

## AN ANALYSIS OF FOOD SAFETY PRACTICES ADOPTED BY FOOD VENDORS

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### ABSTRACT

*This study investigates the adoption of food safety measures among food vendors in Faisalabad, Punjab, Pakistan, focusing on the role of the Punjab Food Authority (PFA) in regulating food safety practices. Data were collected from 120 food vendors operating on 12 main roads of Faisalabad through face-to-face interviews using a validated and pretested interview schedule. The results reveal a lack of awareness about food laws, with 72.5% of respondents unaware of regulations, and insufficient adoption of precautionary measures such as wearing gloves and hair caps. While all of the vendors reported adherence to cleanliness and staff medical requirements, only 26.66% noted receiving food safety instructions from PFA staff. Challenges in compliance included high fines, communication barriers, and perceptions of inconsistent treatment by PFA. Despite these challenges, vendors acknowledged the necessity of improved food safety practices. The study underscores the critical need for enhanced training and regular monitoring by regulatory authorities to ensure food safety compliance and minimize health risks.*

**Keywords:** *Food Authority, Vendors, Safety, Awareness, Adoption*

### INTRODUCTION

Food is a basic necessity for sustaining a healthy life, as it provides essential nutrients for growth and overall well-being. With the global population growing, the demand for safe, nutritious, and sufficient food is rising. However, the supply of inadequate, poor-quality, and unsafe food affects billions, contributing to higher malnutrition rates (Asghar et al., 2023). Poor quality food are available especially in the developing and under developed countries of the world, Common practices associated with food fraud include food adulteration, counterfeiting, tampering, and the

deliberate addition of harmful contaminants at various stages of the food supply chain (Saeed et al., 2019). This is more common in the vendor and some restaurants especially where the food authority staff can't reach, as street food vendors in developing countries provide affordable, diverse food options, serving various social groups. However, due to their informal nature, they often escape regulatory oversight, leading to unsafe practices. Poor infrastructure, inadequate sanitation, and lack of hygiene contribute to microbial hazards, pollution, and contamination,

raising the risk of foodborne diseases and health concerns (Rakha et al., 2022).

Food has been of utmost importance to humanity since the beginning of time. It not only provides the energy needed for growth but also meets essential dietary needs. Our nutrition, health, and both physical and mental capabilities are closely tied to the food we consume. The quest for access to high-quality food has been a central focus of human effort throughout history. Ensuring food safety is a fundamental necessity and a shared concern for all. In reality, food security goes beyond just production, distribution, and consumption—it encompasses a broader set of challenges and solutions (Ali and Yasmin, 2019). Feeding the growing global population sustainably is emerging as one of the world's most pressing challenges. Managing food production in an environmentally sustainable way is essential. Pakistan, with its diverse climatic and ecological zones, supports the cultivation of a wide variety of food crops, making it an important player in addressing this challenge (Arshad and Shafiqat, 2012). The government has introduced several initiatives to improve Pakistan's nutritional profile, such as the Pakistan Nutrition Initiative (PANI) and the National Multi-Sector Nutrition Program aimed at reducing stunting and other forms of malnutrition. These efforts have been backed by an allocation of Rs 8.5 billion to address the country's nutritional challenges (Govt. of Pak, 2024).

The severe and widespread impact of malnutrition is well recognized globally. In Pakistan, 44% of children under the age of 5 suffer from stunting, limiting their potential for full development. Nutrient deficiencies and increasing rates of obesity further compromise health and hinder progress. The complexity of this issue is exacerbated by factors such as limited access to nutritious food, rapid population growth (particularly in urban areas), poverty, security challenges, and susceptibility to crises (Ali et al., 2024).

