Soon, 2018; Bailey et al., 2011).

High staff turnover, limited time for onboarding, and financial constraints make the consistent delivery of effective training difficult (Newman, 2023; Dominguez et al., 2024). These operational barriers are common in food service and may explain the gap between regulatory intent and practice. Moreover, as training alone has proven insufficient to change food safety behaviours in similar contexts (da Cunha et al., 2022), it must be reinforced by broader organisational support, clear communication structures, and formal allergen management protocols (da Cunha, 2021). Collectively, these studies highlight the need for greater education, training, and organisational support to ensure adequate compliance with allergen regulations.

4.3. Communication and consumer protection

Communication with consumers remains one of the most critical, yet fragile, components of allergen risk management in the food service sector. Many jurisdictions require food service operators to display posters or prompts on menus encouraging customers to disclose allergies before ordering (Carter et al., 2020). This practice is seen in U.S. states such as New Hampshire, Massachusetts, and Rhode Island (General Court of the Commonwealth of Massachusetts, 2009; New Hampshire Department of Health and Human Services, 2022; Rhode Island Department of Health, 2012). However, despite such initiatives, communication failures are common. Consumers often feel uncomfortable informing staff about their allergies due to stigma or fear of being seen as a burden (Barnett et al., 2020; Leftwich et al., 2011), while restaurant staff in both the USA and UK frequently believe that responsibility lies solely with the customer (Wen & Kwon, 2017; Soon, 2018). This mismatch creates a dangerous gap between the availability of information and its effective use.

Compounding this issue is the persistent lack of internal communication protocols. Miscommunication between waitstaff and kitchen personnel is a recognised risk factor (Gowland et al., 2024; Newman, 2023), and language barriers further increase the likelihood of error (Gowland et al., 2024). Regulatory solutions such as multilingual signage (e.g. New York State) and visual communication tools like Japan's'Allergy Communication Sheet' (CAA, 2025) have been implemented in some jurisdictions to address this.

Menu design can play an important role in facilitating effective allergen communication. Experimental research has demonstrated that directive formats—using visual elements such as icons—are more effective in capturing consumer attention than text-only menus. For instance, an eye-tracking study by Lee and Wei (2024) found that menus with allergen symbols significantly improved visual engagement with allergen information. Several regulatory frameworks already reflect this principle, including those in Ceará, Brazil (Estado do Ceará, 2022), and Dubai (Government of Dubai, 2023). However, the effectiveness of any communication strategy depends on the availability of accurate and up-to-date information. Many food service establishments still lack standardised recipes or written ingredient records (Radke et al., 2017), limiting the reliability of allergen declarations.

Even when information is provided, allergic reactions still occur. Begen et al. (2018) reported that more than half of allergy incidents happened despite communication with staff, and in some cases, even when allergens were listed on menus. These findings underline the limitations of communication strategies in the absence of robust operational controls.

A further challenge is the inconsistent use of precautionary allergen labelling (PAL) in food service. Unlike prepackaged products, most jurisdictions lack clear guidance on how to communicate the risk of unintentional allergen presence in restaurant meals. As a result, establishments often rely on broad disclaimers such as'we cannot guarantee this food is free from allergens,' which may offer legal protection but provide little clarity to consumers. Research shows that nearly half of consumers mistakenly believe PAL is mandated by law, and up to 40% report purchasing products with PAL, indicating widespread confusion about its meaning and reliability (Barnett et al., 2011). Conversely, individuals with a history of severe reactions are significantly less likely to consume such products, highlighting the role of personal experience in shaping risk perception.

These communication failures have prompted recent public campaigns demanding stronger regulatory safeguards. For example, Owen's Law has gained formal support from the FSA, which recommended its implementation to government ministers in 2023, though legislation is still pending (Grantham, 2024). In the United States, California enacted the Allergen Disclosure for Dining Experiences (ADDE) Act (SB 68) in October 2025 (California, 2025), becoming the first state to require large restaurant chains to list the top nine allergens directly on menus, recognising the inadequacy of voluntary or verbal-only approaches

The challenges are even more pronounced in digital food environments. With the rise of food delivery platforms, consumers increasingly rely on online menus for allergen information. Laws recently adopted in New York State, which mandate allergy disclosure fields and real-time menu updates, offer promising models for improving transparency. However, settings such as dark kitchens—where operational oversight is limited and menu changes frequent—pose additional risks to allergic consumers. Addressing regulatory gaps around unintentional allergen contamination and PAL, especially in these rapidly evolving formats, is essential to strengthen consumer protection and support informed food choices.

4.4. Digital platforms and delivery services

The complexity increases when meals are ordered via delivery apps or online platforms. In these contexts, communication is often mediated through third-party systems, which may delay updates to menus and

allergen information. For example, Laheri et al. (2025a) reported a lag time in updating online allergen information and menu changes in some of UK digital platforms that could range from a few hours to several days. This delay in updating allergen information on online platforms may prevent food hypersensitive consumers from accessing critical, timely information regarding changes in recipes, especially if food allergens were used. This creates critical vulnerabilities, particularly in the case of dark kitchens, which often operate in constrained environments with limited oversight (da Cunha et al., 2024). Many dark kitchens operate in informal or semi-formal environments, often struggling to comply with food safety regulations due to limited oversight (da Cunha et al., 2025), high staff turnover, and shared facilities. Shared space and kitchen facilities including storage space and equipment pose a heightened risk of cross contamination as different food business operators or even staff working for separate dark kitchens may not be aware of the food allergens used by other parties. Conflicts between different dark kitchens have been reported pertaining to responsibilities and cleaning of communal spaces and shared facilities (Laheri et al., 2025b). This informality and lack of cooperation increase the risk of lapses in allergen management and hygiene, especially when multiple brands or different food business operators share the same kitchen space and responsibilities are unclear.

Consumers typically do not perceive third-party delivery apps as responsible for food safety or allergen communication, instead attributing responsibility solely to the food operator (Hakim et al., 2022; Hakim et al., 2026) or the regulators (Flanagan et al., 2025). This perception allows platforms to avoid proactive vigilance, despite their central role in mediating information and transactions. As a result, apps may not prioritise timely allergen updates or robust verification of food safety practices, leaving consumers exposed to risk.

Regulatory challenges include the lack of clear liability frameworks for third-party platforms, insufficient guidance for enforcement agencies, and the difficulty of inspecting and monitoring virtual or home-based kitchens. Up to 79% (n = 123) of Environmental Health Officers in England reported challenges in identifying and inspecting virtual or home-based kitchens. One of the key concerns raised was the logistical challenge posed by the uncertain or sporadic operating hours of such kitchens, which significantly hinders the ability of Environmental Health Officers (EHOs) to carry out inspections. A second major challenge involves the inspection of shared kitchen facilities, especially in determining responsibilities and how the staff from different food business operators (FBOs) ensure hygiene, especially in communal spaces. When different FBOs use the same premises at different times, the overall number of required site visits to ensure adequate oversight for each business increases. This further increases the regulatory burden when their resources are already overstretched (Laheri et al., 2025a). Regulations such as those in New York State, which mandate online allergen declaration and allergy-reporting fields in delivery interfaces, are therefore essential (State of New York, 2021). This mandatory approach contrasts with the guidelines in Singapore, where the online disclosure of allergens for non-prepacked cooked meals—the category most relevant to delivery services—is encouraged but not legally required (Singapore Food Agency, 2021)

Digital ordering is now routine in many households, a trend accelerated by the COVID-19 pandemic (Francioni et al., 2022; Haas et al., 2022). Regulatory oversight must keep pace with these evolving consumer habits to ensure allergen safety in non-traditional food service formats.

