





# A mixed methods analysis of the implementation policy and practice gap of national food safety standards in China's grassroots areas (2023–2024) — Based on the tracking evaluation in Ankang, Shaanxi Province

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## ABSTRACT

**Objective:** This study focuses on Ankang City, Shaanxi Province, to explore the systemic barriers to implementing national food safety standards (NFSS) in grassroots areas of China. Using a mixed-methods approach, it investigates key gaps in policy implementation, practitioner capabilities, and government resource allocation in these regions. The aim is to propose actionable solutions to enhance compliance and effectiveness of National Food Safety Standards of China (NFSSC) in under-resourced areas.

**Study design:** The survey targets county-level practitioners, enterprises, and government regulatory agencies. Additional methods include standard promotion training, field investigations, expert reviews, and exchange seminars. Data were analyzed through thematic coding and statistical evaluation, focusing on seven NFSSC categories, including the National Food Safety Standard for the Use of Food Additives (GB2760-2024) and the National Food Safety Standard for General Hygiene Practices in Catering Services (GB31654-2021).

**Methods:** This study employs a mixed-methods approach, primarily using cross-sectional surveys conducted from October 2023 to November 2024 (n = 185 valid responses from 238 participants).

**Results:** The main findings indicate that: (1) There is a lack of professional competence among practitioners: 97.8 % of the workforce holds a bachelor degree or lower, with limited opportunities for professional training; (2) Policy implementation barriers: misunderstandings of standards (such as unclear classification in the Hygienic Specifications for Ready-to-Eat Fresh Cut Fruits and Vegetables (GB31652-2021)) and inconsistent enforcement; (3) Resource constraints: insufficient funding and personnel shortages from government regulators and relevant practitioners, leading to significant gaps between policy and practice during standard implementation. Among the 98 preliminary feedbacks, 42 were valid suggestions, most of which focused on promoting standards and providing technical guidance.

**Conclusions:** This study highlights the implementation barriers between national standards and grassroots governance realities. We propose our solutions: (1) Establish and Improve the Third-Party Tracking Evaluation Service System in Grassroots Areas; (2) Optimize Inter-departmental Collaboration Mechanisms and Enhance Standard-related Publicity, Training, and Professional Competence Assessment at the Grassroots Level; (3) Establish an Expert Team or Management Evaluation Institution for Food Safety Standards; (4) Enhance the Special Fund Guarantee Mechanism for Standard Tracking and Evaluation.

## 1. Introduction

Tracking and evaluating National Food Safety Standards of China serves as a vital source of information for their improvement [1]. The tracking and evaluation model of national food safety standards in China has been continuously evolving. Currently, a preliminary tracking and evaluation model for National Food Safety Standards of China has been established, in which regular tracking and evaluation and special tracking and evaluation complement each other [2]. Grassroots organizations, as the main channels and primary fronts for the specific implementation and supervision of national food safety standards, are important ways to understand how these standards are implemented

and enforced among frontline groups in cities, counties (districts) and other areas. According to the definition in the “Specifications for the Tracking and Evaluation of National Food Safety Standards (Trial)” issued by the National Health Commission (formerly the Ministry of Health), the tracking and evaluation of national food safety standards is a process of investigating the implementation of these standards, understanding the situation of their implementation, conducting analysis and research, and putting forward suggestions related to the implementation and revision of the standards. It mainly includes the implementation and enforcement of the standards, the measures and achievements in promoting the implementation of the standards, as well as the scientificity and practicality of the standard indicators or

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technical requirements.

In 2021, new National Food Safety Standards of China were updated and implemented. In accordance with the “Notice on Issuing the Work Plan for the Tracking and Evaluation of Food Safety Standards” (Letter from the Food Department of National Health Commission of China [2023] No.37) [3] issued by the General Office of the National Health Commission, the General Office of the Ministry of Agriculture and Rural Affairs, and the General Office of the State Administration for Market Regulation, as well as the relevant document notices of the Health Commission of Shaanxi Province, the Department of Agriculture and Rural Affairs of Shaanxi Province, and the Market Supervision Administration of Shaanxi Province in 2023 and 2024, this study organized and carried out the tracking and evaluation work of National Food Safety Standards of China from 2023 to 2024, targeting the staff of government departments responsible for food safety standards and food enterprises in Ankang region, Shaanxi Province. The aim is to further understand the gap between the implementation policies and practices of national food safety standards at the grassroots level, as well as the implementation and effectiveness of the standards during the process of standard updates.

