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HEALTH HAZARDS FACED BY THE WORKERS OF SELECTED SPICE MILLS AND FROZEN FOOD UNITS IN DINDIGUL DISTRICT OF TAMILNADU AND MALAPPURAM DISTRICT OF KERALA

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Abstract:

Food processing is the conversion of raw ingredients into food or other forms of food. The spice sector plays a significant part in agricultural industry. Spice plays a major in the kitchens of India. The workers of spice mills survive in the area filled with fine dust of spices including chilies, coriander, and mixed masalas. Workers in spice mills are exposed to a variety of respiratory illnesses. The workers of frozen units face hazards including thermally induced problems like chills. Many of them suffer due to the low temperature constantly prevailing in the cold storage units. A standard questionnaire was prepared and the survey was conducted through personal interviews, and google forms in both spice processing mills and frozen food units. The questionnaire includes socio-demographic profile and questions related to the occupational hazards faced by the workers of spice mills and frozen food units. Chills, frostbite, hypothermia, trench foot are the most common hazards faced by the workers of frozen units.

Keywords: **agriculture, frost bite, chills, hypothermia**

I.Introduction:

Many industries and factories in India operate with diverse processes, yet several sectors fail to provide essential protective gear such as helmets, gloves, safety goggles, masks, and coated foam, putting workers' health and safety at risk (Anveshi, 2013). The fact that some test is performed repeatedly at low temperatures also increases the risk of strains, particularly of the elbow and wrist. Workers have to enter freezing rooms when handling raw material, such as carcases. The rapid expanded demand of frozen and chilled food also has the effects of requiring many workers to work long hours at low temperatures. There workers are liable to suffer from respiratory disorder, frostbite and rheumatic disorders. (ILO 1993) Workers in spice-related industries are often exposed to various respirator sensitizers. With the aerosolization of spices, dust begins a significant factor of inhalant, including allergic conditions such as rhinosinusitis and asthma. Occupational asthma has been associated with handling spices like cinnamon, coriander, aniseed, garlic, and onion. In addition to allergic reactions, irritant responses have also been documented in workers managing spices. Furthermore, spices may cross-react with other spices. Certain patterns are food contributing to allergic respiratory disorders. (Vanderwalt, et al., 2013)

The current study "**Health Hazards Faced by The Workers of Selected Spice Mills and Frozen Food Units In Dindigul District of Tamilnadu and Malappuram District of Kerala"** was taken up with the following objectives**:**

1. To identify the various spice mills and frozen food units
2. To check the workers affected by various health problems working in the spice and frozen units.
3. To find the alternative concepts to overcome these issues

II. Methodology

- Research methodology
- Research design
- Source of data
- Questionnaire design

2.1 Research methodology

Research methodology is a way to find out the workplace hazard faced by the workers of selected spice processing units and frozen food processing units. Distinguished the presence of occupational hazards in food processing industries.

2.2 Research design

This research is the collection of workplace hazard faced by the workers of selected Spice processing units and Frozen food processing units. The research is descriptive in nature as the study aims to find out the workplace hazards faced by the workers of selected Spice processing units and Frozen food processing units. The study was carried to find out the naturalistic observation and survey questionnaires, which are attributes of descriptive research

2.3 Source of data

Primary data is been collected through interview method. Primary data consist of original information collected for specific purpose. This project relied on the response of the employees and proprietors. Structured questionnaire was used to collect the primary data. It aimed to determine insights about information about the health issues faced by the workers of food industry.

2.4 Data collection technique

Collection of data for the purpose of the research study was in form of primary data. As the study being presence of industries, primary data include employee's suggestion, open interview, and survey questionnaire. Questionnaire was collected based on the sampling techniques from workplace hazard faced by the workers. The interview schedule was used to collect the primary data. This study was conducted for two months in Dindigul district in tamilnadu and Malappuram District in kerala.

2.5 Sampling Design

Since the presence of food processing industries, the sectors were distinguished. It was not able to collect information from all individual firms on period of time, hence part of the area was taken for collecting data, analyzing and findings the sectors.

2.6 Sample size

Approximately 60 samples were selected from Dindigul district of Tamilnadu and Malappuram district of Kerala. Each sample's data was saved. The information in the questionnaire was gathered from industry proprietors and employees.

