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Innovations in Strategic Management: Navigating Complexity and Driving Organizational Success

Systematic literature review: Assessing community health hazards arising from food safety concerns in the food market

Chanchal Chawla[a] ✉ | **Ashish Gupta**[b] | **Prem Colaco**[c] | **M. Nalini Sunil**[d]

[a]Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India.
[b]School of Business Management, Maharishi University of Information Technology, Uttar Pradesh, India.
[c]Department of ISME, ATLASSkillTech University, Mumbai, Maharashtra, India.
[d]Department of OB & HRM, JAIN (Deemed-to-be Univesity), Bangalore, Karnataka, India.

Abstract Food safety concerns have an immediate impact on public health. The food market is an important node for investigating possible risks due to its central role in the delivery of food goods to communities. Health concerns are internationalized as food supply chains span many countries. Therefore, we undertook this literature study to uncover widespread threats to public health from inadequate food safety measures. The online databases were examined for any quantitative, qualitative or mixed-method studies that had been published and they were in the process of publishing. Prisma table analysis was used to determine the level of methodological quality in the included research. Using a qualitative analysis strategy, we classified the ideas in the full-text articles into overarching categories that share commonalities but are not mutually exclusive. After identifying commonalities in the articles' discussions and final thoughts, we synthesized each subject. After a thorough and methodical reading, recurring motifs were uncovered. During analysis, we got better at categorizing and analyzing the data. The examination of 7 full-text papers resulted in common public health issues linked with food safety in the food industry. The expiration dates on these products were demonstrated to pose a serious risk to healthcare in the food sector. The food industry faces several public health issues discovered in this evaluation of the relevant research. As a result, robust national risk-based food surveillance systems are necessary to guarantee the public's safety. Foods entering global trade must be guaranteed to be safe and of high quality as well as imported foods must meet domestic standards. Regulatory bodies, players in the food sector and consumers need to work together to find effective solutions to these problems. By addressing these issues, we can work toward making the food market a place where everyone can feel secure and healthy.

Keywords: health hazards, food safety, food market, health issue and risk factors

1. Introduction

The necessity to create substitute models of sustainable agriculture was acknowledged by the Food and Agriculture Organization (FAO) organic farming and developed the plan of implementation for the World Food Summit, which is designed to respond to the demand. Environmental contaminants of resources and concerns about the safety of food supplies caused by chemical contamination are becoming the major issues on a global scale (Malla et al 2021). Considering a number of technological advancements, investments and restrictions placed by governments for food safety remains as an important worldwide concern. Food borne illnesses (FBI) are a problem that is becoming increasingly prevalent yet organizations and health management are seeking ways to mitigate its effects. The FBI is thought to be accountable for 420,000 fatalities and 600 million illnesses annually, based on the World Health Organization's (WHO) current assessment of the harm the agency causes. Food safety hazards occur in health issues and financial losses due to a range of variables, such organization's revenue reductions and the costs of medical treatment. The biological, social and economic aspects of food safety demonstrate its critical significance (Da Cunha D T 2021). Street food plays an important part in meeting the day-to-day nutritional requirements of millions of urban residents in developing countries. These folks value have a diverse range of meal alternatives that are affordable and easy to obtain in a short amount of time. In India, there are over ten million street sellers and approximately 20% of them provide only a portion of low-quality street food. These vendors set up their stalls on sidewalks or the side of major highways. Street food marketers use a temporary static structure, like a flexible stand for selling foods to the general public, instead of a permanently constructed facility (Reddy et al 2020).

Many foodborne illnesses that arise from eating tainted food are brought by microbial infections. A number of preservation techniques have been developed to ensure food safety in terms of microbes as well as nutritional content and sensory aspects (Banti 2020) These techniques have unfavorable effects on the nutritional value and biological properties of food; synthetic preservatives, such as formaldehyde, nitrates, benzoates, sulfites and phenolic substances antioxidants, are well known to cause health issues like allergic reactions. Applying bio-preservation is an organic antibacterial food preservative as a substitute for chemicals or heat preservation techniques that can ensure the product's integrity and safety (Quinto et al 2019).