Ankang region is in the southeastern part of Shaanxi Province, in the hinterland of China's inland. It leans against the Bashan Mountains in the south and the Qinling Mountains in the north, with the Han River flowing through it. It has rich water resources and is an area mainly composed of medium and low mountains. It borders Sichuan Province, Hubei Province, and Chongqing Municipality, and administers 1 district, 1 city (county-level city), and 8 counties.

The standards evaluated in Ankang region in this study are: GB31651-2021 “National Food Safety Standard for the Hygiene Specification of Centralized Disinfection of Tableware (Drinking Utensils)”, GB31652-2021 “National Food Safety Standard for the Hygiene Specification of Fresh Cut Fruits and Vegetables Processing for Immediate Consumption”, GB31653-2021 “National Food Safety Standard for the Control of Aflatoxin Contamination in Foods”, GB31654-2021 “National Food Safety Standard for the General Hygiene Specification of Catering Services”, GB29921-2021 “National Food Safety Standard for the Maximum Residue Limits of Pathogenic Bacteria in Prepackaged Foods”, GB31607-2021 “National Food Safety Standard for the Maximum Residue Limits of Pathogenic Bacteria in Bulk Ready-to-Eat Foods”, and GB2760-2024 “National Food Safety Standard for the Use of Food Additives” (hereinafter all abbreviated as standard numbers). These standards cover the normative requirements such as pathogenic bacteria indicators, sampling plans and limits, inspection methods, hygiene specifications, and technical requirements. All the standards are the latest versions of national food safety standards of China (NFSSC). Among them, GB2760-2024 only carried out the tracking and evaluation work on the necessity of the usage process of food additives in 2024, and the other 6 standards have all carried out the tracking and evaluation work within 2 years.

## 2. Methods

### 2.1. Survey subjects

From October 11, 2023, to November 5, 2024, a questionnaire survey was conducted among 238 participants across 10 counties and districts in Ankang City. Respondents included professionals from food production and operation entities, industry associations, government health supervision agencies, market regulatory bodies, testing institutions, and academic research institutions.

### 2.2. Methods

This study employed a mixed-methods design, primarily using a cross-sectional survey supplemented by standard promotion training, field investigations, expert reviews, and exchange seminars. Data were

analyzed via thematic coding and statistical evaluation. The research protocol was led by the Ankang Municipal Health Commission and the Ankang Health Law Enforcement and Supervision Institute, with implementation supported by food science experts from the Ankang Nutrition Society and Ankang University. Tracking and evaluation activities—including training sessions, questionnaire surveys, telephone interviews, expert workshops, field visits, and panel reviews—focused on assessing the applicability of the latest National Food Safety Standards of China in Ankang. Specifically, we examined the reasonableness of each standard's scope and the clarity of food classifications outlined in general standards [4], conducting systematic discussions and benchmark analyses for each criterion. Collected feedback and suggestions were synthesized through centralized expert reviews.

During the study, evaluations also included enterprise baseline surveys [5], coordinated by Ankang's health authority in collaboration with market regulation, agriculture, development and reform, and health supervision agencies. These surveys compiled basic industry data, categorized enterprises into seven standard sectors, and targeted the reported units for detailed investigation. The questionnaire—provided by the Shaanxi Provincial Health Commission and adapted from the National Food Safety Risk Assessment Center's template—included sections on respondents' demographics (region, education level, work experience, professional role) and their feedback on standards (comprehension, applicability, clarity, and improvement suggestions). This study emphasized descriptive analysis of grassroots participants' educational backgrounds, the volume and thematic focus of standards-related feedback, and reflections on gaps between policy implementation and practical challenges.

### 2.3. Statistical analysis

Collected questionnaires were screened by research staff to exclude invalid responses (incomplete or missing critical data). Feedback was categorized into five domains: (a) implementation effectiveness, (b) textual clarity, (c) technical indicators and requirements, (d) alignment with international standards, and (e) other suggestions. Expert panels reviewed these classifications for consistency before data were processed and analyzed using Excel.