2.7 Statistical tools used

The collected data were analyzed, tabulated and percentage was calculated by using bar charts for the purpose of easy understanding.

Sampling methods: Random sampling method

Sampling units: Spice processing units, and frozen food processing units

Sample size: 60

III. RESULTS AND DISCUSSION

The study on workplace hazards in selected spice processing units, and frozen processing units revealed significant occupational risks unique to each sector. In spice processing units, airborne particulate matter from spices posed respiratory hazards, while prolonged exposure to pungent compounds led to skin and eye irritation. Workers in frozen processing units encountered extreme cold environments, increasing susceptibility to frostbite, cold stress, and musculoskeletal strain due to handling frozen goods. Across all sectors, inadequate personal protective equipment (PPE) and limited awareness of occupational safety practices were common concerns. The findings emphasize the need for sector-specific interventions, including improved ventilation in spice units, ergonomic workplace design and better thermal protective measures in frozen processing units. Implementing comprehensive safety training and strict adherence to occupational health guidelines can mitigate these risks and improve overall worker well-being.

RESULTS

- Sociodemographic profile
- Workplace safety
- Clinical problem

3.1 Sociodemographic profile

3.1.1 Table.1

Age

Variable	No. of respondent	Percent
25 – 35	13	22
35 – 45	24	40
45 – 55	17	28
55 – 65	6	10
Total	60	100

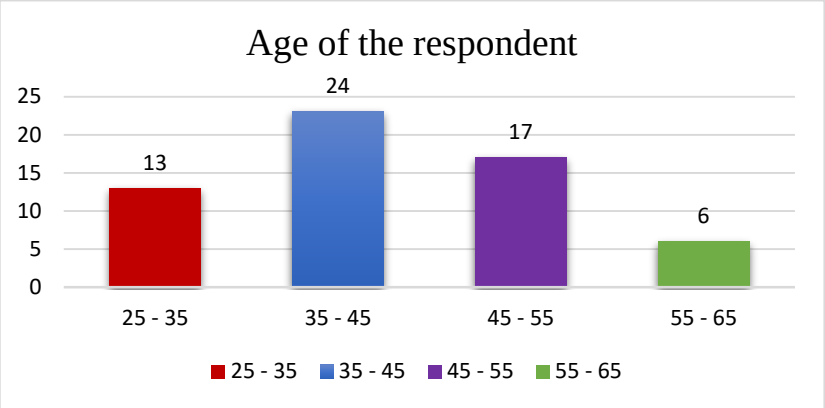


Figure. 1

The table display the distribution of workers across different age group, with four age categories: 25-35, 35-45, 45-55 and 55-65 the highest percentages, 40%, are observed in both the 35-45 age groups, while the lowest percentage, 10%, is in the 55-65 age group.