One of the high-value sectors is the global food chain and it instance seems to indicate that there are certain flaws in the supply chain management. A study published in December 2017 claimed that the Food Safety and Standards Authority of India (FSSAI) operated 72% of the food testing laboratories, of which over 65% lacked authorization (Petrescu et al 2020). Around 10,500 hotels and restaurants were taken off the food service list by well-known food firms, including Swiggy, Zomato and Food Panda, in October 2018 the food quality at these establishments exceeded the requirements specified in the year 2006, Food Safety and Standards Act (FSS Act). These establishments lacked the fundamental food safety controller authorizations issued by the Indian government (Prashar et al 2020). Food stability, food utilization, availability of food and food preservation to prevent further infection are the cornerstones of achieving food security. The socioeconomic context is comprised of these four food pillars, which impact the need for inexpensive food. Bacteria and the harmful substances that create the primary contributors to major food spoilage and bio-deterioration in connection to food insecurity. These factors are due to bacteria producing long-term impacts on the food chain and food web. Microbial contamination has been found to cause a 25–30% loss of food in various underdeveloped nations (Maurya et al 2021). The global scale of risks to food safety is presented throughout the food manufacturing system and the majority of states have established rules and regulations to protect it. There are a number of concerns about food contamination brought by human and environmental causes, such as pharmaceuticals, physical hazards, inorganic and organic chemical pollutants, as well as microbiological species, with transportation thus manufacturing facilities of food becoming more globalized. Food safety laws and developments in analytical methods have not culminated the decreases in the frequency of foodborne infections despite food borne pathogens becoming a significant issue affecting the nutrition sector (Li et al 2021). The study suggests that an essential effort to improve people's healthier life cycles, well-being and the sustainability of the surroundings needs to promote wholesome food for a healthier environment.

The findings of the research, the initial feature of food that determines the standards is its color besides this factor influences the food's flavor and quality, it is used to identify, based on color, which items are not included, such as insufficient food, rotted meat, injured fruits and dehydrated vegetables. Several experiments have demonstrated the importance of color to our enjoyment of eating. Food color is an overlooked sensory factor that further affects how flavorful food is perceived (Singh et al 2023). The adulteration of food involves the act of eliminating or decreasing changes in food quality caused by using unauthorized substances or substituting ingredients or the removal of necessary constituents from food for unfaithful or unrelated reasons. In the end, food adulteration deceives customers and poses several health hazards. These days, finding a sector of the food industry that excludes any form of impurity might be difficult. The growing number of food producers and the exceptional volume of food imports allow the producers to use deception and manipulate customers. Thus, recognizing the common adulterants and the way chemicals affect health is vital information for consumers (Choudhary et al 2020). Food safety means that the product remains secure, non-hazardous and corresponds to reasonable nutritional needs without posing any acute, long-term, or potential risks to human health during its production, processing, packaging, shipping, selling, or consumption, among other uses. Hazardous or harmful chemicals should be eliminated because they represent a risk to human health, generate injury and pose concealed risks to customers and their children, or that can lead to execution, based on mandatory norms and regulations (Liu et al 2020).

Food safety is essential to the global economy, food business and public health. Foodborne illnesses place a tremendous financial and social strain on communities and their healthcare systems. The development and implementation of regulations pertain to food safety, as well as the attitudes and behaviors associated with it depend on effective risk communication and the assessment of consumer understanding. Numerous studies have been carried out to uncover consumer attitudes around food safety. According to some consumer studies on food safety, people have reservations about food quality and they sometimes act inappropriately, which increases the risk of contracting food borne (Bolek 2020). To ensure food safety, the WHO created five essential elements. The primary components of a healthy diet include maintaining food at healthy temperatures, preparing foods properly, maintaining separation between raw as well as cooked food and consuming unaffected raw materials along with water. The food preparation environments established recognized attitudes, values and beliefs that support food safety are referred to as the nutrition protection culture. as the cornerstone of sanitary standards (Onyeaka et al 2021). A common social and economic feature in most metropolitan areas is street food. Considering street foods are affordable, convenient and have a delicious flavor, people in metropolitan areas are spending less time cooking at home and consuming street foods as an everyday food option. Street food is a major source of income for numerous sellers and their families, in rural towns, as it is a cultural, social and economic phenomenon (Abrahale et al 2019).