## 3. Results

### 3.1. Basic demographic analysis

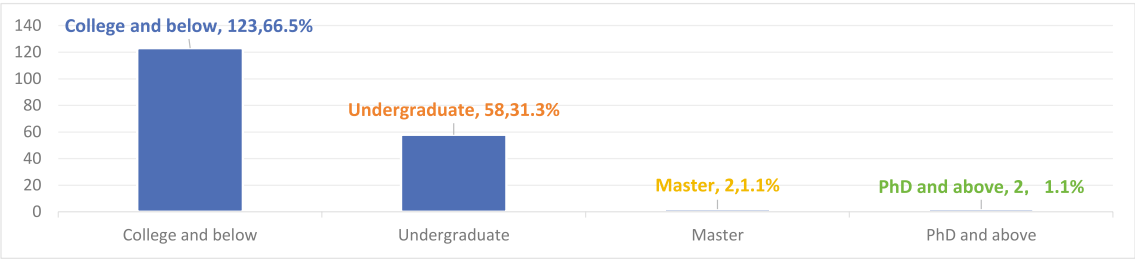
A total of 238 questionnaires were collected between 2023 and 2024, yielding 185 valid responses (77.7 % response rate). Table 1 presents the educational background distribution: 97.8 % of participants held a bachelor's degree or lower, with master's and doctoral degree holders exclusively affiliated with universities and research institutes. Of 98 compiled comments, 42 (42.9 %) remained after removing duplicates and irrelevant content. As shown in Table 2, 88.1 % of feedback focused on technical specifications and textual clarity of the standards. Table 3 highlights that GB31607-2021, GB31654-2021, and GB29921-2021 received the highest volume of comments.

### 3.2. Categorical analysis of specific feedback

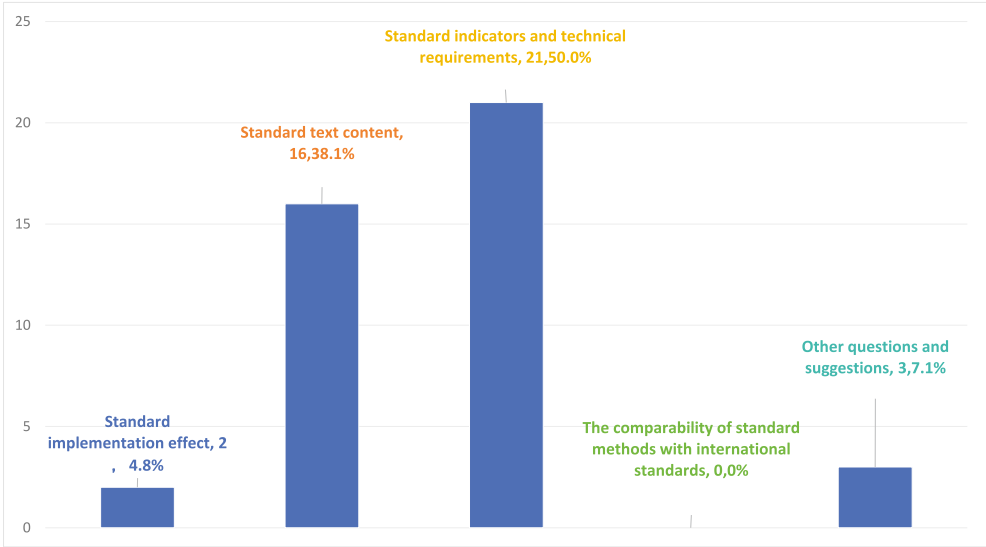
Four standards—GB31607-2021, GB31654-2021, GB29921-2021, and GB31651-2021—emerged as the most frequently discussed in this study (Table 3), with feedback accounting for 23.8 %, 21.4 %, 19.0 %, and 16.7 % of all comments, respectively. These proportions align closely with findings from complementary data collection methods, including telephone interviews, on-site inspections, field visits, and expert workshops.

Feedback classification followed the framework outlined in the Summary Table of National Food Safety Standard Tracking and Evaluation Comments, issued jointly by the Shaanxi Provincial Health