Food safety has become a significant global issue, with many developing countries, such as Pakistan, facing serious threats from foodborne illnesses due to food adulteration and contamination. The food available is often compromised by physical,

biological, and chemical contaminants, which pose considerable health risks (Akhtar, 2015). In Pakistan, Punjab Food Authority (PFA) was founded by the Punjab Government to provide hygiene food products to Punjab residents and to raise public awareness regarding the importance of food protection. It was founded in 2011. It was the country's first such agency. In 2011, the "Punjab Food Authority Act 2011" and the "Pure Food Rules 2011" were approved to implement the legislation's quality requirements Khan et al. (2020)

This study is crucial due to the growing need for safe food practices, particularly among informal food vendors in cities, where foodborne illnesses and malnutrition rates are concerning high. Informal vendors, especially street food sellers, often operate outside of regulatory oversight and lack proper sanitation and hygiene facilities, increasing the risk of contamination and foodborne disease. The presence of food fraud practices, such as adulteration and counterfeiting, further compromises the safety of food available to the public. In Pakistan, rapid population growth, urbanization, and high poverty rates intensify the demand for affordable food, heightening reliance on these informal sources. National initiatives like the Pakistan Nutrition Initiative (PANI) aim to reduce malnutrition and stunting, but without addressing food safety practices at the vendor level, health risks persist. This study seeks to examine the safety practices of food vendors, identify existing challenges, and offer recommendations to enhance regulatory and hygiene standards. The findings will provide insights for policymakers and public health authorities to improve food safety, protect public health, and support food security in underserved communities.

## Methodology

### Study area

This study was conducted in City Faisalabad of Punjab Pakistan. The study area was selected conveniently. Faisalabad, originally known as Lyallpur, is Pakistan's third-most populated city, after Karachi and Lahore, and the second-largest in Punjab's eastern province. The district consists

of five tehsils, named as City Faisalabad, Sadar Faisalabad, Chak Jhumra, Jaranwala and Sumandri.

### **Sample of the study**

This study was conducted in the city Faisalabad, that was selected conveniently. The study area consists of 12 main roads of city Faisalabad. The respondents having their own restaurants and hotels on main roads. Ten food vendors and restaurants were selected from each road for data collection. Thus it makes the sample size of 120 respondents, these food vendors were selected through conveniently.

### **Preparation of interview schedule**

The interview schedule was prepared while keeping in view the objectives of the study.

### **Pre-Testing of Interview Schedule**

The experts of the field helped the researchers to ensure the validity of the interview schedule, after finalizing the interview schedule, it was pretested on 15 respondents to determine its validity. As a result of pre-testing, the researcher checked validity of the data collected and necessary amendments were made to give it final shape. The calculated value of Cronbach was 0.69, it depicted the instrument is reliable. For computing the alpha value computer operated statistical tool named as Statistical Package for Social Science (SPSS) was used.

### **Interviewing the respondents**

Face to face interviews were conducted to collect data. The researcher interviewed respondent at their hotels and restaurants. To obtain accurate information, questions were asked in the local language (Punjabi), the interview schedule was prepared in English. While collecting the data, the researcher tried to create an informal meeting with the respondents.

### **Data analysis**

The collected data were analyzed with the help of available software, SPSS. Different statistical values were computed.

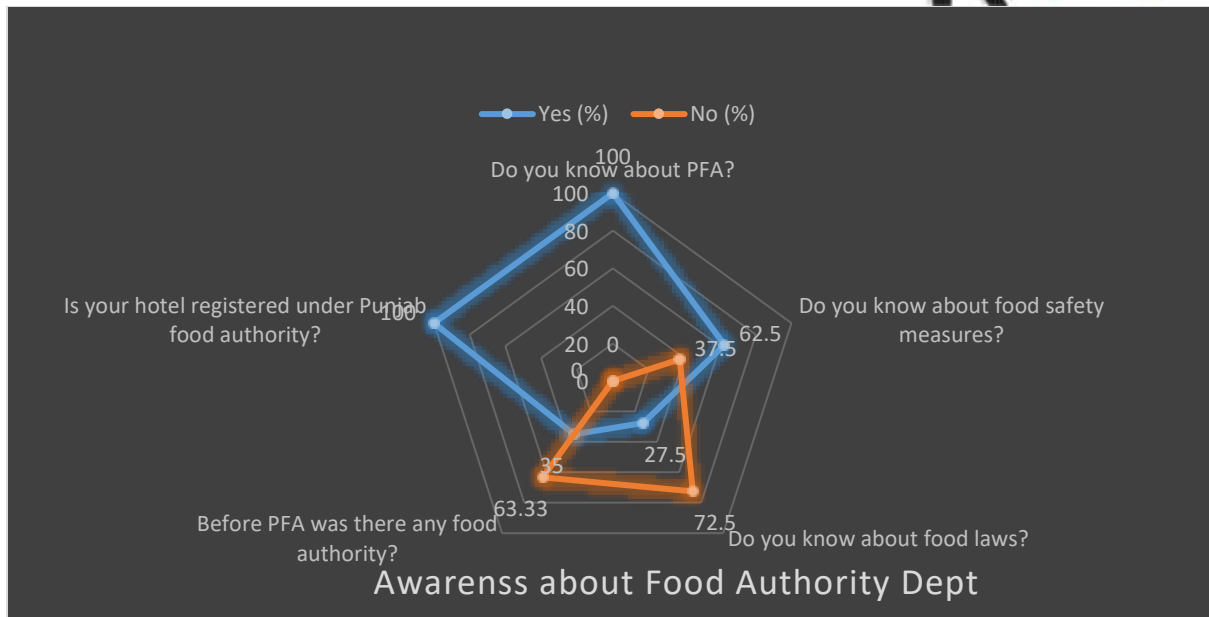
### **Problems faced during data collection**