4.5. Practical implications

The results of this study highlight the need for more integrated and context-sensitive regulatory approaches to allergen management in food service. While training is one of the most common requirements found across jurisdictions, its effectiveness is limited when implemented in isolation. Regulatory bodies should consider not only mandating initial training, but also establishing periodic refresher courses and ensuring that food handlers have access to practical tools such as posters, checklists, and simplified guidelines adapted to the realities of fast-paced work environments. These efforts should be reinforced by the implementation of structured allergen management systems, including procedures for ingredient traceability, cross-contact prevention, cleaning protocols, and clearly defined responsibilities among staff.

Equally important is the way in which information is communicated to consumers. Written and visual forms of disclosure, such as directive menus using icons or symbols, should be prioritised over verbal-only formats, especially in environments with linguistic diversity or limited time for in-person clarification. To enhance consumer confidence and reduce the risk of miscommunication, regulations should require food service operators to maintain up-to-date ingredient lists and ensure that allergenic content is clearly labelled and easily accessible, both in physical locations and in online formats.

Finally, given that allergens are increasingly recognised as chemical hazards within food safety frameworks, their inclusion within formal HACCP-based procedures should be explicitly required in food service regulations. This would help move allergen control from a secondary concern to a core element of risk management, ensuring a more comprehensive and preventive approach to consumer protection.

4.6. Study limitations and future research

This study has several limitations that should be considered when interpreting its findings. Firstly, although extensive efforts were made to identify relevant laws and regulations, it is possible that some documents were inadvertently omitted. Legislative updates are frequent, and the accessibility of legal texts varies widely across jurisdictions, particularly in non-English speaking and low-resource countries. In some cases, translation tools were required to access key provisions, which may have affected interpretation.

Secondly, the study included countries with vastly different legal systems, political structures, and cultural norms. Given this diversity, the aim was not to conduct a comparative analysis of the effectiveness or enforcement of the regulations, but rather to map the existence and thematic scope of legal instruments addressing food allergens in the food service sector. Future research could complement this scoping review with targeted case studies that explore how contextual factors shape the design, adoption, and impact of allergen-related policies.

Finally, this study did not assess how regulations are implemented in practice or whether they effectively reduce risks for allergic consumers. Further research is needed to evaluate the practical impact of these regulations on public health, consumer safety, and food service operations. Implementation studies, audits of compliance, and stakeholder interviews could provide valuable insights into the barriers and facilitators of effective allergen management in different contexts. In particular, emerging models of food service delivery—such as dark kitchens and platform-based ordering—present new challenges that require further investigation. Understanding how these evolving formats affect the enforcement of allergen regulations will be critical to protecting vulnerable consumers in increasingly complex food systems.

5. Conclusion

This study identified 83 regulatory documents addressing the management of non-prepackaged allergenic foods in food service settings across different countries and regions. While some instruments, such as those in the European Union, apply across multiple jurisdictions, others are highly localised, as seen in cities like Saint Paul (USA). In federal nations such as the United States, Brazil, and Canada, overlapping frameworks were found at municipal, state, and provincial levels. However, the scarcity of regulations in middle- and especially low-income countries highlights persistent global inequalities in the protection of allergic consumers and in the realisation of the human right to

safe and adequate food.

The identified regulations could be categorised into five main themes: allergen disclosure; mechanisms to prompt consumer notification; staff training and education; emergency action plans for anaphylaxis; and the implementation of allergen management systems or individualised plans. While some documents addressed only one of these dimensions, others, like Natasha's Law, incorporated multiple elements into a more integrated approach.

Taken together, despite these shared themes, regulations often reflect specific local needs and constraints. Some mandate multilingual communication, while others require that allergenic ingredients be clearly indicated in written form. Nevertheless, the practical implementation of these requirements remains a challenge. Structural limitations in food service operations—such as time pressure, limited training, and resource constraints—can hinder compliance, while consumers continue to face significant barriers to allergen-safe dining.

Considering the global rise in food allergies and the potential severity of allergic reactions, the relatively small number of regulations addressing unpackaged foods in food service establishments suggests that allergen risk management for non-prepacked foods may still be under-regulated in many jurisdictions. These findings underscore the urgent need for more inclusive, enforceable, and context-sensitive policies that guarantee access to accurate allergen information, whether meals are consumed on-site or ordered via digital platforms.

Future research should address several critical gaps identified in this review:

- Evaluating the effectiveness of regulatory implementation: Longitudinal studies and compliance audits are needed to assess how well allergen regulations are enforced and their impact on public health outcomes, especially in diverse food service environments.
- Defining the responsibilities of digital platforms and third-party delivery services: Research should clarify the legal and operational obligations of these intermediaries in communicating allergen information, updating menus, and ensuring consumer safety, particularly as digital ordering becomes increasingly prevalent.
- Studying the link between consumer behaviour and regulatory compliance: Investigations into how consumers interpret allergen labelling, attribute responsibility, and make risk-related decisions will inform the design of more effective communication strategies and interventions.
- Exploring the impact of informal and dark kitchen operations: Case studies and policy analyses should examine how these emerging food service models affect allergen risk management, regulatory oversight, and consumer protection.
- Advancing harmonisation and standardisation: Comparative research on international best practices, including threshold-based PAL and integrated HACCP approaches, will support the development of more consistent and science-based regulatory frameworks.

By pursuing these research directions, future studies can help bridge the gap between regulatory intent and real-world practice, ultimately strengthening food safety and inclusivity for allergic consumers in an increasingly complex and digitalised food environment.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work, we used ChatGPT and Gemini to assist with translation. The o4-mini-high model was employed for a final cross-check to ensure data completeness.

CRediT authorship contribution statement

Mariana Scudeller Vicentini: Writing – original draft, Methodology, Investigation, Formal analysis. **Carolina Neves Freiria:** Writing – review & editing, Investigation, Formal analysis. **Jan Mei Soon-Sinclair:** Writing – review & editing, Investigation, Formal analysis. **Iain Malcolm Ferris:** Writing – review & editing, Investigation, Funding acquisition, Formal analysis. **Lisa Marie Winnall:** Writing – review & editing, Investigation, Funding acquisition, Formal analysis. **Han Wen:** Writing – review & editing, Investigation. **Diogo Thimoteo da Cunha:** Writing – review & editing, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Conceptualization.

Funding

This work was supported by the São Paulo Research Foundation, FAPESP (grant numbers #2024/12505-4; #2026/00644-5). This study was partially funded by CAPES – Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (Coordination for the Improvement of Higher Education Personnel), financial code 001. DTC thanks to CNPq – Conselho Nacional de Desenvolvimento Científico e Tecnológico for the productivity grant #304542/2024-5.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Diogo Thimoteo da Cunha reports financial support was provided by State University of Campinas. Diogo Thimoteo da Cunha reports financial support was provided by State of Sao Paulo Research Foundation. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgments

This work was supported by the São Paulo Research Foundation, FAPESP (grant numbers #2024/12505-4; #2026/00644-5). This study was partially funded by CAPES – Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (Coordination for the Improvement of Higher Education Personnel), financial code 001. DTC thanks to CNPq – Conselho Nacional de Desenvolvimento Científico e Tecnológico for the productivity grant #304542/2024-5.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.foodpol.2026.103083.

