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RESEARCH PAPER

TITLE

LAWS DEALING WITH FOOD SAFETY LAWS IN PAKISTAN

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LAWS DEALING WITH FOOD SAFETY LAWS IN PAKISTAN

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Abstract

Biological, Chemical and Physical contamination of foods is a terrible danger to emerging civilizations' health and economic progress. The abundant literature on foodborne infections, particularly diarrhea in children, exclusively illustrates the increased disease burden associated with foodborne illness in developing nations. The presence of several pathogens in a variety of foods is prevalent in Pakistan. Precise numbers for foodborne infections in Pakistan are difficult to come by due to a lack of monitoring, surveillance, and infection control. Aflatoxin contamination and mold proliferation are mostly caused by poor processing and storage of milk, cereal grains, and nuts. Numerous studies show that a wide range of foods is contaminated with heavy metals. The increasing population restricts the economic potential of individuals and states by encouraging traders and manufacturers to purposely degrade food commodities provided for sale in order to maximize profit at the expense of quality and safety. As a result, a recent trend of food adulteration, notably milk adulteration, creates an urgent concern for the government. This analysis is a concentrated effort to shed light on the current food safety situation in Pakistan. Data from local and relevant international research will be provided to paint a clear picture of food safety in Pakistan. It is advocated that a comprehensive food safety infrastructure be created, constructed, and implemented in order to provide a safer food supply.

Key words: Tarakai, ethnomedicinal, swabi, ethnobotany, traditional knowledge

1. Introduction

Food safety concerns are rising, particularly in developing countries, as the world population grows and trade becomes more competitive. Such concerns constitute a severe danger to the sustainability and economics of emerging countries. The World Health Organization (WHO) has established that food-borne illnesses have a significant role in the majority of diseases impacting the economies of developing and underdeveloped nations (Bruhn and Schutz, 1999).

This scenario is delicate since there is scant or no monitoring, and many occurrences of foodborne infections go unreported and untreated. As a consequence of this severe situation, most countries have started uncompromising efforts to reduce the risks of foodborne infections, particularly in developing countries. Food safety challenges in developing countries are well acknowledged, and many international organizations are taking a keen interest in them.

Food security has been named one of the World Health Organization's top 11 objectives (WHO). In this context, WHO is working hard to raise public awareness of this severe situation. Food-borne illness has emerged as a

major concern for emerging nations as the disease burden increases. It is estimated that around 2000 diarrheal episodes occur worldwide, 80% of which are caused by biological contamination of edible items, resulting in the deaths of 3.5 million children aged 1 to 5 years. Cholera is also suspected to be caused by biological contamination of food (Hussain *et al*., 2008).

Infants and young children are the most vulnerable in the developing world, and they are the leading cause of death in this age category. Efforts to reduce hunger, famine, and poverty in the areas will be futile unless the defined food safety procedures are enhanced (. Salmonella, Campylobacter, Listeria, and E. coli are major pathogens that cause diarrhea and accompanying illnesses such as renal failure. Brucellosis and TB are spread by animals and impact a large population in rural regions associated with agriculture and livestock management. Water pollution, on the other hand, causes gastrointestinal illnesses and other serious problems that affect millions of people (Iqbal *et al*., 2010).

However, identifying contaminants, whether from food production, food processing, or packaging, is still challenging. It is essential to have an understanding of the possible contaminants present at each stage of food preparation. The next paragraphs address the main pollutants at each phase, how to control them, and how to prevent or reduce their presence in food. This information is essential for determining the source of pollutants in the final product (Afzal, 2010).

With 180.1 million people, Pakistan is the sixth most populous nation in the world. By 2030, that number is expected to rise to 210.13 million. Around 20% of the population has been living below the international poverty threshold of US$ 1.25 per day, according to Human Development Indices (2014). Despite spending 2.5% of its GDP on health, Pakistan nevertheless has a high disease burden and inadequate maternal and child health conditions.