3.1.2 Sex

Table-2

Gender	No. of respondent	Percent
Male	38	63
Female	22	37
Total	60	100

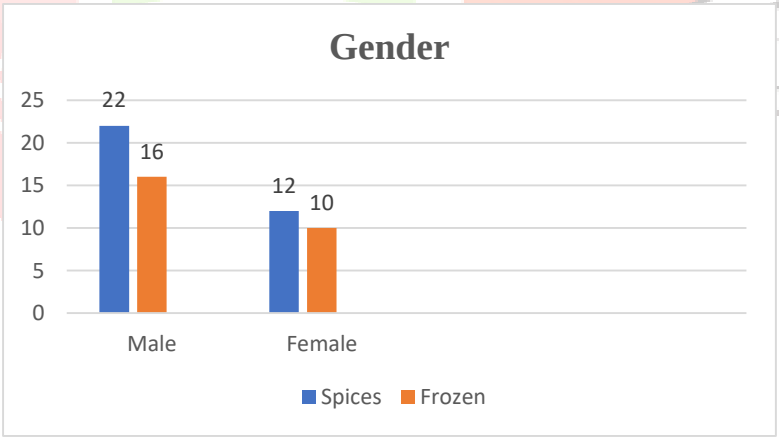


Figure.2

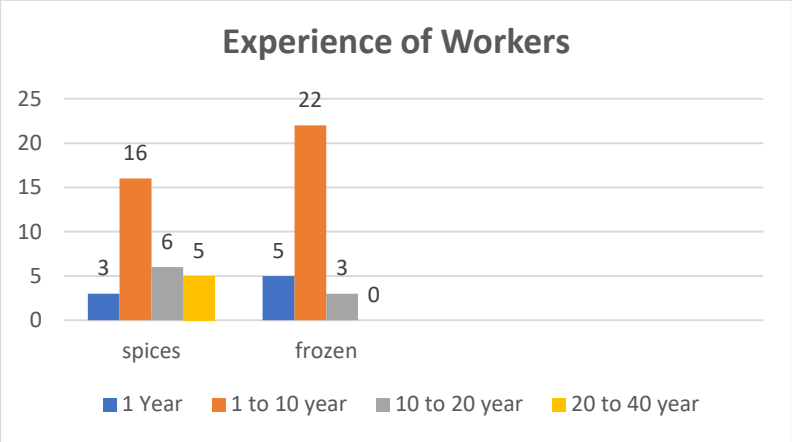
The table presents a distribution of workers based on gender, showing both frequency and percentage value. The data indicates that out of a total of 60 workers, 38 are male, which accounts for 63% of the workforce, while 22 are female, representing 37% of the total.

3.1.3 Table.3

Experience of workers

S.No	Experience of workers	Frequency	Percent
1	1 year	8	13
2	1 to 10 years	38	64
3	10 to 20 years	9	15
4	20 to 40 years	5	8
Total		60	100

Figure.3



The table displays the distribution of workers across different working experience group, with four working experience categories: 1month-1year, 1 to 10 year, 10 to 20 year and 20 to 40 year. The highest percentage, 64%, is in the 1 to 10 years, while the lowest percentage, 8%, is in the 20 to 40 years category.

3.1.4 Table.4

General health issues

S.No	Health issues	Frequency	Percent
1	Yes	10	17
2	No	50	83
Total		60	100

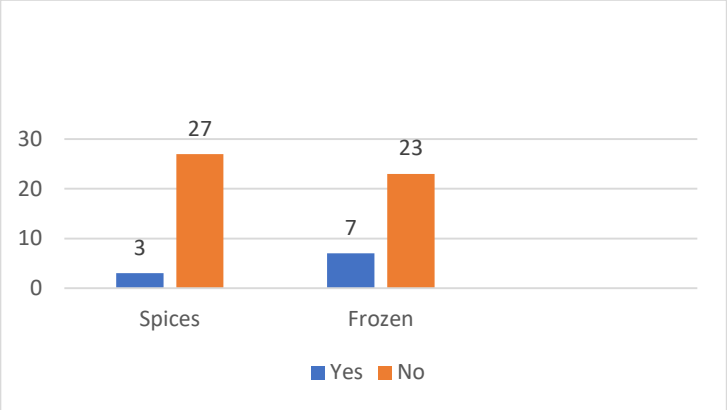


Figure.4

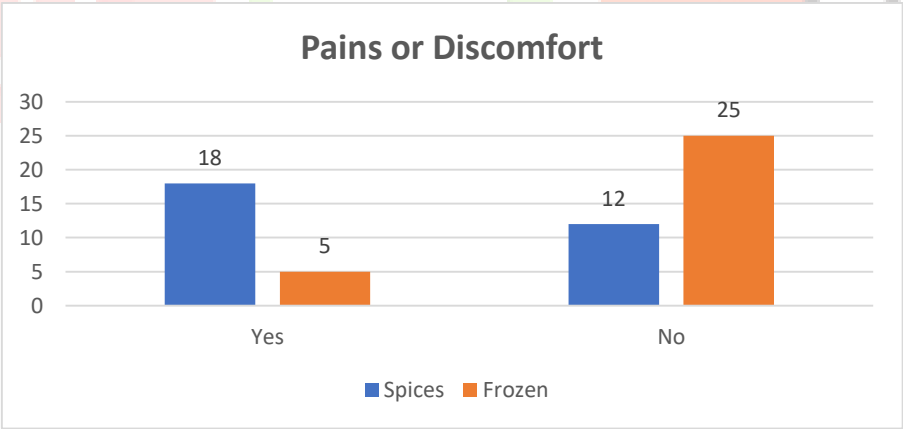
The table present data on the prevalence of general health issues among a sample population. The table shows that 10 individuals (17%) reported experiencing a general health issue, while 50 individuals (83%) reported no health issues.