References

Adeosun, K.P., Greene, M., Oosterveer, P., 2023. Practitioners' perspectives on improving ready-to-eat food vending in urban Nigeria: a practice-based visioning and back-casting approach. Frontiers in Sustainable Food Systems 7, 1160156. https://doi.org/10.3389/fsufs.2023.1160156.

Ahuja, R., Sicherer, S.H., 2007. Food allergy management from the perspective of restaurant and food establishment personnel. Annals of Allergy, Asthma & Immunology 98 (4), 344–348.

Akiyama, H., Adachi, R., 2021. Japanese food allergy-labeling system and comparison with the international experience; Detection and thresholds. Food Safety 9 (4), 101–116. https://doi.org/10.5487/tr.2021.D-21-00008.

Alabama State Board of Health. (2018). Food Rule 420-2-22-.02. https://www.alabamapublichealth.gov/environmental/rules.html.

Allergen awareness. (2010). *Code of Ordinances*. Retrieved from https://library.municode.com/mn/st._paul/codes/code_of_ordinances?nodeId=10061. Accessed February 10, 2025.

Arkansas State Board of Health. (2022). *Rules Pertaining to Retail Food Establishments*. https://healthy.arkansas.gov/wp-content/uploads/Retail_Food_Establishment_Rule_.pdf.

Arksey, H., O'malley, L., 2005. Scoping studies: Towards a methodological framework. International Journal of Social Research Methodology 8 (1), 19–32.

Bailey, S., Albardiaz, R., Frew, A.J., Smith, H., 2011. Restaurant staff's knowledge of anaphylaxis and dietary care of people with allergies. Clinical & Experimental Allergy 41 (5), 713–717. https://doi.org/10.1111/j.1365-2222.2011.03748.x.

Bahia (Estado). (2025, 12 de fevereiro). *Lei n° 14.863, de 12 de fevereiro de 2025*. Dispõe sobre a obrigatoriedade da especificação da informação e da divulgação da presença de alimentos alergênicos nos cardápios dos estabelecimentos de comercialização de alimentos que indica. Diário Oficial do Estado da Bahia. Retrived from: https://www.al.ba.gov.br/atividade-legislativa-nova/proposicao/PL.-24655-2022. Accessed June 11, 2025.

Bardin, L., 1977. *L'analyse de contenu*. Presses Universitaires de France, Paris.

Barnett, J., Vasileiou, K., Lucas, J.S., 2020. Conversations about food allergy risk with restaurant staff when eating out: A customer perspective. Food Control 108. https://doi.org/10.1016/j.foodcont.2019.106858.

Barnett, J., Muncer, K., Leftwich, J., Shepherd, R., Raats, M.M., Gowland, M.H., Lucas, J. S., 2011. How do peanut and nut-allergic consumers use information on the packaging to avoid allergens? Allergy 66 (7), 969–978. https://doi.org/10.1111/j.1365-2222.2010.03649.x.

Barshow, S., Tirumalasetty, J., Sampath, V., Zhou, X., Seastedt, H., Schuetz, J., Nadeau, K., 2024. *The immunobiology and treatment of food allergy*. Annual Review of Immunology 42, 401–425. https://doi.org/10.1146/annurev-immunol-090122-043501.

Begen, F.M., Barnett, J., Payne, R., Gowland, M.H., DunnGalvin, A., Lucas, J.S., 2018. Eating out with a food allergy in the UK: Change in the eating out practices of consumers with food allergy following introduction of allergen information legislation. Clinical and Experimental Allergy: Journal of the British Society for Allergy and Clinical Immunology 48 (3), 317–324. https://doi.org/10.1111/cea.13072.

Bingham, A.J., 2023. From data management to actionable findings: A five-phase process of qualitative data analysis, 16094069231183620 International Journal of Qualitative Methods 22. https://doi.org/10.1177/16094069231183620.

Brasil. Senado Federal. (2025). Projeto de Lei n° 246, de 2025. Altera a Lei n° 8.078, de 11 de setembro de 1990 (Código de Defesa do Consumidor), para tornar obrigatória a informação sobre a presença de alérgenos alimentares nos rótulos de produtos e nos cardápios de serviços de alimentação. Retrieved from https://www25.senado.leg.br/web/atividade/materias/-/materia/167099. Accessed June 11, 2025.

Consumer Affairs Agency (CAA). (2025). *Food labelling*. Retrieved from https://www.caa.go.jp/en/policy/food_labeling/. Accessed April 20, 2025.

Cabanillas, B., 2020. Gluten-related disorders: Celiac disease, wheat allergy, and nonceliac gluten sensitivity. Critical Reviews in Food Science and Nutrition 60 (15), 2606–2621. https://doi.org/10.1080/10408398.2019.1651689.

Caio, G., Volta, U., Sapone, A., Leffler, D.A., De Giorgio, R., Catassi, C., Fasano, A., 2019. Celiac disease: A comprehensive current review. BMC Medicine 17(1), 142. https://doi.org/10.1186/s12916-019 1380-z.

Câmara Municipal da Cidade de Rio Grande. (2017). *Lei no 8067 de 02 de Janeiro de 2017*. Retrieved from https://leismunicipais.com.br/a/rs/r/rio-grande/lei-ordinaria/2017/807/8067/lei-ordinaria-n-8067-2017 dispoe-sobre-a-obrigatoriedade-de-divulgacao-sobre-os-ingredientes-e-composicao-dos-alimentos comercializados-pelos-estabelecimentos-privados-no-municipio-do-rio-grande. Accessed February 10, 2025.

Câmara Municipal do Rio de Janeiro. (2017). *Lei n° 6.159, de 4 de maio de 2017*. Dispõe sobre a obrigatoriedade de informar quanto à presença de glúten e seus derivados nos alimentos preparados e servidos nos restaurantes, bares e afins, no Município do Rio de Janeiro. Retrieved from https://cmrj.nopapercloud.com.br/legislacao/norma.aspx?ano=2017&id=5806&temas=27. Accessed February 10, 2025.

California, 2025. Senate Bill No. 68: Allergen Disclosure for Dining Experiences (ADDE) Act. California Legislature. https://aafa.org/aafa-bill-to-require-allergen-labeling-in-california-restaurants-becomes-law/.

Carter, C.A., Pistiner, M., Wang, J., Sharma, H.P., 2020. Food allergy in restaurants work group report. The Journal of Allergy and Clinical Immunology. In Practice 8 (1), 70–74. https://doi.org/10.1016/j.jaip.2019.09.013.

Catassi, C., & Fasano, A. (2008). Celiac disease. In E. K. Arendt & F. Dal Bello (Eds.), *Gluten-free cereal products and beverages* (pp. 1–27). Academic Press. doi:10.1016/B978-012373739-7.50003-4.

Chang, F., Eng, L., Chang, C., 2023. Food allergy labeling laws: International guidelines for residents and travelers. Clinical Reviews in Allergy and Immunology 65 (2), 148–165. https://doi.org/10.1007/s12016 023–08960-6.

CNN. (2019). *Owen Carey died after eating Byron burger despite informing staff of allergy, coroner rules*. Retrieved from https://edition.cnn.com/2019/09/13/uk/byron-burger-death-gbr-scli-intl/index.html. Accessed February 3, 2025.