- It was very difficult to collect the data from the respondents due to the very hot weather condition.
- The respondents were located at the different location, so there was the issue of conveyance to access them.
- The respondents were illiterate or having less qualification, therefore it was very difficult to collect the data from them
- Some of the respondents were dubious of the study's purpose and were afraid of telling the truth.
- Some of the respondents were much afraid of Punjab food authority to provide data.
- It was difficult to contact with respondents because they have shortage of time due to their field activities.
- Despite all of the difficulties, the researcher tried his best to collect data.

### **Results and Discussion**

#### **Awareness about the Food Authority Department**

The Punjab Food Authority Act, 2011, assigns the Punjab Food Authority the responsibility of regulating and monitoring the food industry to ensure compliance across all stakeholders, including farmers, manufacturers, and distributors, to provide safe food. Its functions include formulating standards, guidelines, and enforcement systems for food safety and quality, establishing and upgrading food laboratories, and managing licensing, recalls, and legal actions. The authority also provides scientific advice, conducts training, promotes awareness, certifies food exports, ensures traceability, and undertakes surveillance to analyze and disseminate data on food and nutrient intake. The respondents were inquired about their awareness about the Food authority and their rules and laws



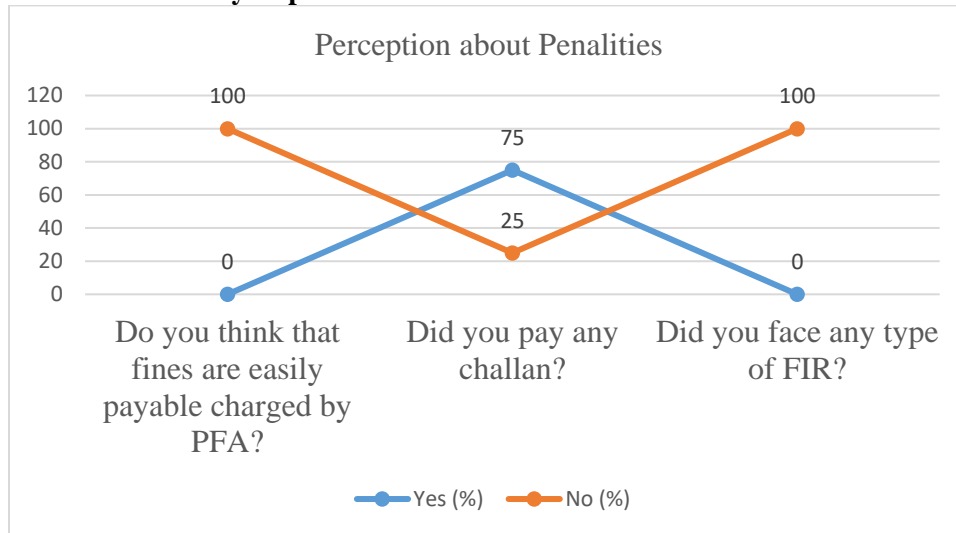
Data show that all of the respondents know about Punjab food authority (PFA). Among all only 62.5% respondents know about food safety measures. A vast majority (72.5%) of the respondents did not know about food laws and regulations. Majority (63.33%) of the respondents said that there was no any authority like Punjab food authority before the establishment of PFA. During the discussion, respondents revealed that sometimes Deputy commissioner had to visit to check out food safety. All of the respondents said that they had registered their hotel / restaurant under Punjab food authority. The findings indicate that food vendors and restaurant staff were not placing sufficient emphasis on precautionary measures to ensure food quality. During discussions, it was revealed that the majority of vendors and chefs were unaware of the standards for quality food and the necessary precautions for safe cooking. Tuglo et al. (2021) emphasized that food safety knowledge, attitudes, and practices (KAP) are critical for minimizing the risk of foodborne illnesses. A lack of proper food safety knowledge, poor attitudes, and incorrect handling practices can lead to significant health risks. Therefore, it is essential that food safety KAP are well understood and implemented to prevent contamination and ensure that food is safe during preparation, processing, and serving. So, there is need to educate the vendors and chefs about the food safety standards. As reported by Ahmed et