Food can be characterized as materials derived from plants or animals in their raw, processed, or semi-processed forms

consumed by the body to support various metabolic and biochemical processes. These goods lead to food fraud and adulteration, which can cause health problems for consumers. Many of these establishments provide cuisine that is not of the highest quality, but it nevertheless manages to fascinate the stomach and fulfill it instead of offering a balanced, nutrient-dense meal (Banti2020). The broad organizational framework pertaining to food safety, known as food safety culture (FSC), is created by the interactions of many organization actors. Social cognition, technology, nutrition and company culture are the three fundamental pillars that form the foundation of FSC. To satisfy the food safety requirements, it is essential to comprehend whether an FSMS is created and implemented, the way it responds to internal and external influences and how it integrates with the culture. The theoretical evolution related to the creation and implementation of FSMS in the historical context determines the direction and approach of future research using empirical methods (Manning et al 2019).

The further part of the section includes a food market of Food Safety Concerns are indicated in section 2 along with a subsection. The result analysis and discussion are presented in section 3. The study's conclusion and subsequent steps are listed in section 4.

2. Food Market of Food Safety Concerns: Effective Health Hazards and the Search Process Safety Concerns in the Food Market Involve Potential health hazards

Using public media and additional sources, the search method turned up 500 titles and abstracts. After removing duplicates, 350 titles and abstracts were retrieved. After examination based on the titles and abstract, 255 articles were retrieved for additional analysis. Additionally, of these, 55 papers were found to be eligible and 25 publications were evaluated the systematic literature-based reviews that were assessed. In addition, 7 publications were incorporated into a comprehensive literature review and exceeded the inclusion requirements. Figure 1 denotes the evaluation of the filtering flow diagram.

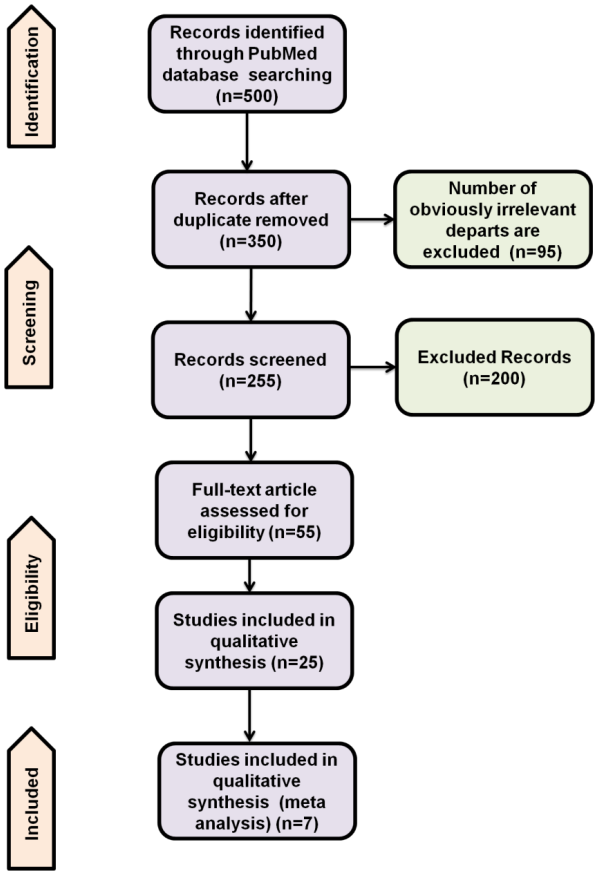

Figure 1 The evaluation of the filtering flow diagram.

2.1. Food Quality

Food quality has been a major problem in recent days in the food economy and recent decades indicate that consumer views on food quality and their intentions to purchase food have changed as a result of the concerns about leading better lifestyles and protecting the environment. Food labels that list ingredients, expiry dates, health benefits and environmental features are depended upon by customers, when evaluating the quality of food, it is unable to accomplish that through the inclusion of various characteristics. The collection of features that determine a product's performance, which is in dynamic interaction with one another and impacts the consumer decisions to embrace or oppose the effect, Food quality is determined

by factors including physical characteristics, chemical makeup, sensory features, microbiological as well as neurotoxin pollutants, shelf life, packaging and marketing. (Petrescu et al 2020).