Codex Alimentarius. (2020). *Code of practice on food allergen management for food business operators (CXC 80-2020)*. Retrieved from https://www.fao.org/fao-who-codexalimentarius/sh proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252FStandard s%252FCXC%2B80-2020%252FCXC_080e.pdf. Accessed February 3, 2025.

Codex Alimentarius. (2025). *About Codex Alimentarius*. Retrieved from https://www.fao.org/fao-who codexalimentarius/about-codex/en/#c453333. Accessed January 31, 2025.

Colorado Department of Public Health and Environment, & Division of Environmental Health and Sustainability. (2024). Colorado Retail Food Establishment Regulations—6 CCR 1010-2. https://drive.google.com/file/d/1kEtv4f6YciFXXzLEu6amUc9Anu9uWGYn/view.

Commonwealth of Pennsylvania. (2024). https://www.pa.gov/content/copapwp-pagov/en/agencies/pda/food-safety/retail-food.html.

County of Westchester. (2022). *Local Law Intro* No. 48—2022. Retrieved from https://westchestercountyny.legistar.com/View.ashx?M=F&ID=10953187&GUID=6F0A5E70-EA7A-4D27 AD9C-2EB6ACABC148. Accessed March 4, 2025.

Congreso de la Nación Argentina. (2015). *Ley N° 27.196, Modificación de la Ley N° 26.588 sobre la Enfermedad Celíaca*. Boletín Oficial de la República Argentina. https://www.argentina.gob.ar/normativa/nacional/ley-27196-255225/texto. Accessed June 10, 2025.

Consumer Affairs Agency (CAA). (2024, May 9). *Efforts to provide information on food allergies in the foodservice industry* (in Japanese). https://www.caa.go.jp/policies/policy/food_labeling/food_sanitation/allergy/efforts/assets/food_labeling_cms204_240509_01.pdf. Accessed June 11, 2025.

da Cunha, D.T., 2021. Improving food safety practices in the foodservice industry. Current Opinion in Food Science 42, 127–133. https://doi.org/10.1016/j.cofs.2021.05.010.

da Cunha, D.T., Hakim, M.P., Alves, M.M., Vicentini, M.S., Wiśniewska, M.Z., 2024. Dark kitchens: Origin, definition, and perspectives of an emerging food sector. International Journal of Gastronomy and Food Science 35. https://doi.org/10.1016/j.ijgfs.2024.100884.

da Cunha, D.T., Soon, J.M., Eluwole, K.K., Mullan, B.A., Bai, L., Stedefeldt, E., 2022. Knowledge, attitudes and practices model in food safety: Limitations and methodological suggestions. Food Control 141, 109198. https://doi.org/10.1016/j.foodcont.2022.109198.

da Cunha, D.T., Stedefeldt, E., Hakim, M.P., Alves, M.M., Milanezi, B.T., Zanin, L.M., Wiśniewska, M.Z., Soon-Sinclair, J.M., 2025. Food safety in the shadows: Understanding dark kitchens through the lens of necessity entrepreneurship and activity theory. Food Research International, 117585. https://doi.org/10.1016/j.foodres.2025.117585.

Decreto no 22.679, de 17 de janeiro de 2024. (2024). *Diário Oficial do Estado do Piauí*. Retrieved from https://www.diario.pi.gov.br/doe/files/diarios/anexo/99368a97-f564-46b8-9344 2726ccb97050/DOEPI_14_2024.pdf. Accessed March 15, 2025.

Delaware Department of Health and Social Services. (2019). State of Delaware Food Code. https://www.dhss.delaware.gov/dhss/dph/files/foodcode.pdf.

Department of Health & Human Services, & Department of Agriculture, Conservation and Forestry. (2013). Maine Food Code. https://www.maine.gov/dhhs/mecdc/environmental-health/el/site-files/rules/Food%20Code%20October%202013..pdf.

Department of Health. (2012). District of Columbia, Vol. 59—No. 48. https://dchealth.dc.gov/sites/default/files/dc/sites/doh/publication/attachments/DC%20Register_Nov_30_2012_Final%20Rulemaking_DOH%20-%2025A%20DCMR%20-%20Food%20and%20Food%20Operationspdf.pdf.

Department of Health (2014). *S.I. No. 489/2014 – European Union (Provision of Food Information to Consumers) Regulations 2014*. Office of the Attorney General. Retrieved from https://www.irishstatutebook.ie/eli/2014/si/489. Accessed March 4, 2025.

Donovan, C.M., O'Donovan, C.B., Porter, M., Cooling, V., O'Mahony, S., Lyons, O.C., Geraghty, C.J., Taleghani, S., Flynn, M.A.T., 2018. Challenges to accurate food allergen labelling in food service outlets. Proceedings of the Nutrition Society 77 (OCE1), E13. https://doi.org/10.1017/S0029665118000514.

Dominguez, S., Théolier, J., Gerdts, J., Godefroy, S.B., 2024. Dining out with food allergies: Two decades of evidence calling for enhanced consumer protection. International Journal of Hospitality Management 122. https://doi.org/10.1016/j.ijhm.2024.103825.

El-Gamal, Y., El-Sayed, Z., El-Morshedy, K., 2019. Challenges of managing food allergy in the developing world. World Allergy Organization Journal 12 (12), 100080.

Estado do Ceará. (2022). *Lei n° 17.899, de 11 de janeiro de 2022*. Dispõe sobre a obrigatoriedade de bares, hotéis, restaurantes, fast-foods, food-trucks, sorveterias, docerias, delicatessens, padarias e outros estabelecimentos congêneres, que comercializam produtos prontos para consumo imediato, informarem em seus cardápios a presença de glúten, lactose, leite, peixe, amêndoas, corantes, castanhas, soja, ovo e crustáceos. Retrieved from https://www.legisweb.com.br/legislacao/?id=427662. Accessed February 10, 2025.

Estado do Pará. (2024). *Lei n° 10.654, de 4 de julho de 2024*. Dispõe sobre a obrigatoriedade de bares, lanchonetes, restaurantes e congêneres localizados no Estado do Pará a informar em seus cardápios físicos ou digitais os alimentos que possuem lactose, glúten e frutos do mar. Retrieved from https://www.pge.pa.gov.br/node/981. Accessed February 10, 2025.

Estado do Piauí. (2023). *Lei n° 8.111, de 14 de agosto de 2023*. Dispõe sobre a obrigatoriedade de estabelecimentos de gastronomia disponibilizarem kits de primeiros socorros em casos de alergia a alimentos que contenham frutos do mar e derivados. Retrieved from https://sapl.al.pi.leg.br/media/sapl/public/normajuridica/2023/5750/sei_00010.007030_2023_22.pdf. Accessed February 10, 2025.

European Union. (2004). *Regulation (EC) No 852/2004 of the European Parliament and of the Council of 29 April 2004 on the hygiene of foodstuffs*. Retrieved from https://eur-lex.europa.eu/eli/reg/2004/852/oj/eng. Accessed May 5, 2025.

European Union. (2011). Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011 on the provision of food information to consumers, amending Regulations (EC) No 1924/2006 and (EC) No 1925/2006, and repealing several Directives and Regulations. Retrieved from https://www.legisjation.gov.uk/eur/2011/1169/contents. Accessed February 5, 2025.

European Union. (2021). Commission Regulation (EU) 2021/382 of 3 March 2021 amending the Annexes to Regulation (EC) No 852/2004 of the European Parliament and of the Council on the hygiene of foodstuffs as regards food allergen management, redistribution of food and food safety culture. Retrieved from https://eur-lex.europa.eu/eli/reg/2021/382/oj/eng. Accessed February 10, 2025.