Given the role of the media, international campaigns, and local interventions to raise awareness of bacterial pathogenesis, the severity of foodborne illness, especially diarrhoea, gastroenteritis, and upper respiratory tract infections continue to rise among children in Pakistan. This is especially true of street-vended foods, which have been found to be chemically and microbiologically contaminated. Several indigenous milk products were found to be heavily contaminated with foodborne pathogens such as Staphylococcus aureus, *Escherichia coli*, and Klebsiella spp., resulting in the hospitalization of subjects after ingesting contaminated food (Holleran *et al*., 1999).

Laws dealing with Food Safety in Pakistan

Pakistan also lacks a comprehensive legislative framework and instead has a collection of rules covering various aspects of food safety. Despite the fact that they were implemented many years ago, these regulations have a great chance of ensuring at least a basic degree of food safety. These laws, like many others, aren't always enforced, though. Below is a summary of this legislation:

1. Pakistan Pure Food Laws (PFL), 1963:

The existing market legal framework for food quality and safety in the nation is based on the PFL. It has 104 food items broken down into nine broad categories: drinks, food grains and cereals, starchy meals, spices and condiments, sweeteners, fruits and vegetables, and miscellaneous food goods. It also includes milk and milk products. These regulations cover raw food additives, preservatives, synthetic colors, antioxidants, and heavy metals (Sabreen, 2021).

2. The Pure Food Ordinance, 1960:

The Pure Food Ordinance of 1960 consolidates and changes the law governing food preparation and sale. This law has been accepted by all provinces and certain northern areas, with minor changes. Its goal is to assure the integrity of food being sold in the market and, as a result, to avoid adulteration. The legislation forbids anybody from mixing, coloring, staining, or powdering any food if the combination violates authorized regulations or is likely to make the food harmful to health. Colorants, preservatives, flavoring compounds, antioxidants, stabilizers, anti-caking agents, non-nutritive ingredients, and metals are all subject to the guidelines (Tahir *et al.*, 2001).

In addition, misbranded food goods are prohibited from being sold, prepared, manufactured, imported, or exported for human consumption if they are unsound, unwholesome, or harmful to health.

There are four criterion adopted by the law to ensure purity of food:

1. It prohibits the manufacture, preparation, or processing of food that is likely to be harmful for human consumption, such as food that can cause food poisoning.
2. It prohibits the import, export, or sale of contaminated food.
3. establishes certain hygiene standards
4. Provides for inspection and laboratory analysis of food samples according to a set criterion (Sabreen, 2021).

The legislation is not consistent in all sectors. The sanctions for the same offence differ among jurisdictions. Furthermore, the legislation is silent on the issue of consumer compensation or damages. Cantonment areas are exempt from the Pure Food Ordinance of 1960. The Cantonment Pure Food Act, 1966 is a special statute for cantonments. The Pure Food Ordinance 1960 and The Cantonment Pure Food Act have no significant differences. Even the operating regulations are fairly similar.

3. Pakistan Hotels and Restaurant Act, 1976:

The Pakistan Hotels and Restaurant Act, of 1976, governs all hotels and restaurants in Pakistan and aims to manage and regulate hotel and restaurant pricing and service standards. Section 22(2) makes it a criminal offense to sell infected food or beverages that were not prepared hygienically or served in utensils that were not hygienic or clean. The act neither expressly specifies the right of consumers to file a complaint nor prohibits anybody from filing a complaint. Furthermore, like with other food regulations, it does not allow for consumer compensation in the event of damage (Saqib and Nazir, 2020).

4. The Pakistan Standards and Quality Control Authority (PSQCA) Act, 1996:

The Pakistan Standards and Quality Control Authority, under the Ministry of Science and Technology, is the national standardization body. The PSQCA Act, 1996 governs how the PSQCA performs its responsibilities and activities. PSQCA is a member of the International Organization for Standardization (ISO), which is the apex body for developing and implementing international standards.

PSQCA also serves as:

- National, regional, and international organizations and institutions such as ISO, IEC, Codex Alimentarius, and the World Trade Organization.
- National Enquiry Point (NEP) For WTO Agreement on Technical Barrier to Trade (TBT).

- Introduce
  Measures Through Standardization Regarding Consumer Safety and Health.
- Establish Procedure to Conformity Assessment Compliant with National & International Standards.