2.2. Food safety management systems (FSMS)

The importance of Food Safety Management Systems (FSMS) in the food industry is emphasized. In an effort to clarify the initiatives that food companies take, the requirements for an FSMS are the specified need to guarantee food safety. Compatibility with regulations and standards are a fundamental component of any FSMS. Since the 1990s, there has been an important move towards stricter regulations and tighter food safety governance to ensure food safety worldwide. It is important to consider that an organization's culture frames the effectiveness and operation of FSMS, while the way that FSMS is designed, inspected, established, monitored and evaluated is essentially unaltered (Nguyen et al 2022). Food safety needs to be considered and handled as a vital component of management operations, as it is the most significant attribute of quality. The foundation for managing various facets of the activity is the collection of guidelines outlined in multiple management system standards. Different concepts are described in management standards that appear as a collection of numerous operations, including making decisions established in the facts and benefiting from relationships with manufacturers, leadership, customer orientation, engagement of people, process approach and continuous development (Stoyanova et al 2022).

2.3. Food manufacturing

The environmental carrying capacity and sustainable food production are interrelated concepts. Any strategy to boost food production needs to stay in the bounds of the environment-carrying ability. The most effective way of raising agricultural production is irrigation; the sustainability of the food supply is dependent on the optimum amount of water that cultivated resources and they are able to store. A crucial field management strategy to increase crop yield is fertilization, excessive fertilization can affect soil in an effort for high and constant products, which includes an impact on the sustainability of the food supply (Wang 2022).

2.4. Impact of Food Products

Healthy food production requires reducing the use of resources, land, water and fossil fuels, which are scarce, expensive as well as allocated irregularly in terms of population expansion. It requires the recovered use and recycling of existing resources in waste-reduction systems, such as fertilizers and water. A sufficient supply of freshwater, land, fossil fuels and nutrients is necessary for food production. These resources have been utilized at a rate that equals their rate of global growth. The innovative method of producing food can compress and compact presentation into locations as well as spaces can rarely be employed for food production (Goddek et al 2019).

2.5. Food Packaging

The intention of environmentally responsible food packaging includes an inventive and perhaps practical material packaging that can enhance economic and environmental well-being. To reduce the packaging's environmental effects and ecological footprint, recyclable materials can be used in conjunction with lifecycle inventory along with evaluations. By minimizing food waste and reducing reliance on limited fossil fuel supplies, sustainable food packaging contributes to preserving food resources by addressing an increase in environmental garbage made of plastic. Sustainable packaging is a complex idea and it requires analysis and record-keeping to evaluate the materials, processes, life cycles and package design. Packaging materials must be designed to satisfy the increasing needs of producers, customers and regulatory bodies while maintaining food quality. These requests are growing as dynamic, encompassing, providing the highest quality food and delivering such food in environmentally friendly as well as consumer-friendly packaging (Ncube et al 2020).

2.6. Food storage-related contamination

A vital component of food safety and quality is how food is stored. Effective storage increases the freshness of food. This is dependent on the kind of food, whether it is packaged and the ambient temperature as well as dryness of the storage space. It is imperative that food packaging materials with long-term storage have excellent barrier qualities to prevent any organoleptic alterations during food preservation. Certain packing materials can break down in the presence of moisture; thus, the ideal temperature ranges from 4 to 210 Celsius, which is considered cool to moderate. The food and packaging might deteriorate in direct sunlight. The demonstration showed that chemical transmission through the packing material is contingent upon the barrier properties (Kamboj et al 2020).

3. Results

The following section includes the Hazard-based food safety investigations, annual statistics of food borne illnesses, various components of food safety and the food manufacturing industry in India.

3.1. Hazard-based food safety investigations

The food product involves ingredients like milk, eggs or peanuts that are not specified on the label are labeled incorrectly, allergy sufferers can react negatively. Chemicals that remain in food products, such as pesticides, lead or mercury, can impact human health at certain concentrations. Microbiological microorganisms that can induce sickness, such as viruses, bacteria or infections, can contaminate food products. In other words, a food product is dangerous if it has a hazard that doesn't fit into any other categories and it includes substances that are prohibited, issues with nutrition and possible manipulation. Figure 2 and Table 1 depict the hazard-based food safety investigations.