3.1.5 Table.5

Pains or discomfort

S.No	Pains or discomfort	Frequency	Percent
1	Yes	23	38
2	No	37	62
Total		60	100

Figure.5



The table present data on the prevalence of general pains or discomfort among a sample population. The table shows that 23 individuals (38%) reported experiencing pains and discomfort, while 37 individuals (62%) reported no health issues.

3.1.6 Table.6

Allergy symptoms

S.No	Allergy symptoms	Frequency	Percent
1	Yes	6	10
2	No	54	90
Total		60	100

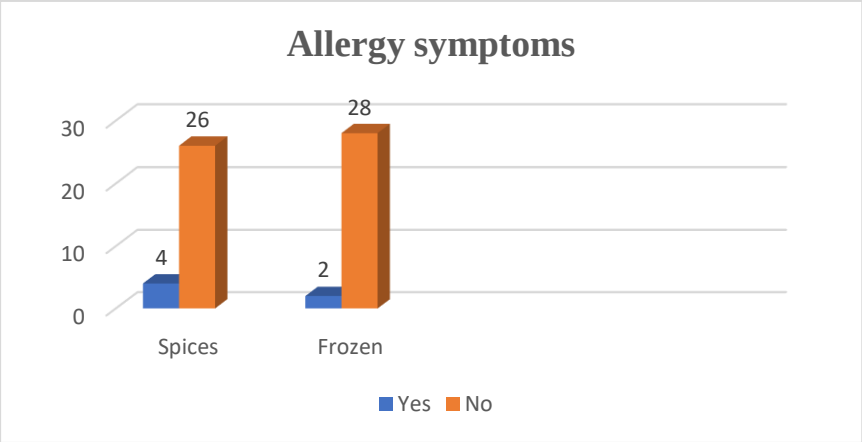


Figure.6

The table presents data on the prevalence of allergy symptoms among employee. Out of 60 respondents, only 6(10%) reported experiencing allergy symptoms, while the vast majority, 54 (90%), did not from any allergies. However, for those affected, potential allergens such as dust, chemicals, or airborne particles should be identified and controlled to ensure a healthier work environment. Implementing air filtration systems, regular cleaning, and providing protective measure can help mitigate allergic reactions and improve workplace comfort.

3.2 Workplace safety

3.2.1 Table.7

Safe in work place

S.No	Safe in work place	Frequency	Percent
1	Yes	54	90
2	No	6	10
Total		60	100

Figure.7

The table present data on the prevalence of general safe in work place among a sample population. The table shows that 54 individuals (90%) reported experiencing safe in work place, while 6 individuals (10%) reported no health issues.

3.2.2 Table.8

Hygiene Aspects

S.No	Hygiene Aspects	Frequency	Percent
1	Yes	50	83
2	No	10	17
Total		60	100

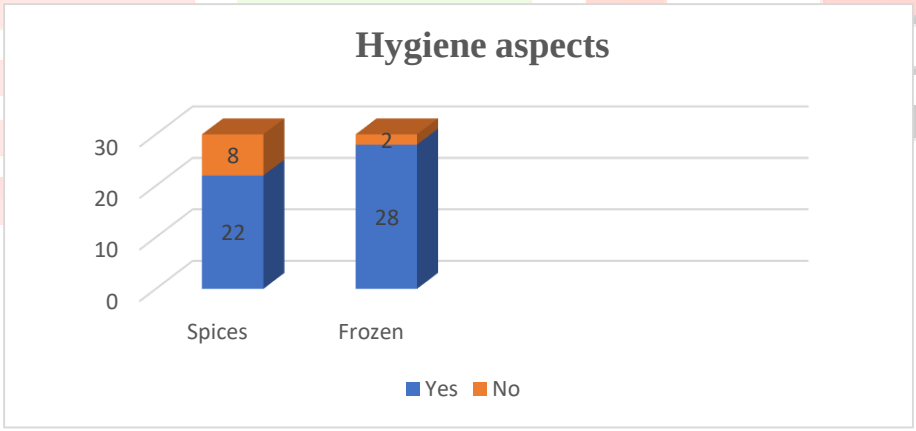


Figure.8

The data shows that most employees (83%) maintain proper hygiene, while a small percentage (17%) do not. This indicates a strong emphasis on cleanliness among the workforce, which contributes to a healthier and more productive work environment. However, the presence of employees neglecting hygiene practices highlights the need for continued awareness and reinforcement of good hygiene habits to ensure overall workplace well-being.