PSQCA standards are voluntary and open to the public. Their execution is reliant on the adoption of concerned parties. A Pakistan standard, on the other hand, becomes legally enforceable if it is mentioned in a contract, referenced in law, or declared required by special instructions of the Federal Government. PSQCA is responsible for inspecting and testing products and services, including food, for quality, specification, and characteristics throughout use, as well as for import and export purposes ((Laraib *et al*., 2019).

Punjab Food Authority

In Pakistan, the Punjab Food Authority (PFA) operates under the government of Punjab to provide inhabitants with hygienic food items and to educate the public about the significance of food safety (Shadman, 2017) It was established in 2011. It was our country's first department of its kind. Two acts, the "Punjab Food Authority Act 2011" and the "Pure Food Rules 2011," were passed in 2011 to enforce the quality requirements outlined in the legislation.

Responsibilities of PFA

Following are the responsibilities which are fulfilled by the PFA in accordance with the Act 2011;

1) They have to monitor the activities of different industries dealing with food product manufacturing, to ensure the supply of safe food for the consumers.

2) They have to maintain standards & create new rules & standards for different types of food products & also for food additives & packaging.

3) They have to maintain the standards of their Testing Laboratories & have to Upgrade their Procedures & Equipment according to new rules & technology.

4) They play an important role in organizing the training sessions for the citizens & stakeholders.

5) To trace the production lines of different food products & hygiene measures of the industry (PFA, 2018).

Enforcement Mechanism & Tools

Different types of methods are used by PFA to enforce the standards discussed in the PFA act of 2011.
Following are the methods;

1) Sending Notice to the Stakeholder.
2) By Fining the Industry.
3) Seize a specific product or the who le industry.
4) Recall in the food product light of Laws.

Food safety issues in Pakistan

Pakistan has a lot of problems with food safety, but the adulteration of food products is the most serious issue. It is a severe issue since, as compared to pesticide residues, ready-to-eat food items are directly contaminated. The most common adulterants used to alter products are tap water, hydrogen peroxide (H2 O2), formalin, carbonates and bicarbonates, caustic soda, and ammonia, which are all directly added to milk to increase its volume and maintain its physical properties. Indirect adulterants also include various antibiotics, which are given to cows to increase milk production (Akhtar *et al.,* 2020) reported that 80% of milk sold in tetra packs or loose packaging is contaminated. Similar to this, a number of other products, including drinks, baked goods, spices, and bottled water, have also been shown to contain adulterants (Khan *et al.,* 2020) The preponderance of pesticide residues in food items with plant origins is the

second significant problem for the safety of Pakistani meals. These pesticide residues enter the bloodstream and negatively impact the body's metabolism, which lowers immunity. Several illnesses, including various forms of carcinomas, may be brought on by lowered immunity.

Several diseases, including various forms of carcinomas, may be brought on by reduced immunity. In Pakistan, six main groups of pesticides—carbofuran, endosulfan, methyl parathion, monostrophes, bifenthrin, and cyhalothrin—are used extensively in agricultural products. High levels of pesticide accumulation have been discovered in various parts of the country, including Hyderabad, where 61% of locally grown fruits and vegetables were found to have accumulation levels of pesticide residues that exceeded the legal limit. The proliferation of foodborne viruses and microorganisms is Pakistan's third and most recent threat to food safety.

These may include fungi, bacteria, or viruses that cause food-borne illnesses such listeriosis (caused by Listeria mono-cryogens), botulism (caused by Clostridium botulinum), or mycotoxicosis (caused by different fungal species, including aflatoxins) (type of carcinoma). High rates of liver conditions and hepatic cancer are thought to be caused by the aflatoxin contamination of Pakistani foods (Khan *et al.,* 2020).

National food safety legislations

Pakistan has supported a number of laws relating to food safety. The West Pakistan Pure Food Ordinance from 1960 and the Cantonments Pure Food Act from 1966 are the main Acts. These laws guarantee food safety throughout the whole food preparation process. Production, processing, shipping, storage, and eventually client sales are the aforementioned steps. Local government bodies are required to see that these ordinances are followed (Holleran *et al*., 1999) However, these laws have come under fire for a number of things, one of which is that customers are not provided with compensation when they consume poor-quality food items.