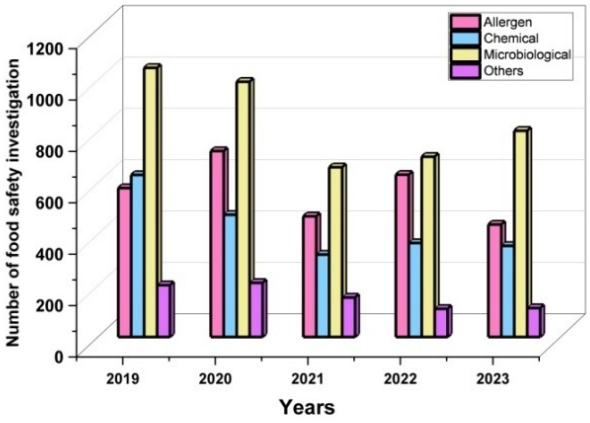

Figure 2 Depicts the hazard based food safety investigations.

Table 1 Depicts the hazard based food safety investigations.

Number of food safety investigation				
Years	Allergen	Chemical	Microbiological	Others
2019	580	631	1048	202
2020	724	476	994	211
2021	470	321	661	154
2022	632	366	702	110
2023	438	355	803	113

3.2. Annual statistics of Foodborne diseases

Foodborne diseases (FBDs) are illnesses brought by hazardous foods or drinks. There are several approaches to quantify the health effects of FBD, such as the number of diseases along with deaths each year and the severity of the condition. The Disability Adjusted Life Year (DALY) is a commonly used metric to estimate the impact of illness. While illness and mortality are combined, one DALY is equal to one year lost of healthy life. The measurement of health impact in DALYs facilitates by prioritizing and enables comparisons across different illnesses. The overall FBD statistics reports from 2013 to 2023 appear in Figure 3 and Table 2.

3.3. Various Components of Food Safety

Food safety concerns, including product safety, food handling and health hazards, were prevalent among men and women, as shown in Figure 4. Men seemed a possibility to be more concerned about product safety than the problems with food handling when it came to food safety. Furthermore, female concerns encompass three categories, with food safety as their top concern. In contrast to men, more women than men emphasized health hazards, even though they were ranked third. Table 3 shows several elements involved in food safety.

3.4. Food manufacturing sector in India

The food manufacturing sector in India is represented in Figure 5 and Table 4 it includes minimizing the waste products, preserving food, marketing, distribution occupations and improving food standardization. It facilitates the transportation of fragile perishable goods over great distances, promotes the availability of various items throughout the year and enables a wide variety of food safely consumed by eliminating harmful microorganisms and decomposing them. Food processing is the major factor that makes the incredibly diverse modern diet feasible on a large scale.

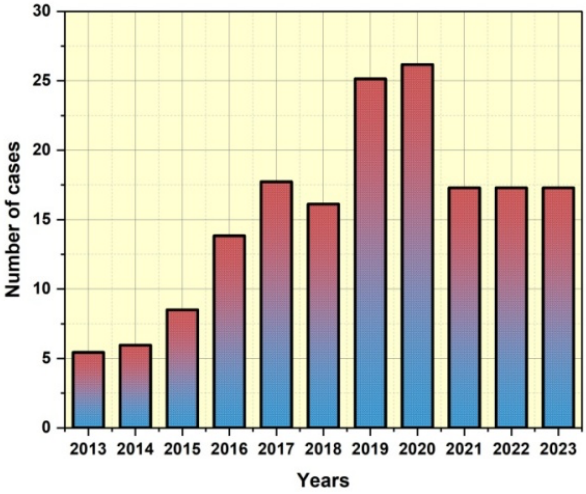

Figure 3 Statistics of Food borne Disease.

Table 2 Statistics of Foodborne Disease.

Years	Number of cases
2013	5.44
2014	5.96
2015	8.5
2016	13.84
2017	17.73
2018	16.12
2019	25.15
2020	26.17
2021	17.29
2022	17.29
2023	17.29

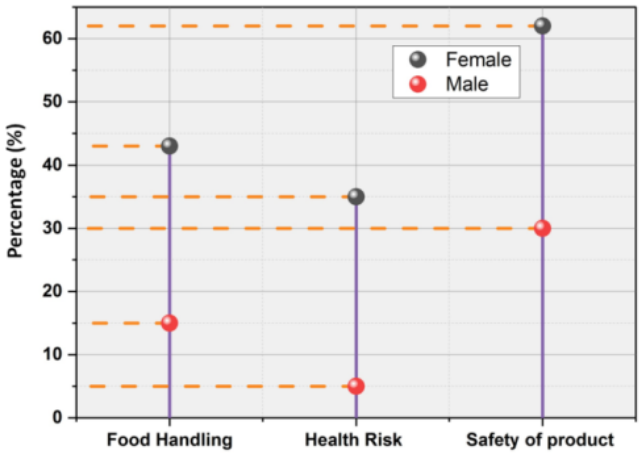

Figure 4 Various Components of food safety.