European Union. (2025). *EU countries*. Retrieved from https://european-union.europa.eu/principles countries-history/eu-countries_en?page=1. Accessed February 5, 2025.

FARE. (2025). *Ready to Act*. Retrieved from https://www.foodallergy.org/our-initiatives/awareness campaigns/ready-act. Accessed January 13, 2025.

Feng, H., Xiong, X., Chen, Z., Xu, Q., Zhang, Z., Luo, N., Wu, Y., 2023. Prevalence and influencing factors of food allergy in global context: A meta-analysis. International

Archives of Allergy and Immunology 184 (4), 320–352. https://doi.org/10.1159/000527870.
Figueroa-Gómez, X.A., Oliveras-López, M.J., Poyanco-Bugueño, M.F., Ocaña-Peinado, F. M., de la Serrana, H.-L.-G., Quezada, M.A., 2024. Knowledge, attitude, and practices of restaurant and foodservice personnel in food allergy: a systematic review and meta-analysis. Heliyon 10(13), e33431. https://doi.org/10.1016/j.heliyon.2024.e33431.
Flanagan, M.A., Soon-Sinclair, J.M.J.M., 2025. Consumers' perceptions of regulatory food hygiene inspections of restaurants and takeaways. British Food Journal 127 (3), 897–913. https://doi.org/10.1108/BFJ-07-2024-0764.
Food Allergy Canada. (2019). *New law in Alberta will better protect students with food allergy*. Food Allergy Canada. Retrieved from https://foodallergycanada.ca/new-law-in-alberta-will-better-protect-students-with food-allergy/. Accessed March 05, 2025.
Food Allergy Canada. (2025). *Sabrina's Law*. Food Allergy Canada. Retrieved from https://www.foodallergycanada.ca/sabrinas-law/. Accessed March 05, 2025.
Food Allergy Research & Resource Program. (2024). *Food allergens—International regulatory chart*. Retrieved from https://farrp.unl.edu/IRChart/#n1. Accessed May 12, 2025.
Food Standards Agency (FSA). (2024). *Allergen guidance for food businesses*. Retrieved from https://www.food.gov.uk/business-guidance/allergen-guidance-for-food-businesses. Accessed January 23, 2025.
Food Standards Australia New Zealand, 2023. Australia New Zealand Food Standards Code – Standard 3.2.2A – Food Safety Management Tools. https://www.foodstandards.gov.au/sites/default/files/2023-12/Standard%203.2.2A%20Food%20Safety%20Management%20Tools-%20corrected%20271123.pdf. (Accessed 10 October 2025).
Francioni, B., Curina, I., Hegner, S.M., Cioppi, M., 2022. Predictors of continuance intention of online food delivery services: Gender as moderator. International Journal of Retail & Distribution Management 50 (12), 1437–1457. https://doi.org/10.1108/IJRDM-11-2021-0537.
French Government, 2015. Decree No. 2015-447 of April 17, 2015, relating to consumer information on allergens and non-prepackaged foodstuffs. https://www.legifrance.gouv.fr/loda/id/JORFTEXT000030491684?utm_source=chatgpt.com (accessed 10 October 2025).
Food Standards Agency (FSA). (2022). Annex G: Owen's Law campaign and the FSA response. Retrieved from https://www.food.gov.uk/about-us/fsa-22-06-07-annex-g-owens-law-campaign-and-the-fsa-response. Accessed February 19, 2025.
GCC Standardization Organization (2025). *About GSO*. Retrieved from https://www.gso.org.sa/en/about gso/. Accessed February 4, 2025.
General Court of the Commonwealth of Massachusetts. (2009). *General Law—Part I, Title XX, Chapter 140, Section 6B*. Retrieved from https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXX/Chapter140/Section6B. Accessed February 10, 2025.
Gesetze im Internet. (2017). Bundesministeruim der Justiz and Fur Verbraucherschutz - Lebensmittel-Informations-Durchführungsverordnung (LMIDV). Retrieved from https://www.gesetze-im-internet.de/lmidv/BJNR227210017.html. Accessed October 11, 2025.
GIAP. (2024). Conditions Générales 2024-2025. Retrieved from https://www.giap.ch/sites/default/files/documents/do_conditions-generales-2024-2025_anglais_240816_10.pdf. Accessed October 08, 2025.
Gobierno de España. (2015). Real Decreto 126/2015, de 27 de februaro 27. Retrieved from https://www.boe.es/eli/es/rd/2015/02/27/126/con. Accessed October 07, 2025.
Government of Canada. (2016). *Food products that require a label*. Retrieved from http://inspection.canada.ca/en/food-labels/labelling/industry/food-products. Accessed March 4, 2025.
Government of Dubai (2023). *Food Code 2.0*. Retrieved from https://assets-eu-01.kcusercontent.com/75502796-0ea4-01e1-d006-9e077eede920/9ba7459e-99b3-400e-a6a5 99e38a2dd60a/FOOD%20CODE%202.0%20Version%2012%20July%202023.pdf. Accessed February 6, 2025.
Government of Ontario (2005). *Sabrina's Law, 2005, S.O. 2005, c. 7*. Retrieved from https://www.ontario.ca/laws/statute/05s07. Accessed March 5, 2025.
Government of Ontario, 2017. Ontario Regulation 493/17: Food Premises. https://www.ontario.ca/laws/regulation/170493 (Accessed 10 October 2025).
Godin, K., Stapleton, J., Kirkpatrick, S.I., Hanning, R.M., Leatherdale, S.T., 2015. Applying systematic review search methods to the grey literature: a case study examining guidelines for school-based breakfast programs in Canada. Systematic Reviews 4, 138. https://doi.org/10.1186/s13643-015-0125-0.
Gowland, M.H., Ackerley, L., Jones, D., Turner, P.J., 2024. Managing food allergies in restaurants and food hospitality establishments. *Reference module in food science*. Elsevier.
Grace, D., 2015. Food safety in low and middle income countries. International Journal of Environmental Research and Public Health 12 (9), 10490–10507.
GSO Codex Stab 80:2023. (2023). *Code of Practice on Food Allergen Management for Food Business Operators*. Retrieved from https://www.gso.org.sa/store/standards/GSO:820578/GSO%20CODEX%20STAN%2080:2023?lang=en. Accessed January 30, 2025.
Haas, R., Aşan, H., Doğan, O., Michalek, C.R., Karaca Akkan, Ö., Bulut, Z.A., 2022. Designing and implementing the MySusCof App—a mobile app to support food waste reduction. Foods 11(15), 2222. https://doi.org/10.3390/foods11152222.
Hakim, M.P., Libera, V.M.D., Zanetta, L.D.A., Nascimento, L.G.P., da Cunha, D.T., 2022. What is a dark kitchen? A study of consumer's perceptions of deliver-only restaurants using food delivery apps in Brazil. Food Research International 161. https://doi.org/10.1016/j.foodres.2022.111768.