Food and drink adulteration are covered under the Pakistan Penal Code's provision on consumer compensation, but not the aforementioned problem. Contrarily, the problem of compensation has been unilaterally settled by Article 65 of the Indian Food Safety and Standards Act, which came into effect in 2006. (India ministry of law., 2006). Additionally, the food safety of items sold on the street is not adequately addressed, despite the fact that this is a culture that is booming in Pakistan and offers low- and middle-income people an easy way to start their own business at no expense. Despite the fact that most street sellers find their food goods to be affordable and popular choices, there is always a danger that customers might have health problems. Numerous studies conducted in underdeveloped nations have emphasized even the most minimal food hygiene of such goods (Iqbal *et al*., 2010).

The major causes of microbiological contamination of raw food include tainted water, improper cleaning of utensils, ill and infected workers, inadequate cooking, and inadequate heating of food. In a study of the microbiology of juice sold on the street in Pakistan, it was revealed that, respectively, yeast, moulds, and E. coli were present in all of the samples examined (Hussain *et al*., 2007).

The World Health Organization (WHO) urges nations to employ a holistic strategy to defining and enforcing rules limiting street vended food in order to lower these dangers. Street sellers must be registered and given a health checkup to check for contagious illnesses. Numerous studies have revealed that the majority of street sellers and food handlers

have low awareness of food safety, although age or gender have little bearing on this knowledge ((Hussain *et al*., 2008).

Pakistan has not yet developed a work plan for the security of foods sold on the street. All hotels and restaurants are required by the Act of Pakistan Hotels and Restaurants to register formally, and in the event of a breach, the owner must pay a fine (Khan *et al*., 2020). Through registration, the shop may verify that all of its employees have obtained medical fitness certifications and that they meet minimal health and hygiene criteria.

How to ensure food safety?

It's critical for businesses in the food sector to guarantee that product is produced in a secure and sanitary setting. There are many things to think about when developing a culture that values food safety and cleanliness, but failing to follow the rules for food safety might result in outbreaks of bacteria that cause foodborne diseases, such salmonella, E. coli, and campylobacter.

Because the term "food safety" is frequently used simultaneously with other terms, it is important to define it before discussing how to increase food safety in a business.

A top-level understanding of the distinction is rather straightforward. Food safety encompasses all measures used to ensure that food is suitable for human consumption (Gallo *et al.,* 2020) The Food Standards Agency (FSA) is responsible for overseeing food safety, which is supported by UK laws.

Food Hygiene: mostly bacterial contaminants, but also chemicals and physical risks, are the source of foodborne diseases, which are often more particularly focused on. According to UK authorities, ensuring that food doesn't hurt people due to factors like allergies and pathogens is the main goal of food hygiene. (Macheka *et al*., 2013)

In order to maintain adequate food hygiene and safety, which is essential for a successful business, here are 10 ways to achieve it:

- ✓ **Plan the design and location of your facilities**

Figure out which areas are known to be pest hotspots and are vulnerable to pollution when deciding where to locate your business because these places are more likely to produce contamination. Make sure the area is built to prevent contamination and has functioning hand washing facilities (Martinez-Dominguez *et al.,* 2015).

- ✓ **Understand your machinery and production lines**

Make sure you use equipment that meets food safety laws to ensure that your food handling and processing is always done to a high degree. Design your manufacturing lines and machinery such that it is easy to clean, maintain, and check that everything is operating properly (Mortimore and Wallace, 2013) (Martinez-Dominguez *et al.,* 2015).

- ✓ **Take a proactive approach to maintenance**

Food processing equipment needs routine maintenance; keep an eye out for symptoms of wear and tear or insect damage that might affect output or contaminate the products. Additionally, it's important to evaluate the property and take care of any faults before they get worse (Zanin *et al.,* 2021).

Put measures in place to control pests

Pests including insects, rodents, birds, and animals may spread themselves fast on your property, transmit disease, contaminate products with foodborne illnesses, or cause expensive damage (Kishor *et al.,* 2020) To keep pests out of your business and prevent them from settling there, the premises should be sealed, cleaned, inspected, and clutter-free (Gil *et al.,* 2015).

- ✓ **Provide appropriate waste management**

A critical part of food safety is developing processes for the lawful storage and disposal of waste. A buildup that can attract pests and increase the danger of contamination should be avoided by providing waste with proper storage spaces and containers and routinely discarding it (Lin *et al.*, 2009).