3.2.3 Table.9

Proper Lighting

S.No	Lighting	Frequency	Percent

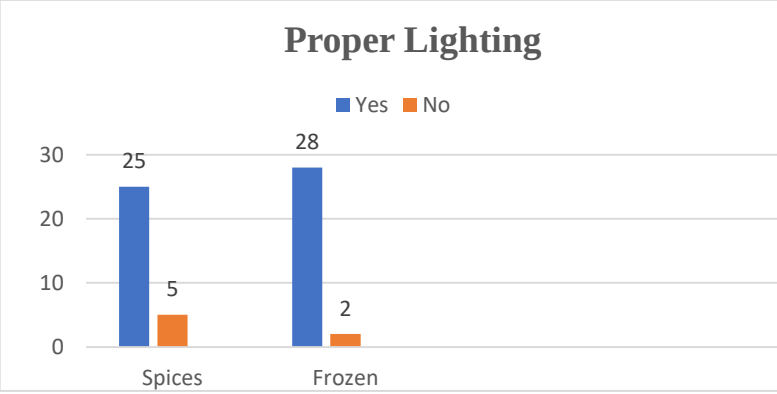


Figure.9

The table presents a distribution of proper lighting source, showing both frequency and percentage value. The data indicates that out of a total of 60 workers, 53 individuals, which accounts for 88% of the lighting source, while 7 individuals are, representing 12% not lighting source.

3.2.4 Table.10

Ventilation:

S.No	Ventilation	Frequency	Percent
1	Yes	42	70
2	No	18	30
Total		60	100

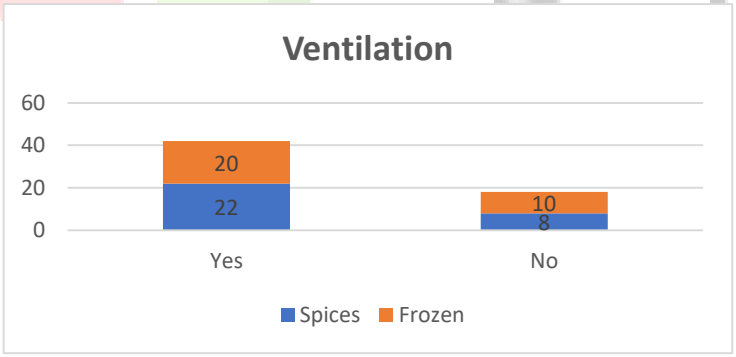


Figure.10

The data indicates that most employees (70%) work in a well-ventilated environment, while a small portion (30%) lack proper ventilation. This suggests that workplace conditions are generally favorable in terms of air quality and comfort, which can enhance employee health and productivity. However, attention should be given to the minority of workplaces without proper ventilation to ensure a safe and healthy work environment for all employees