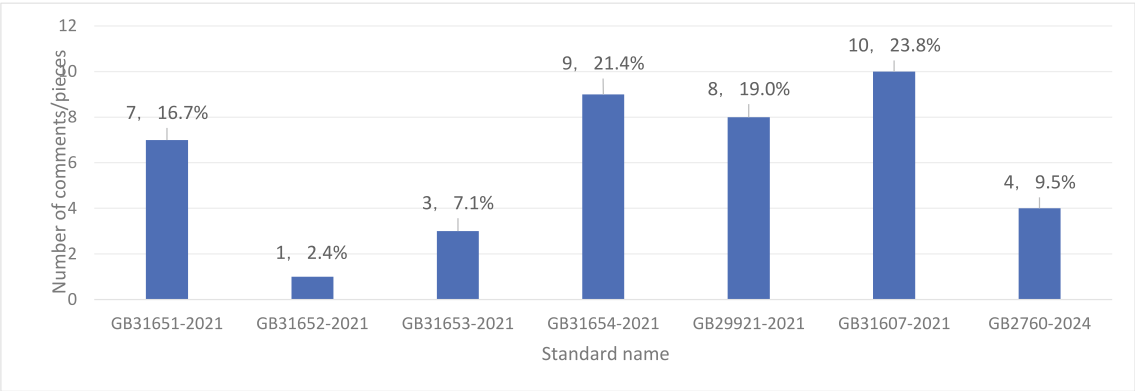
**Table 1**  
Distribution of academic qualifications (n = 185).



**Table 2**  
Type and quantity of opinions (n = 42).



**Table 3**  
Number of standard opinions (n = 42).



Commission, Department of Agriculture and Rural Affairs, and Market Supervision Administration (Food Letter from the Food Department of the Health Commission of Shaanxi Province, China No.317,2023). Notably, over 88 % of qualitative data centered on two core domains: (1) Technical specifications and indicator plausibility, and (2) Textual clarity and interpretive consistency of the standards. Detailed thematic distributions are presented in [Table 4](#).

**4. Discussion**

*4.1. Problems existing in the tracking evaluation in grassroots areas*

*4.1.1. Weak professional competence in food safety tracking evaluation at the city and county levels in grassroots areas*

Ankang area is part of the contiguous region of the Qinling and

Table 4

Summary of the main suggestions for each standard of national food safety standards.

Standard	Number of branches	Content of the opinion	Type of opinion
GB31651-2021	7	1.Requirements for the disinfection, drying time, temperature, and cleanliness of tableware; Add opinions on the treatment of residues such as wastewater and sewage in waste treatment. 2.The problem of cleaning agent residues is quite prominent, and the treatment requirements should be strengthened in the standards; Add requirements for the dominant wind direction when selecting the site; Add requirements for the cleaning and disinfection of turnover boxes and the self-inspection methods of tableware (drinking utensils) disinfection units. 3.Strengthen publicity, implementation training, and technical guidance.	Standard indicators and technical requirements;  Standard text content;
GB31652-2021	1	It is recommended to incorporate specific provisions on cleanliness requirements for clean operational zones into the section addressing factory buildings and workshops.	Other issues and recommendations  Standard indicators and technical requirements;
GB31653-2021	3	1.It is recommended to modify the scope of application of the standard to be consistent with the categories in GB 2761; and add the rapid detection method for aflatoxin. 2.Enterprises should be compelled to conduct aflatoxin testing, including inspection before processing and testing after processing.	Standard text content  Effectiveness of standard implementation
GB31654-2021	9	1.The ventilation and smoke exhaust facilities should comply with the requirements of relevant laws and regulations such as the Law of the People's Republic of China on the Prevention and Control of Atmospheric Pollution. It is recommended to store perishable foods separately. Classify the number of catering service providers who keep food samples. Refine the requirements for the regular disinfection frequency of delivery boxes, the responsible person for disinfection, food packaging seals, etc. in food delivery services. Clearly define the number of times of use of frying oil. It is recommended to change the retention period of records of cleaning, maintenance and waste management from 6 months to 12 months.	Standard indicators and technical requirements

Table 4 (continued)