- ✓ **Clean regularly**

To lower the threat of contamination, it is essential to regularly clean and disinfects facilities used for food preparation as well as the apparatus and equipment used during food processing. To guarantee adequate decontamination, appropriate disinfectant products should be used, but always adhere to the manufacturer's instructions (Jay *et al.*, 1999).

- ✓ **Be aware of environmental hygiene**

Despite the fact that you should clean food preparation places, utensils, and equipment often (Ahmad *et al*., 1989), doing so increases the risk of potentially harmful chemicals contaminating produce while food is being produced. As a result, you must put precautions in place to assist avoid unintentional environmental pollution (Darko *et al*., 2015).

- ✓ **Ensure personal hygiene is met**

As bacteria easily spreads through biological and physical contamination, adequate cleaning facilities should be provided for staff to maintain a high standard of personal hygiene. Staff should wear clean clothing, wash their hands frequently, cover or tie back their hair and remove jeweler (except wedding bands) (AOAC.,2007).

- ✓ **Maintain food safety during handling, storage and transport**

To prevent products from being contaminated, good hygiene procedures must also be followed during the handling, storage, and shipping phases. In order to preserve the product from spoiling during these stages, remember to manage the temperature, keeping cold food cold (below 5°C) and hot food hot (above 60°C) (Tsola *et al*., 2008).

- ✓ **Educate staff sufficiently**

All employees should get proper training and supervision in personal hygiene, cleaning, food preparation, food storage, trash disposal, and pest control techniques. This will demonstrate to them the value of food safety and how they may take proactive steps to lower the risk of contamination and foodborne diseases in your company (Thayer et al., 2004).

Ensure food safety at home

At home its easy to ensure food safety some steps are mentioned bellow:

4 Basic Steps for Food Safety

Foodborne infections affect millions of people each year and might make you feel like you have the flu. Foodborne infections can potentially result in major health issues, including death (Ramakrishnan *et al.*, 2021) To keep you and your family safe, adhere to these four guidelines.

1. Clean

Always wash your food, hands, counters, and cooking tools.

- Wash hands in warm soapy water for at least 20 seconds. Do this before and after touching food (Romero-González, 2015)
- Wash your cutting boards, dishes, forks, spoons, knives, and counter tops with hot soapy water. Do this after working with each food item (Lehotay, 2011)
- Rinse fruits and veggies.

- Clean the lids on canned goods before opening (Davies *et al.,* 2014).

2. Separate (Keep Apart)

Keep raw foods to themselves. Germs can spread from one food to another.

- Keep raw meat, poultry, seafood, and eggs away from other foods. Do this in your shopping cart, bags, and fridge.
- Do not reuse marinades used on raw foods unless you bring them to a boil first.
- Use a special cutting board or plate for raw foods only (Pico *et al.,* 2021).

3. Cook

Foods need to get hot and stay hot. Heat kills germs.

- Cook to safe temperatures:
  - Beef, Pork, Lamb 145 °F
  - Fish 145 °F
  - Ground Beef, Pork, Lamb 160 °F
  - Turkey, Chicken, Duck 165 °F
- Use a food thermometer to make sure that food is done. You can't always tell by looking (Parra *et al.,* 2014) (Pico *et al.,* 2006).

4. Chill

Put food in the fridge right away.

- 2-Hour Rule: Put foods in the fridge or freezer within 2 hours after cooking or buying from the store. Do this within 1 hour if it is 90 degrees or hotter outside (Abrar *et al.,* 2009)
- Never thaw food by simply taking it out of the fridge. Thaw food:
  - In the fridge
  - Under cold water
  - In the microwave
- Marinate foods in the fridge (Roccato *et al.,* 2017).

Principles of Food Control: Issues for Consideration

National authorities must take into account a variety of principles and values that support food control activities while attempting to develop, update, improve, or otherwise change food control systems, including the following: maximizing risk reduction by completely implementing the preventive principle along the whole food supply chain; addressing the farm-to-table continuum; establishing emergency response protocols for dealing with specific dangers (such as product recalls); creating food control techniques based on research; deciding on priorities based on an examination of risks and the effectiveness of risk management; launching comprehensive, coordinated programs that address risks and their effects on the economy; and Realizing that food control is a duty that all stakeholders must actively participate in ((Lewis *et al.,* 2003).