al. (2017) that there is a critical need to educate vendors on food safety knowledge and practices before they start selling food. Local and provincial governments should enforce food safety standards in line with WHO recommendations and regularly monitor sanitary and hygiene conditions to ensure compliance. Lee et al. (2017) reported that food handlers play a crucial role in maintaining food safety and preventing contamination at every stage of the food supply chain. Ahmed et al. (2017) reported that Street food vendors in Pakistan often lack essential knowledge about proper food handling, personal hygiene, and safe food storage practices. Common issues include inadequate handwashing, failure to cover food, and limited awareness of foodborne illnesses, all of which hinder compliance with food authority regulations. Sara et al. (2023) Street food vendors in Pakistan are often unaware of the health risks posed by using rancid oil, unsanitary food handling practices, and inadequate cleaning methods. This lack of awareness greatly affects their compliance with food authority regulations and compromises overall food safety standards. Atter et al. (2015) reported that lack of adequate local infrastructure, poor access to sanitary facilities, insufficient training in food hygiene, substandard sanitation, and limited knowledge of personal hygiene among street food vendors have led to numerous challenges. From the above discussion, it is clear

that there is a need to educate food vendors and restaurant owners about food safety rules and laws. Unsafe food can lead to illnesses in the community, negatively impacting the health

system of any country. Strict rules and regulations should be implemented to ensure the provision of safe food. Anyone violating these rules should be punished or penalized without discrimination.

### Penalties by the Food Authority Department



All respondents stated that the fines imposed by the Punjab Food Authority (PFA) are difficult to pay, often exceeding manageable limits. An overwhelming majority (90%) of respondents reported having paid challans, which they presented as evidence. Notably, none of the respondents had faced an FIR filed by the food authority staff. During discussions, the respondents suggested implementing stricter penalties and heavier fines for those who violate the rules and regulations of the food authority as reported by Bert et al. (2022), they reported that Food authorities have implemented regulations to combat food fraud, largely in response to historical public health concerns. These regulations often enforce compliance through penalties, such as fines or "challans," imposed on violators. They further added that Food authority

staff offer guidance to food operators on identifying potential vulnerabilities and implementing strategies to mitigate the risk of fraud. From the above findings it is clear that no one has faced the FIR, it might be difficult to accept that all of the food handlers are following the rules and laws of Food authority so from this it can be concluded that there is need to implement the laws properly as reported by Sabreen (2021), he stated that existing laws governing the production and trade of food items are inadequately enforced. The government should prioritize strengthening the implementation of these regulations. Pakistan lacks a comprehensive legal framework for halal food, food safety, and traceability. Establishing a centralized authority to oversee and ensure the enforcement of these laws is essential.