Standard	Number of branches	Content of the opinion	Type of opinion
GB29921-2021	8	2. Conduct more offline training to enable the staff to have a better understanding of food safety standards, and strengthen the enforcement of laws against food waste in the catering industry.	Effectiveness of standard implementation
		3. Provide assistance and education based on the results of the inspection, and try to avoid making announcements about them on the Internet.	Other issues and recommendations
		1. In the description of food categories (names), add classifications such as cured and smoked meat products or cured meat products, ready-to-eat konjac products, etc. in meat products, and consider the classifications of some local characteristic foods. For foods mainly made from rice, add the index requirements for <i>Bacillus cereus</i> . Add the relevant pathogenic bacteria index requirements and standards for prefabricated dishes. Since the standard has unclear provisions on the limit of quantification for foods outside the scope, the detection limit and limit of quantification for other foods that can be referred to for implementation should be clearly defined. Add or raise the requirements for rapid detection technologies (such as test strips, detection liquids, etc.) to facilitate consumers to make quick comparisons.	Standard indicators and technical requirements
GB31607-2021	10	2. The food categories should be more detailed. The textual descriptions of the indicators and technical requirements are complex, and it is difficult to understand the scope of application and technical requirements. It is recommended to modify them to make them more accessible and easy to understand.	Standard text content
		1. When conducting food inspections on fruits, distinguish between the peel and the pulp. For peels that are inedible, they can be excluded from the inspection. Increase the types of pathogenic bacteria to be detected in bulk ready-to-eat foods. Add high-efficiency means for detecting the limit indicators and technical requirements of pathogenic bacteria.	Standard indicators and technical requirements
		2. Classify bulk foods and provide descriptions of food categories just like those for	Standard text content

(continued on next page)

Table 4 (continued)

Standard	Number of branches	Content of the opinion	Type of opinion
GB2760-2024	4	pre-packaged foods. Add the classification and standard requirements for foods produced by small workshops, such as marinated foods, bulk pastries, chestnuts, etc. The descriptions of other bulk ready-to-eat foods need to be further clarified, as some expressions are difficult for grassroots personnel to understand. Expand the scope of application of the standard, and standardize or provide instructions for bulk foods in the catering service industry. Further clarify the definition and scope of non-pre-packaged foods and classify them in detail.	Other issues and recommendations
		3.Strengthen the efforts in publicity, implementation, and training. Publicize the updated standards in a timely manner. Administrative departments should promptly conduct publicity, training, and notification for enterprises. The quantity of additives in wet noodle products (noodles, dumpling wrappers, wonton wrappers, shumai wrappers) should be restricted. Increase the classification of konjac products and the scope of use of additives. It is recommended to classify and explain the additives that can be consumed in an appropriate amount according to production needs separately.	Standard text content

Note: GB 31651–2021 is the “National Food Safety Standard - Hygiene Specification for Centralized Disinfection of Tableware and Kitchenware in Catering Services”; GB 31652–2021 is the “National Food Safety Standard - Hygiene Specification for the Processing of Ready-to-Eat Fresh-Cut Fruits and Vegetables”; GB 31653–2021 is the “National Food Safety Standard - Specification for the Control of Aflatoxin Contamination in Foods”; GB 31654–2021 is the “National Food Safety Standard - General Hygiene Specification for Catering Services”; GB 29921–2021 is the “National Food Safety Standard - Limits of Pathogenic Bacteria in Pre-packaged Foods”; GB 31607–2021 is the “National Food Safety Standard - Limits of Pathogenic Bacteria in Bulk Ready-to-Eat Foods”; GB 2760–2024 is the “National Food Safety Standard - Standard for the Use of Food Additives”.

Bashan Mountains. In the grassroots jurisdiction, the employees generally have a low educational background and a low professional background (as shown in Table 1, the employees with a bachelor's degree or below account for 97.8 % of the surveyed objects). There is a shortage of professional institutions and employees related to food safety standards, and there is no complete or perfect testing institution. Moreover, there are many categories and a large volume of food safety standards. The policy requirements of a high level of professionalism for the standard tracking evaluation work form a major implementation obstacle compared with the practical situation of “three noes” (no special institutions, no full-time staff, no professional background) at the city and county levels. Consequently, grassroots regions are experiencing the coexistence of inadequate professional competence and mismatched

standard applicability. For example, regarding fundamental and general standards such as GB 31654–2021 and GB 29921–2021, grassroots feedback mainly focuses on ambiguities in textual interpretation and difficulties in the implementation of specific indicators (see Table 4), which reflects the insufficient depth of publicity and training. In contrast, for industry-specific standards like GB 31652–2021, the inability to conduct tracking and evaluation has emerged in Ankang, a region lacking relevant industries. Due to the absence of applicable objects for this standard, its tracking and evaluation cannot be effectively carried out, resulting in the waste of administrative resources. In response to this phenomenon, during the tracking evaluation process, for some of the problems and suggestions put forward by the respondents, it is necessary to sift out the chaff and select the scientific, reasonable and operable problems and suggestions for the standard revision [6].