Hakim, M.P., Luis, D., Vieira, J.V., Weatherall, O., Butters, B., Wiśniewska, M.Z., Malinowska, E., Stedefeldt, E., Zanin, L.M., Soon-Sinclair, J., da Cunha, D.T., 2026. How are dark kitchens perceived by different cultures? A cross-cultural study in Brazil, Poland, and the United Kingdom. International Journal of Hospitality Management 132. https://doi.org/10.1016/j.ijhm.2025.104398.
Halpin, S., 2024. Inter-coder agreement in qualitative coding: Considerations for its use. American Journal of Qualitative Research 8 (3), 23–43. https://doi.org/10.29333/ajqr/14887.
Hawaii Department of Health, & Hawaii Administrative Rules. (2017). HAR Chapter 11-50: Food. https://health.hawaii.gov/san/files/2017/12/CH-50-SIGNED-SEARCHABLE-12-13-17-1.pdf.
Idaho Department of Health and Welfare, & Division of Public Health. (2019). Idaho food code. https://idahopublichealth.com/environmental/foodprotection/Idaho_Food_Code_Informational.pdf.
Illinois General Assembly (2017). *Public Act 100-0367*. Retrieved from https://www.ilga.gov/legislation/publicacts/fulltext.asp?Name=100-0367. Accessed January 20, 2025.
Illinois General Assembly (2019). *Public Act 101-0495*. Retrieved from https://www.ilga.gov/legislation/publicacts/fulltext.asp?Name=101-0495. Accessed March 3, 2025.
Jaffee, S., Henson, S., 2024. Promoting food safety in the informal markets of low- and middle-income countries: the need for context-specific interventions. Available from Food Protection Trends 44 (9), 776–782. https://www.foodprotection.org/publications/food-protection-trends/archive/2024-09-promoting-food-safety-in-the-informal-markets-of-low-and-middle-income-countries-the-need-fo/.
Kansas Department of Agriculture. (2022). Kansas food code. https://www.agriculture.ks.gov/home/showpublisheddocument/912/638444897243330000.
Lacy-Nichols, J., Williams, O., 2021. "Part of the solution": Food corporation strategies for regulatory capture and legitimacy. Globalization and Health 17, 1–14. https://doi.org/10.1186/s12992-021-00680-w.
Laheri, Z., Ferris, I., da Cunha, D.T., Soon-Sinclair, J.M., 2025a. 'Going dark' or under the radar? Challenges and opportunities for local authorities and dark kitchens in ensuring food safety. Food Control 172. https://doi.org/10.1016/j.foodcont.2025.111179.
Laheri, Z., Ferris, I., Soon-Sinclair, J.M., 2025b. The rise of dark kitchens: Characteristics and operational challenges. International Journal of Gastronomy and Food Science 40. https://doi.org/10.1016/j.ijgfs.2025.101142.
Lee, Y.M., Wei (Victor), C., 2024. Consumer visual attention to food allergen information on restaurant menus: an eye-tracking study. British Food Journal 126 (6), 2454–2476. https://doi.org/10.1108/BFJ-02 2023–0156.
Leftwich, J., Barnett, J., Muncer, K., Shepherd, R., Raats, M.M., Hazel Gowland, M., Lucas, J.S., 2011. The challenges for nut-allergic consumers of eating out. Clinical & Experimental Allergy 41 (2), 243–249. https://doi.org/10.1111/j.1365-2222.2010.03649.x.
Legal Information System of the Republic of Serbia (2017). Rulebook on Food Declaration, Labelling and Advertising, published in the "Official Gazette of the Republic of Serbia", No. 19/2017. Retrieved from https://pravno-informacioni-sistem.rs/eli/rep/sgrs/ministarstva/pravilnik/2013/85/5/reg. Accessed October 08, 2025.
Legislative Assembly of Alberta. (2019). *Bill 201—Protection of Students With Life-Threatening Allergies Act*. Retrieved from https://docs.assembly.ab.ca/LADDAR_files/docs/bills/bill/legislature_30/session_1/20190521_bill-201.pdf. Accessed March 5, 2025.
Legislatura de la Ciudad de Buenos Aires. (2019a). *Ley N° 6268, Menú apto para celíacos en eventos masivos*. Boletín Oficial de la Ciudad de Buenos Aires, N° 5782. https://boletinoficial.buenosaires.gob.ar/normativaba/norma/503965. Accessed June 10, 2025.
Legislatura de la Ciudad de Buenos Aires. (2019b). *Ley N° 6296*. Boletín Oficial de la Ciudad de Buenos Aires, N° 5782. https://boletinoficial.buenosaires.gob.ar/normativaba/norma/503967. Accessed June 10, 2025.
Lietuvos Respublikos Sveikatos Apsaugos Ministras (2014). 677 *Dėl Lietuvos higienos normos HN 119:2002 "Maisto produktų ženklinimas" tvirtinimo*. Retrieved from https://e seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.204888/asr. Accessed March 4, 2025.
Malhotra Gaur, R., Khan, A., 2022. An analysis on the existing food laws in india with special reference to the food safety and standards act, 2006 (FSSAI). European Food & Feed Law Review 17 (6), 414–433.
Maryland General Assembly. (2015). *Legislation—HB1197*. Retrieved from https://mgaleg.maryland.gov/mgawebsite/Legislation/Details/HB1197/?ys=2014rs. Accessed February 10, 2025.
Ministerio de Salud de Perú. (2018, 7 de septiembre). *Norma Sanitaria para Restaurantes y Servicios Afines* (Resolución Ministerial N° 822-2018/MINSA). https://cdn.www.gob.pe/uploads/document/file/197614/Resolucion-Ministerial_N-822-2018-MINSA.PDF?v=1693175766. Accessed June 10, 2025.
Ministry of Food, Agriculture and Livestock. (2017). Turkish Food Codex Regulation on Food Labelling and Consumer Information. Official Gazette of the Republic of Turkey. (as amended). https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=23282&MevzuatTur=7&MevzuatTertip=5. Accessed March 17, 2026.
Ministry of Health and Care Services, Ministry of Agriculture and Food, Ministry of Trade, Industry and Fisheries. (2014). *Regulation of 28 November 2014 no. 1497 on food information to consumers*. Retrieved from https://lovdata.no/dokument/SF/forskrift/2014-11-28-1497?q=matinformasjon. Accessed February 6, 2025.
Ministry of Government Legislation (2023). *Children's Dietary Life Safety Management Special Act* (Law No. 19622). https://www.law.go.kr/LSW/lsSc.do?section=&menuId=1&subMenuId=15&tabMenuId=81&eventGubun=060101&query=%EC%96%B4%EB%A6%B0%EC%9D%B4+%EC%8B%9D%EC%83%9D%ED%99%9C%EC%95%88%EC%A0%84%EA%B4%80%EB%A6%AC+%ED%8A%B9%EB%B3%84%EB%B2%95. Accessed June 10, 2025.