**Table 1. Distribution of the respondents according to their adoption of different safety measures**

| Adoption of practices   | Yes |       | No |       | Always |       | Sometimes |       |
|---|-----|-------|----|-------|--------|-------|-----------|-------|
|   | f   | %     | f  | %     | f      | %     | f         | %     |
| Do you wash your hands before cooking?                              | 120 | 100   | 0  | 0     | 120    | 100   | 0         | 0     |
| Do you wash your hands after cooking?                               | 120 | 100   | 0  | 0     | 120    | 100   | 0         | 0     |
| Do you wear food safety cap while cooking?                          | 87  | 72.5  | 33 | 27.5  | 60     | 68.96 | 27        | 31.03 |
| Do you cut your nails at time?                                      | 77  | 64.16 | 43 | 35.83 | 50     | 64.93 | 27        | 35.06 |
| Do you wear gloves while cooking?                                   | 63  | 52.5  | 57 | 47.5  | 63     | 52.5  | 0         | 0     |
| Do you use hair catcher?  | 33  | 27.5  | 87 | 72.5  | 22     | 66.7  | 11        | 33.3  |
| Do you clean your hotel/restaurant daily?                           | 120 | 100   | 0  | 0.0   | 120    | 100   | 0         | 0     |
| Do you conduct medical of your staff on regular basis?              | 120 | 100   | 0  | 0     | 77     | 64.16 | 43        | 35.83 |
| Do you smoke while working?   | 35  | 29.16 | 85 | 70.8  | 35     | 100   | 0         | 0     |
| Do you use fresh water?   | 120 | 100   | 0  | 0     | 120    | 100   | 0         | 0     |
| Washing area should be separate from kitchen?                       | 120 | 100   | 0  | 0     | 120    | 100   | 0         | 0     |
| Do you use food safety measures at all time?                        | 120 | 100   | 0  | 0     | 120    | 100   | 0         | 0     |
| Do you think that chef should be free from disease?                 | 120 | 100   | 0  | 0     | 120    | 100   | 0         | 0     |
| Did PFA visit inside your kitchen?                                  | 93  | 77.5  | 27 | 22.5  | 70     | 75.26 | 23        | 24.73 |
| Did PFA field staff gives instructions to the chef when they visit? | 32  | 26.66 | 88 | 73.33 | 32     | 100   | 0         | 0     |

Table 1 reveals the hygiene and food safety practices adopted by respondents. All of the respondents reported always washing their hands before and after cooking. A study by Kanwal (2022) revealed that 89% of street food vendors failed to maintain adequate hygiene or wear appropriate clothing, and 71% neglected to wash their hands before preparing food. A majority (72.5%) stated that they wear food safety caps while cooking. Among the 87 respondents who reported wearing caps, 60 (68.96%) indicated they always wear them, while 27 (31.03%) reported occasional use. About 64% of respondents said they cut their nails regularly; of these, 65% consistently maintained nail hygiene, while 35% reported doing so occasionally. A significant proportion (72.5%) admitted to not using hair catchers while cooking or serving meals. The findings differ from those of Ali et al. (2022), who reported that 61.11% of food handlers covered their heads while working, compared to 29.16% who did so occasionally. Similarly, Ibrahim et al. (2021) found that only 4% of vendors practiced proper hygiene, 40% washed their hands before

food preparation, and merely 1% wore gloves during food handling. The practices reported in this study are notably better than those in the cited literature. All respondents stated that they clean their hotels/restaurants daily and maintain medical records for their staff. Of these, 64% conducted medical checkups regularly, while 36% performed them occasionally but not consistently. The findings of Ahmed et al., (2017), were not in line with the study, according to them none of the food vendors underwent medical examinations before starting their business or could provide health certificates. However, over 80% of food handlers expressed a willingness to undergo medical examinations to help prevent foodborne diseases. Additionally, about 52.5% of respondents reported not wearing gloves while cooking, highlighting a significant gap in food safety practices. Regarding smoking habits, 30% of respondents admitted to smoking while working, whereas the majority refrained from smoking during work hours. Additionally, all respondents (100%) confirmed the use of fresh water and adherence to food safety measures at all times.