4.1.2. Lack of professional standard publicity, training and technical guidance in grassroots areas

Front-line employees in enterprises and public institutions, law enforcement management, technical management, etc. in grassroots areas have some deficiencies in mastering and understanding the standards (as shown in Table 2, the feedback from the surveyed objects focuses on the text content and technical indicators, etc.). The channels for standard updates and information acquisition are single. The employees engaged in standard-related work have a low educational background. It is difficult for the industry regulatory authorities and enterprise employees to understand and enforce the “standards”. Enterprises have a great demand for professional standard personnel or institutions. There is a lack of effective channels for standard consultation, learning and problem-solving. Especially for the updated standards, many employees in grassroots industries have no access to them. Relevant administrative personnel and practitioners lack professional publicity, training and technical guidance (as shown in Table 4, there are many suggestions for standard publicity and training). During the implementation and enforcement of the standards, there is a lack of effective screening and implementation techniques, and they do not understand or master the scope of the latest standards and specific implementation requirements.

4.1.3. Insufficient collaboration mechanism among grassroots departments and asymmetric information

Currently, the law enforcement supervision and management of most standards are carried out by the market supervision and management departments, while the formulation and implementation effects of the standards are the responsibility of the health and health departments, resulting in an insufficient cross-departmental collaboration mechanism. Many grassroots units have employees taking on multiple positions, and most law enforcement managers lack a professional background in food or medicine. In the publicity, training and implementation in the health and health system, there are few participants from cross-departments and cross-industries. There are some errors in the understanding of standard professional terms and requirements among different grassroots departments (as shown in Table 4, there are many suggestions for the standard text content, classification categories or standard definitions, etc.), resulting in asymmetric standard information, understanding and enforcement. In the process of standard enforcement, managers may encounter inconsistent requirements among departments, increasing the cost for enterprises. Therefore, during the tracking evaluation, cross-departmental collaboration should be strengthened, and the information feedback channels for standard implementation should be continuously broadened and improved, and opinions and suggestions from all parties on all current national food safety standards should be widely collected [7].

4.1.4. Lack of special funds and personnel support for the publicity, training and implementation of food safety standards in grassroots areas

The tracking evaluation in grassroots areas is the responsibility of the



health and health departments. There is an overlap between special funds and personnel. Although there is some financial support, the sources of funds are single, and the coordination and professional support among various departments are insufficient, resulting in few opportunities for many enterprises to participate in the publicity, training and implementation of food safety standards, and a lack of understanding of the standards. The administrative resources owned by local governments are limited. Considering the characteristics of the regulatory objects, it is difficult for local governments and their law enforcement departments to carry out high-standard supervision [8]. The implementation and enforcement of standards require long-term and normalized publicity, training and technical support. Due to the lack of funds and personnel support, it is impossible to assign special personnel to be responsible for the implementation and enforcement of many standards. Grassroots regulatory departments have an insufficient understanding of the basic requirements of the standards in the supervision practice, and there are many cases of incomplete supervision and guidance. As a result, it is difficult to form an effective and continuous tracking evaluation mechanism during the implementation and enforcement of the standards. In most grassroots areas, only spot-check tracking evaluations are carried out, and normalized evaluations are difficult to implement.

#### 4.1.5. Single industrial chain in grassroots areas and lack of a complete industry

In most grassroots areas, such as the counties and districts under the jurisdiction of Ankang area, due to geographical conditions and ecological environment limitations, the food industrial chain is single. Many enterprises stay in the primary processing stage, and there is a lack of deep processing enterprises. Moreover, there are many professional terms, blurred boundaries and overlapping industries in the scope of application of national food safety standards. Some standards lack applicable objects or professional evaluation objects in grassroots areas. For example, the scope of application of GB31652-2021 has no tracking evaluation objects that meet the relevant standards in Ankang area, and it is impossible to effectively track and evaluate this standard. The plan and program for national food safety tracking evaluation should be formulated in a standardized, scientific and reasonable manner, the annual goals and focuses should be determined, and the maximum benefits of the food safety standard tracking evaluation system should be brought into play [9].