Developing a National Food Control Strategy

Analyzing the current circumstances and creating a national food control plan is necessary for achieving the goals of the food control system. The programming used to accomplish these goals is frequently region. They are affected by present or developing food safety and quality concerns, just as socioeconomic factors. These programs must also take into account global standards, global commitments to food safety, and global perceptions of food dangers. As a result, it's crucial to build a national plan and conduct a thorough analysis of every issue that might affect the goals and effectiveness of the food

control system when it is established (Casani *et al.*, 2006).

(a) Collection of Information

This is accomplished by gathering and compiling relevant information into a Country Profile (See Annex 8). This information serves as the foundation for developing strategies, with stakeholders coming to agreements on goals, priorities, rules, the functions of various ministries and agencies, industry obligations, and implementation timelines. Particularly, significant issues related to the prevention and control of foodborne illnesses are identified in order to apply efficient solutions to these issues (Zwietering, 2005).

Development of Strategy

In order to establish an integrated, coherent, effective, and dynamic food control system and to decide on goals that assure consumer protection and advance the nation's economic development, a national food control plan must be created. When numerous food control agencies are engaged but there is no current national policy or overarching coordinating structure, such an approach ought to improve coherence (Afzal, 2010).

In these situations, it avoids complication, duplication of work, performance inefficiencies, and resource waste (Okpala and Korzeniowska, 2021).

It is not easy to develop food control plans with clearly defined objectives, and determining the top priorities for public investment in food management can be difficult. The plan should be multi-sectoral in nature and concentrate on the need for food security as well as consumer protection from tainted or mislabeled products. The growth of the food industry, the interests of farmers and food producers, and the economic interests of the nation in terms of export/import commerce should all be taken into account concurrently. Priorities for action should be determined using a risk-based approach in strategies. Timelines should be established and areas for both required and optional activities should be clearly stated. The need for human resource development and strengthening of infrastructure such as laboratories should be also considered (Even and Nadkarni, 2012)

Certain food control measures need large fixed capital expenditures for both equipment and labor. Although it is simpler to justify these expenditures for bigger businesses, it may not be fair to impose them on smaller businesses that could coexist with larger businesses. As a result, it is preferable to phase in such measures gradually. For instance, nations may give small businesses more time to implement HACCP (Lachin, 2000)

The plan will be impacted by the nation's economic size, level of food industry complexity, and stage of growth. The ultimate plan should incorporate: a national food control policy with clear goals, a method for implementation, and benchmarks; the creation of suitable food laws or the amendment of current legislation to accomplish the goals outlined in the national strategy; the creation or updating of food laws, standards, and codes of conduct, as well as their synchronization with global needs; an initiative to improve food surveillance and control mechanisms; promotion of food safety and quality improvement systems, such as the implementation of HACCP-based food control programmes; creation and administration of training programmes for food handlers, processors, analyzers, and inspectors; improved contributions to research, data collecting, and monitoring of foodborne diseases, as well as building up the system's scientific competence; and promoting

consumer education and other neighborhood engagement programmed (Hoste *et al*.,2015).

Conclusion

If immediate action is not done to address the problem, Pakistan's existing food safety scenario will continue to have a significant impact on the country's economic infrastructure. The increasing prevalence of food-borne diseases, particularly diarrheal disease among children, is concerning since Pakistan's future relies on having a healthy population. Furthermore, Pakistan urgently has to address the problem of food safety scientifically. The majority of Pakistani foods, according to evidence from the literature, are seriously linked to pollutants such as heavy metals, pesticide residues, and adulterants, which are a terrible threat to human health and wellness. Some practical, systematic, and combative measures that can be taken to reduce the risk of microbiological and chemical foodborne diseases and to minimize their impact include food hygiene training as a means of improving food safety, strong consumer protection groups, awareness of food safety and the right to obtain safe food, strict adherence to food laws, new legislation with changing food safety perspectives, and the recognition of this difficult problem by all stakeholders.

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