Different results reported by Ahmed et al., (2017), according to them over 75% of street food vendors used tap water for food preparation, while only a small percentage relied on borehole water. They also unanimously agreed that chefs and hotel staff should be free from diseases. Regarding inspections, 78% of respondents reported that the Punjab Food Authority (PFA) visits their kitchens. Of these, 75.26% stated that visits occur regularly, while 24.73% mentioned occasional inspections. As reported by Mirna et al. (2022), food authorities conduct kitchen

inspections to protect consumers from foodborne risks. These inspections are influenced by factors such as staff training, inspection frequency, and laboratory capabilities. The primary objective is to ensure compliance with safety standards, primarily through government regulations, with modern approaches focusing more on prevention than enforcement. These findings indicate a higher compliance rate with hygiene and safety standards compared to previously reported studies, reflecting improved practices in the current sample.

**Table 2 Distribution of the respondents according to their views about visit of Punjab Food Authority staff**

| Activities of staff when they visit   | Yes |       | No  |       | Always |       | Sometimes |       |
|---|-----|-------|-----|-------|--------|-------|-----------|-------|
|   | f   | %     | f   | %     | f      | %     | f         | %     |
| Did PFA check dressing of your cook and hygiene of staff members of hotel/restaurant? | 120 | 100   | 0   | 0     | 120    | 100   | 0         | 0     |
| Did PFA allow you to wear watch, chain and ring while cooking?                        | 0   | 0     | 120 | 100   | 0      | 0     | 0         | 0     |
| Did PFA taste your food?  | 72  | 60    | 48  | 40    | 45     | 62.5  | 27        | 37.5  |
| Did PFA check adulteration in your food by testing?                                   | 120 | 100   | 0   | 0     | 120    | 100   | 0         | 0     |
| Did PFA check expiry dates of your kitchen stuff?                                     | 120 | 100   | 0   | 0     | 120    | 100   | 0         | 0     |
| Did you ever feel insecure while dealing with PFA?                                    | 25  | 20.83 | 95  | 79.16 | 0      | 0     | 0         | 0     |
| Does PFA treat you in a professional way?   | 33  | 27.5  | 87  | 72.5  | 22     | 66.66 | 11        | 33.33 |

Table 2 shows the result that all of the respondents said that PFA always check dressing and hygiene of hotel/restaurant staff. All respondents stated that PFA did not allow us to wear watch and ring while cooking. Majority (60%) of the respondents said that PFA taste their food whenever the staff visit their restaurant. Out of them 62.5% reported that PFA always taste their food, while remaining (37.5%) said that PFA taste their food sometimes. All of respondents said that PFA always check adulteration in food by testing and they check expiry dates of our kitchen stuff by PFA. Majority 95 (79.16%) respondents said that they don't feel insecure while dealing with PFA. Majority 87(87.5%)

respondents said that PFA did treat them in a professional way. 22(66.66%) respondents said that PFA always did not treat them in a professional, while 11(33.33%) said that sometimes PFA treat them in a professional way. As found by Peralonso (2013), the major focus of the food authority staff is ensuring the safe food and implementation of the food laws. For this purpose, there is need to educate the food handler about the preparation of safe and quality food for the community as reported by Simran et al. (2002) that there is a pressing need for regulatory measures, highlighting that joint efforts by both vendors and authorities are crucial to enhance hygiene and food handling practices among

vendors in Jaipur. Similarly finding also reported by Lihua et al. (2019) that there is also the need for stronger policies and strategies by government

agencies to improve food safety practices among street food vendors in Handan, China.

**Table 3 Perception about the working of Punjab Food Authority staff**

| Perceptions about the working of PFA Staff             | Yes |       | No  |       | Always |       | Sometimes |       |
|--|-----|-------|-----|-------|--------|-------|-----------|-------|
|  | f   | %     | f   | %     | f      | %     | f         | %     |
| Communication problems                                 | 41  | 34.16 | 79  | 65.83 | 24     | 58.53 | 17        | 41.46 |
| Fine problems  | 120 | 100   | 0   | 0     | 0      | 0     | 120       | 100   |
| Do they fine with their own choice?                    | 120 | 100   | 0   | 0     | 120    | 100   | 0         | 0     |
| Did PFA pressurize you?                                | 70  | 58.33 | 50  | 41.66 | 40     | 57.14 | 30        | 42.85 |
| Do they seal your hotel/restaurant at the spot?        | 70  | 58.33 | 50  | 41.66 | 45     | 64.28 | 25        | 35.71 |
| Do you think that license is the main issue for PFA?   | 120 | 100   | 0   | 0     | 120    | 100   | 0         | 0     |
| Do you think PFA treats all vendors in the same way?   | 55  | 45.83 | 65  | 54.16 | 13     | 23.63 | 42        | 76.36 |
| Do you feel free to visit PFA office without any fear? | 120 | 100   | 0   | 0     | 120    | 100   | 0         | 0     |
| Do you think that they visit only large food vendors?  | 0   | 0     | 120 | 100   | 0      | 0     | 0         | 0     |
| Do they provide you rate list on daily basis?          | 0   | 0     | 120 | 100   | 0      | 0     | 0         | 0     |
| Do you have your own rate lists of food?               | 120 | 100   | 0   | 0     | 120    | 100   | 0         | 0     |