Minnesota Department of Health. (2017). *Chapter 4626, Food Code; food managers*. https://www.revisor.mn.gov/rules/4626/.
Montgomery County. (2016). *Montgomery County Code (Bill No. 33-16)*. Retrieved from https://www.montgomerycountymd.gov/COUNCIL/Resources/Files/bill/2016/20161101_33-16.pdf. Accessed March 4, 2025.
Muthukumar, J., Selvasekaran, P., Lokanadham, M., & Chidambaram, R. (2020). Food and food products associated with food allergy and food intolerance – An overview. *Food Research International*, 138, 109780. /10.1016/j.foodres.2020.109780.
Narodne novine. (2014). *Pravilnik o informiranju potrošača o nepretpakiranoj hrani*. Retrieved from https://narodne-novine.nn.hr/clanci/sluzbeni/2014_12_144_2700.html. Accessed March 4, 2025.
Nasseredine, S., El Harake, M. D., Kharroubi, S. A., & Toufeili, I. (2021). Food allergy knowledge, attitudes and practices of foodservice workers at restaurants in Lebanon: Findings from a national cross-sectional study. *Food Control*, 130, 108380. /10.1016/j.foodcont.2021.108380.
Natasha Allergy Research Foundation. (2025). *What is Natasha's Law?* The Natasha Allergy Research Foundation. Retrieved from https://www.narf.org.uk/natashaslaw. Accessed March 17, 2025.
National Health Commission of the People's Republic of China & State Administration for Market Regulation. (2025). *National food safety standard: General standard for the labelling of prepackaged foods* (GB 7718-2025).
Nederlandse Voedsel- en Warenautoriteit. (2020). *Allergenen bij onverpakte levensmiddelen* [Onderwerp]. Ministerie van Landbouw, Natuur en Voedselkwaliteit. Retrieved from https://www.nvwa.nl/onderwerpen/allergenen/allergenen-bij-onverpakte-levensmiddelen. Accessed March 4, 2025.
Nestle, M., 2013. *Food politics: How the food industry influences nutrition and health*, revised and, expanded ed. University of California Press, Berkeley.
Nevada Administrative Code. (2013). Chapter 446—Food establishments NAC 446.053. https://www.leg.state.nv.us/nac/nac-446.html.
New Hampshire Department of Health and Human Services. (2022). *Chapter He-P 2300 Sanitary Production and Distribution of Food*. Retrieved from https://www.dhhs.nh.gov/sites/g/files/ehbemt476/files/inline-documents/sonh/adopted-rule-2022-65-rule text-he-p-2300-various_0.pdf. Accessed March 4, 2025.
New Jersey Revised Statutes. (2024). *Title 26 - Health and vital statistics: Section 26:3E-14 - Fact sheet distributed to restaurants relative to food allergies, posting of signs; definitions*. Justia Law. Retrieved from https://law.justia.com/codes/new-jersey/title-26/section-26-3e-14/. Accessed March 4, 2025.
Newman, J., 2023. A qualitative study to explore the attitudes and understanding of hospitality workers towards allergens and their experiences of online allergen training. Public Health Institute Journal 17.
NSW Food Authority. (2015). *Food allergen rules*. Retrieved from https://www.foodauthority.nsw.gov.au/food-labelling/labels-and-law/food-allergen-rules. Accessed February 5, 2025.
Ohio Administrative Code. (2024). Ohio Admin. Code 3717-1-02.4: Management and personnel—Supervision. https://www.law.cornell.edu/regulations/ohio/Ohio-Admin-Code-3717-1-02-4.
Oklahoma State Department of Health. (2016). Title 310. Chapter 257: Food establishments. https://oklahoma.gov/content/dam/ok/en/health/health2/aem-documents/protective-health/consumer-health-services/food-service/9-11-21%20New%20Chapter%20257.pdf.
Oregon Health Authority (2024). Food sanitation rules. https://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/FOODSAFETY/Documents/foodsanitationrulesweb.pdf.
Ouzzani, M., Hammady, H., Fedorowicz, Z., Elmagarmid, A., 2016. Rayyan—A web and mobile app for systematic reviews. Systematic Reviews 5 (1), 210. https://doi.org/10.1186/s13643-016-0384-4.
Paez, A., 2017. Gray literature: An important resource in systematic reviews. Journal of Evidence-Based Medicine 10, 233–240. https://doi.org/10.1111/jebm.12266.
Pham, M.T., Rajić, A., Greig, J.D., Sargeant, J.M., Papadopoulos, A., McEwen, S.A., 2014. A scoping review of scoping reviews: Advancing the approach and enhancing the consistency. Research Synthesis Methods 5 (4), 371–385. https://doi.org/10.1002/jrsm.1123.
Prefeitura Municipal de Belo Horizonte. (2018). *Lei n° 11.116, de 21 de junho de 2018*. Retrieved from https://dom-web.pbh.gov.br/visualizacao/ato/365224. Accessed February 10, 2025.
Prefeitura Municipal de Serra Negra. (2025). Lei n° *4775, de 27 de maio de 2025*. Retrieved from https://leis.org/municipais/sp/serra-negra/lei/lei-ordinaria/2025/4775/lei-ordinaria-n-4775-2025-dispoe-sobre-a-obrigatoriedade-de-informar-quanto-a-presenca-de-lactose-proteina-do-leite-gluten-e-seus-derivados-nos-alimentos-preparados-e-servidos-nos-restaurantes-bares-lanchonetes-hoteis-e-similares-e-da-outras-providencias. Accessed March 17, 2026.
Republic of South Africa. Regulations Relating to the Labelling and Advertising of Foodstuffs (R.146 of 1 March 2010). Government Gazette No. 32975; 01 March 2010. https://www.gov.za/sites/default/files/gcis_document/201409/32975146.pdf.
Republic of South Africa. Consumer Protection Act No. 68 of 2008. Government Gazette No. 32186; 24 April 2009. https://www.gov.za/documents/consumer-protection-act.
Republique Italienne. Decreto Legislativo 15 dicembre 2017, n. 231. Disciplina sanzionatoria per la violazione delle disposizioni del Regolamento (UE) 1169/2011 relativo alla fornitura di informazioni sugli alimenti ai consumatori e l'adeguamento della normativa nazionale alle medesime disposizioni. Gazzetta Ufficiale della Repubblica Italiana, Serie Generale n. 32; 08 Febbraio 2018. https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legislativo:2017-12-15;231!vig=.
Republique Italienne. Ministero della Salute. Nota 6 febbraio 2015: "Indicazioni sulla presenza di allergeni negli alimenti forniti dalle collettività" (Regolamento CE 1169/2011). 06 Febbraio 2015.
Rhode Island Department of Health. (2024). *Food allergy awareness in food-service establishments*. Retrieved from https://law.justia.com/codes/rhode-island/title-23/chapter-23-20-12/. Accessed January 27, 2025.
Radke, T.J., Brown, L.G., Hoover, E.R., Faw, B.V., Reimann, D., Wong, M.R., Nicholas, D., Ripley, D., 2016. Food allergy knowledge and attitudes of restaurant managers and staff: An EHS-Net study. Journal of Food Protection 79 (9), 1588–1598. https://doi.org/10.4315/0362-028X.JFP-16-071.
Radke, T.J., Brown, L.G., Hoover, E.R., Faw, B.V., Reimann, D., Wong, M.R., Nicholas, D., Ripley, D., 2017. Restaurant food allergy practices — six selected sites, United States, 2014. MMWR Morbidity and Mortality Weekly Report 66 (15), 404–407. https://doi.org/10.15585/mmwr.mm6615a2.
Saudi Food and Drug Authority. (2018*). Declaration of allergens on food establishments menus: SFDA.FD 56/2018*. Riyadh, Saudi Arabia. Retrieved from https://www.sfda.gov.sa/. Accessed February 6, 2025.
Singapore Food Agency. (2021, September 20). *Guidelines for selling food online via e-commerce platforms*. https://www.sfa.gov.sg/docs/default-source/food-retail/guidelines-for-selling-food-online-via-e-commerce-platforms.pdf. Accessed June 10, 2025.
Schweizerische Eidgenossenschaft. (2016). SR 817.022.16 – *Verordnung des EDI über die Kennzeichnung und Anpreisung von Lebensmitteln*. Retrieved from https://www.fedlex.admin.ch/eli/cc/2017/158/de#art_5. Accessed March 4, 2025.
Shek, L.P.C., Cabrera-Morales, E.A., Soh, S.E., Gerez, I., Ng, P.Z., Yi, F.C., Lee, B.W., 2010. A population-based questionnaire survey on the prevalence of peanut, tree nut, and shellfish allergy in 2 asian populations. The Journal of Allergy and Clinical Immunology 126 (2), 324–331.
Sicherer, S.H., Sampson, H.A., 2010. Food allergy. Journal of Allergy and Clinical Immunology 125 (Supplement 2), S116–S125. https://doi.org/10.1016/j.jaci.2009.08.028.
Soon, J.M., 2018. 'No nuts please': Food allergen management in takeaways. Food Control 91, 349–356. https://doi.org/10.1016/j.foodcont.2018.04.024.
Soon, J.M., 2020. 'Food allergy? Ask before you eat': Current food allergy training and future training needs in food services. Food Control 112. https://doi.org/10.1016/j.foodcont.2020.107129.
State of California (2019). *Assembly Bill No. 1532*. Retrieved from https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200AB1532. Accessed February 10, 2025.
State of Connecticut (2023). *Public Act No. 23-115*. Retrieved from https://legiscan.com/CT/text/HB05902/id/2828060. Accessed March 4, 2025.
State of Florida, Department of Business and Professional Regulation, & Division of Hotels and Restaurants. (2015). DBPR Form HR 5030-038. https://www2.myfloridalicense.com/hr/forms/documents/5030_038.pdf.
State of Michigan. (2014). *Public Act 516 of 2014*. Retrieved from https://legislature.mi.gov/doc.aspx?2013 SB-0730. Accessed February 10, 2025.
State of New York (2021). *Assembly Bill 2021-A2344A*. Retrieved from https://www.nysenate.gov/legislation/bills/2021/A2344. Accessed February 10, 2025.
State of Texas (2023). *Senate Bill No. 812*. Retrieved from https://capitol.texas.gov/tlodocs/88R/billtext/html/SB00812I.htm. Accessed February 10, 2025.
State of Wisconsin, & Department of Agriculture, Trade and Consumer Protection (2020). *DATCP Home Wisconsin Food Code*. https://datcp.wi.gov/Pages/Programs_Services/FoodCode.aspx.
Tennessee Department of Health (2018). Chapter 1200-23-01: Food service establishment. https://www.tn.gov/content/dam/tn/health/program-areas/eh/TDH-Food-Rules.pdf.
Tricco, A.C., Lillie, E., Zarin, W., O'Brien, K.K., Colquhoun, H., Levac, D., Moher, D., Peters, M.D.J., Horsley, T., Weeks, L., Hempel, S., Akl, E.A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M.G., Garritty, C., Straus, S.E., 2018. PRISMA Extension for Scoping Reviews (PRISMA ScR): Checklist and explanation. Annals of Internal Medicine 169 (7), 467–473. https://doi.org/10.7326/M18-0850.
U.S. Food & Drug Administration (2004). *Food Allergen Labeling and Consumer Protection Act of 2004 (FALCPA)*. Retrieved from https://www.fda.gov/food/food-allergensgluten-free-guidance-documents regulatory-information/food-allergen-labeling-and-consumer-protection-act-2004-falcpa. Accessed May 13, 2025.
U.S. Food & Drug Administration (2017). *Food Safety Modernization Act (FSMA). FDA*. Retrieved from https://www.fda.gov/food/food-safety-modernization-act-fsma/full-text-food-safety-modernization-act-fsma. Accessed May 13, 2025.
U.S. Food & Drug Administration (FDA). (2022). *FDA Food Code*. FDA. Retrieved from https://www.fda.gov/food/fda-food-code/food-code-2022. Accessed September 30, 2025.
U.S. Food & Drug Administration (FDA). (2024, August 30). *FDA Food Code*. FDA. Retrieved from https://www.fda.gov/food/retail-food-protection/fda-food-code. Accessed February 10, 2025.
U.S. Federal Aviation Administration. (2003). *Advisory Circular 121-33B: Emergency Medical Equipment*. https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC%20121-33B.pdf.
UK Statutory Instruments (2014a). *The Food Information Regulations 2014 No. 1855*. Statute Law Database. Retrieved from https://www.legislation.gov.uk/uksi/2014/1855/regulation/5. Accessed May 13, 2025.
UK Statutory Instruments (2014b). *The Food Information (Scotland) Regulations 2014 No. 312*. Statute Law Database. Retrieved from https://www.legislation.gov.uk/ssi/2014/312/regulation/5. Accessed May 13, 2025.
UK Statutory Instruments (2019). *The Food Information (Amendment) (England) Regulations 2019. King's Printer of Acts of Parliament*. Retrieved from https://www.legislation.gov.uk/uksi/2019/1218/made. Accessed February 6, 2025.