### 4.2. Suggestions for the tracking evaluation in grassroots areas

#### 4.2.1. Establish and improve the third-party tracking evaluation service system in grassroots areas

The evaluation mode should gradually shift from a “broad coverage” to a “focused” approach, screening key standards and key issues, and carrying out special research [10]. In China, Food and Drug Safety Committees, initiated and led by Health Commissions of various provinces and municipalities, are entrusted with the responsibilities of issuing task lists and conducting performance assessments. It is recommended that these committees collaborate with market supervision authorities and third-party industry associations/societies to release annual key work lists and assessment criteria for food safety at the beginning of each year. Based on the industrial distribution characteristics of grassroots regions, food safety standards should be classified into three tiers—core priority standards, general standards, and region-specific standards—for systematic tracked evaluation and management. Core priority standards apply to core industries and high-risk sectors (e.g., GB 31651–2021, GB 29921–2021), mandating grassroots regions to implement comprehensive and regular tracked evaluations. General standards refer to those with low industrial relevance (e.g., GB 31653–2021), and targeted tracked evaluations may be conducted through methods such as county-level sampling and on-site visits to key enterprises. Region-specific standards denote those for which no

relevant industries exist in grassroots regions (e.g., GB 31652–2021 in Ankang), and tracked evaluations may be exempted in regions lacking corresponding industrial foundations. Furthermore, third-party professional entities, including local universities, research institutes, and industry associations/societies, should undertake special surveys on grassroots food safety standards. Sampling evaluations should be implemented by integrating online surveys, interviews with key informants, and focus group discussions with enterprises. Additionally, surveys regarding the cognition, attitudes, and practical implementation of food safety standards should be administered within relevant industrial sectors. At the end of each year, effectiveness and efficiency assessments should be conducted in alignment with the task lists and assessment criteria issued at the start of the year, and specialized assessment reports should be formulated and submitted to relevant government departments for policy reference.

#### 4.2.2. Optimizing inter-departmental collaboration mechanisms and enhancing standard-related publicity, training, and professional competence assessment at the grassroots level

To eliminate the blind spots in food safety risk management caused by the blurred governance functions of the main body, it is urgent to improve the professional level of the law enforcement team [11]. Grassroots employees lack access to standard learning. At the grassroots level, semi-annual hybrid online-offline standardized training for law enforcement personnel and enterprise representatives shall be organized by Food and Drug Safety Committees, co-hosted by Health Commissions and Administrations for Market Regulation. Focused on standard interpretation and practical operation, the training shall be followed by competence-oriented assessments to verify participants’ proficiency in applying relevant standards. Through regular training, organize cross-departmental communication and interaction among functional personnel to form a long-term, effective and sustainable learning and communication mechanism. Meanwhile, illustrative case-based interpretation toolkits full of pictures and texts shall be developed to address textual, indicator, and technical feedback from grassroots personnel, optimizing their standard learning formats.

#### 4.2.3. Establish an expert team or management evaluation institution for food safety standards

Combined with the reform of the disease prevention and control system, implement the work specifications for food safety and nutrition and health in disease prevention and control institutions. Relying on disease prevention and control centers (health supervision institutes), universities, scientific research institutes, industry associations and other units by provincial health departments establish a provincial-city-county three-level linkage expert database or evaluation team for food safety standard management. Comprehensively consider the balance between the investment in the formulation and implementation of food safety standards and the obtained health benefits, so that the standards can be more scientific, reasonable and feasible as risk management measures [12]. Fully include personnel from enterprises, administrative departments, universities, scientific research institutions, industry associations and other fields. The expert members of food safety standards conduct standard tracking management evaluations according to local characteristics, regularly organize industry research and discussion and exchange activities for relevant industries, and further improve the cultivation system of food safety standard talent teams.

#### 4.2.4. Enhancing the special fund guarantee mechanism for standard tracking and evaluation

Special funds for tracking and evaluation in grassroots regions shall be jointly earmarked by Provincial Health Commissions and Market Supervision Administrations, with such earmarked outlays incorporated into routine work scope and annual departmental budgets as dedicated expenditures. To ensure the sustainability and effectiveness of grassroots tracking and evaluation initiatives, fund allocation shall be directly tied

to the annual assessment outcomes of such work in grassroots counties and districts. Notably, the qualification rate of standard-related knowledge assessments for grassroots law enforcement personnel and enterprise food safety officers shall be integrated into the annual performance appraisal of relevant departments and the budget indicators of local Food and Drug Safety Committees.

### Ethical statement

No ethical approval was required, because it did not involve human or animal participants, primary data collection, or sensitive personal information. The collector has been informed during the questionnaire process, and the information collection does not involve sensitive personal privacy issues.

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### Declaration of competing interest

There is no conflict of interest.

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