Table 4 shows Results depicts that about one third (34.16%) of the respondents have communication problems while talking with PFA staff, but majority (65.83%) were not facing such issues. During the discussion vendors suggested that food authority staff should focus on the education and training of the food handlers not on the imposing fine as reported by Ibrahim et al. (2021), they recommended that food safety regulatory bodies should prioritize large-scale awareness campaigns over imposing heavy fines for revenue generation. So the practices of imposing fine by the food authority staff on minor negligence should be discouraged by higher-ups. Majority (58.33%) respondents said that PFA pressurize us. They reported that staff pressurize us to sale branded foods, if you will not sale, we will seal your hotel/restaurant charges to you. According to the respondents (58.33%) staff seal the restaurants at

the spot if they note any minor fault in the food and kitchen or staff dressing. Respondents reported that they should warn us if they note any negligence or any deficiency in our system. If we don't follow their recommendation after the instruction. Then they have right to seal the restaurants. But some respondents stated that PFA did not seal their hotel/restaurant at the spot but they warn in their first visit. According to all respondents the license is the main issue for PFA. If someone don't have license, he could not run your hotel/restaurant. According to the respondents if someone don't pay his license fees he would be notified by PFA. More than a half (54.16%) respondents stated that PFA staff did not treat all vendors in a same way. All of the respondents said that they always feel free to visit PFA office without any fear. They also stated that staff did not visit only large food vendors, they



also visit small and large vendors. Respondents (100%) also reported that PFA did not provide us rate lists on daily basis, we have our own rate lists of foods. Respondents (100%) were agreed that washing area should always be separate from kitchen. Similar action of food authority staff also reported by Adiga et al. (2012) they stated that Kitchen food safety is essential, as poor food handling practices can result in bacterial contamination. A study found pathogenic bacteria in multiple areas within kitchens, highlighting the importance of regular cleaning to prevent foodborne illnesses. Key obstacles to enforcing food safety regulations include insufficient knowledge, unclear standards, negative attitudes, time limitations, low motivation, lack of experience, inadequate facilities, and insufficient equipment. According to above findings there is need to improve the working of the staff as well structure of the department as identified by Dogar and Yaqoob, (2023), a comprehensive and up-to-date regulatory framework to address emerging food safety challenges is lacking. Existing regulations, such as the Punjab Pure Food Regulations, have remained unchanged since 2018, undermining effective implementation and enforcement efforts.

### Conclusion and Recommendations

The awareness of food laws among food vendors is not satisfactory. Food vendors and restaurant owners should participate in awareness campaigns and programs conducted by the food authority in their areas or should listen keenly the program which are broadcasted on television. It is essential for vendors to have a comprehensive understanding of food safety practices, and these practices should be strictly implemented. Furthermore, the treatment by food authorities should be consistent and impartial for all vendors. To ensure compliance, proper monitoring mechanisms must be established, including the regular provision of updated rate lists. Addressing communication gaps between food vendors and food authority staff is also crucial. A collaborative and friendly working environment can be fostered to reduce misunderstandings and enhance cooperation.

Before imposing fines, authorities should issue warnings to allow vendors an opportunity to rectify their practices. However, repeated violations of food safety regulations should result in fines, and persistent non-compliance should ultimately lead to the sealing of the restaurants. These measures can ensure better adherence to food laws and promote public health

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