United Nations (2025). *The 17 goals*. Retrieved from https://sdgs.un.org/goals. Accessed February 10, 2025.

Virginia Department of Health. (2015). *Food allergen awareness*. Retrieved from https://www.vdh.virginia.gov/environmental-health/food-safety-in-virginia/food-allergens/. Accessed February 10, 2025.

Washington State Department of Health (2022). Washington State Retail Food Code. https://doh.wa.gov/sites/default/files/legacy/Documents/Pubs/332-033.pdf.

Wen, H., Kwon, J., 2017. Restaurant servers' risk perceptions and risk communication-related behaviors when serving customers with food allergies in the US. International Journal of Hospitality Management 64, 11–20.

World Health Organization, 2024. *In brief: Food allergen reference doses*. Retrieved from https://www.who.int/publications/i/item/B09031 (Accessed February 3).

Wyoming Department of Agriculture, 2012. Wyoming Food Safety Rule. https://agriculture.wy.gov/corecode/uploads/document6/uploaded_pdfs/corecode/2012foodrule_939.pdf.

Royal Society for Public Health (RSPH). Allergy information and fast food takeaways: Reducing the risk to allergic consumers from takeaways breaking the law. London: RSPH; 2015. Available from: https://www.rsph.org.uk/static/uploaded/f1249152-3bd0-4bf4-b8ca860c281f725a.pdf.

Italy. (2005). Legge 4 luglio 2005, n. 123: Norme per la protezione dei soggetti malati di celiachia [Law No. 123 of July 4, 2005: Rules for the protection of subjects with celiac disease]. Gazzetta Ufficiale della Repubblica Italiana, n. 166, 18 luglio 2005. https://www.parlamento.it/parlam/leggi/05123l.htm.

France, Ministère de l'Éducation Nationale, de la Jeunesse et des Sports, Ministère des Solidarités et de la Santé. (2021). Circulaire n° 2021-056 du 10 février 2021 : Projet d'accueil individualisé pour raison de santé [Bulletin Officiel de l'Éducation Nationale, n° 9, 4 mars 2021]. https://www.education.gouv.fr/bo/21/Hebdo9/MENE2104832C.htm.

Grantham, C., 2024. What is Owen's Law? The Safer Food Group. Available at: https://www.thesaferfoodgroup.com/knowledge/what-is-owens-law/ (accessed 26 March 2026). California Legislature, 2025. Senate Bill No. 68 (SB-68): Major food allergens. Chapter 741. California Legislative Information. Approved October 13, 2025. Available at: California Legislative Information website (accessed 26 March 2026).