Table 3 Various Components of food safety.

Various Components of food safety	Percentage (%)	
	Female	Male
Food Handling	43	15
Health Risk	35	5
Safety of product	62	30

3.5. Discussion

Food safety problems in the food market are key issues that center on ensuring that the food supplied to consumers is healthy for human consumption. This is the primary objective of the food safety concerns. These problems cover a broad spectrum of potential causes that utilized together can lead to disease, food borne illnesses and a reduction in food quality. The process of assessing risk includes in estimating the chance of suffering harm as well as the degree of injury relevant to specific food safety issues. During this stage of the procedure, a range of factors, such as the sensitivity of the population and the potential results of an epidemic, are taken into consideration.

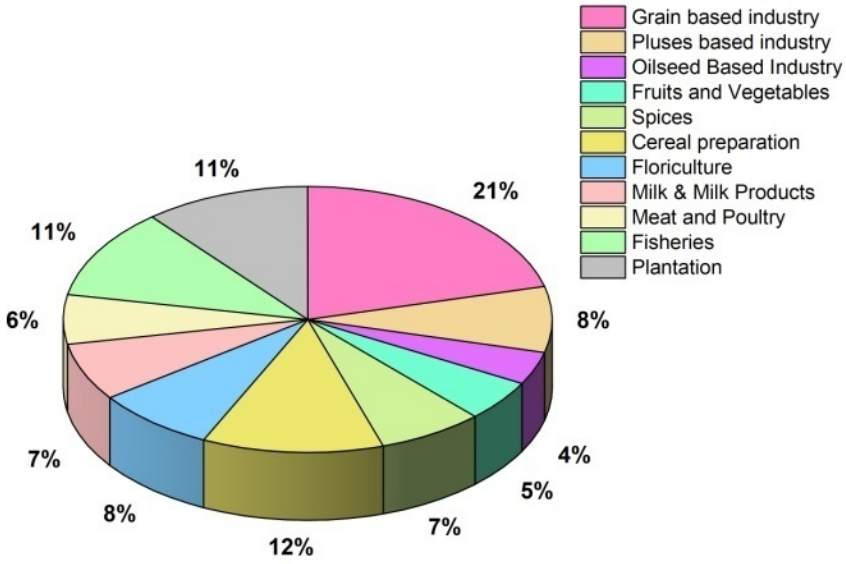

Figure 5 Food manufacturing sector in India.

Table 4 Food manufacturing sector in India.

Items	Percentage (%)
Grains-based Sector	21
pluses basis sector	8
Sector Based on Oilseeds	4
Vegetables along with Fruits	5
Spices	7
Cereal preparation	12
Floriculture	8
Milk and Dairy Products	7
Chicken and Meat	6
Fishery	11
Planting trees	11

4. Conclusions

The analytical points of view that provide concerns about food safety are highlighted in this review. Food safety is receiving greater attention and changing consumer opinions. The difficulties with food security in an environment that evolves quickly are explored in this section, along with the importance of maintaining high standards for food quality, managing food safety and producing food sustainably and efficiently. Strengthening public health is ensured. Ensuring that the food provided to consumers is of high quality and nutritious is a crucial component. A comprehensive evaluation of the risks connected to the processes of food production, including the creation of innovative hazards and risk-mitigation approaches should be part of the FSMS. Food safety hazards result in health issues and financial losses for a number of reasons, such as medical costs and lost business income. From a biological, social and economic standpoint, food safety is crucial. The future scope of food safety management is dynamic and ever-changing due to rising global concerns, developments in customer preferences, technological advancements and approaches to improve human well-being and the earth's sustainability to promote a healthy lifestyle for a healthier environment.

Ethical Considerations

Not applicable.

Conflict of Interest

The authors declare no conflict of interest.

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