3.2.5 Table.11

Awareness of Hazards or dangers in the workplace

S.No	Hazards or dangers in work places	Frequency	Percent
1	Yes	55	92
2	No	5	8

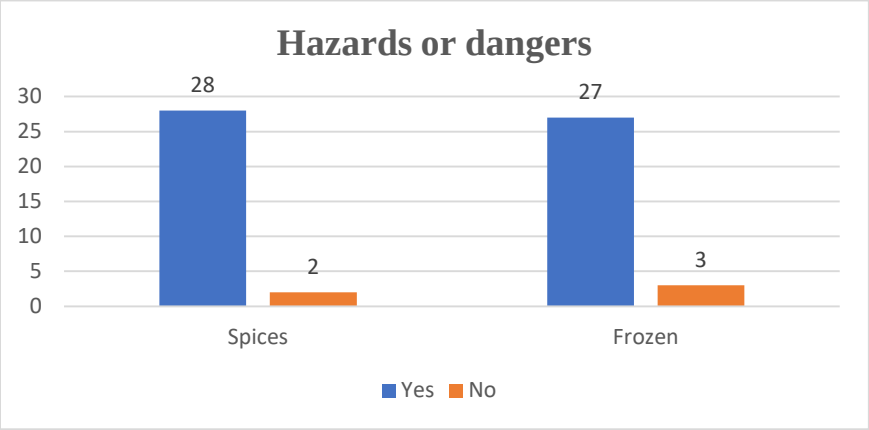


Figure.11

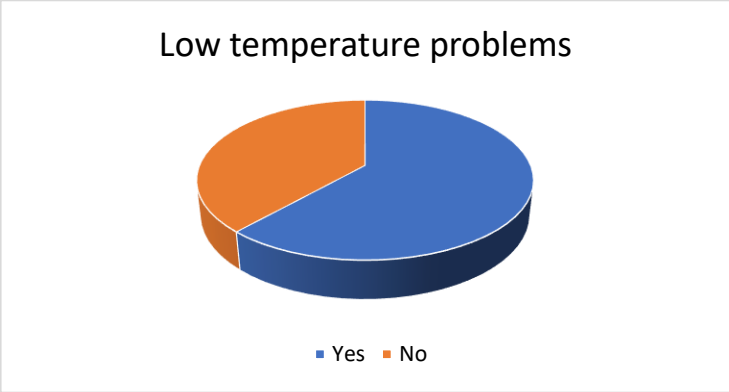
The table present data on the prevalence of general hazards or danger among a sample population. The table shows that 55 individuals (92%) reported experiencing safe in work place, while 5individuals (8%) reported no health issues.

3.2.6 Table.12

Problems due to very low temperature

S.No	Problems	Frequency	Percent
1	Yes	37	62
2	No	23	38
Total		60	100

Figure.12



The table presents a distribution of problems due to low temperature, showing both frequency and percentage value. The data indicates that out of a total of 60 workers, 37 individuals, which accounts for 62% of the workers have problems due to low temperature, while 23 individuals are, representing 38% have not facing any problem due to low temperature.

3.2.7 Table.13

Temperature at work place

S.No	Workplace temperature	Frequency	Percent
1	0-4	26	43
2	0 to -18	19	32
3	20	15	25
Total		60	100

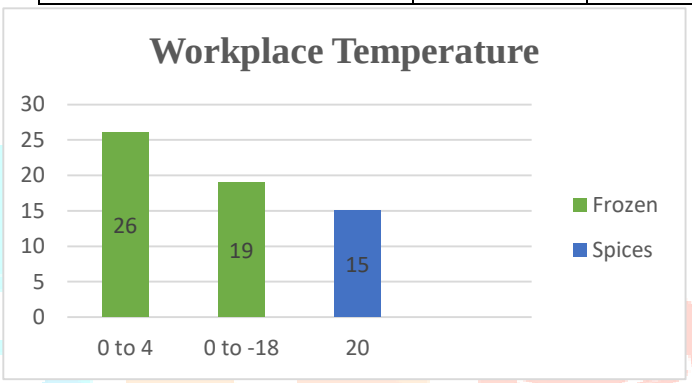


Figure.13

The table display the distribution of workers across different temperature, with three categories the highest percentages, 43% is in the 0 to 4 temperature categories, while the lowest percentage, 32% is in the 0 to -18 temperature category, Spice milling units have huge variation on temperature 20°C of 25% workers.

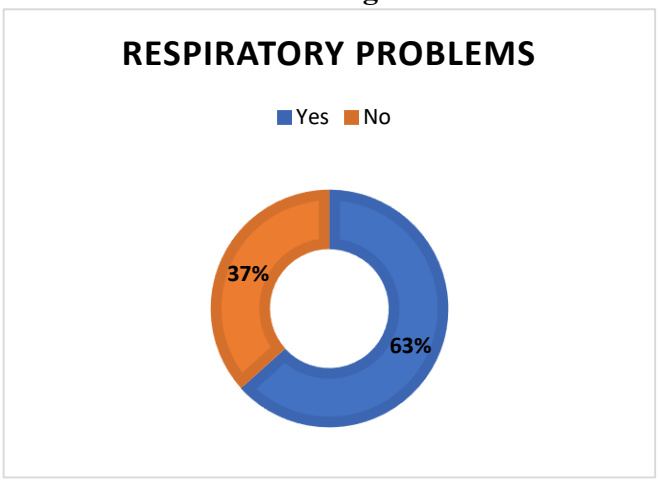
3.3 Clinical problem

3.3.1 Table.14

Respiratory problem

S.No	Respiratory Problems	Frequency	Percent
1	Yes	38	63
2	No	22	37
Total		60	100

Figure.14



The table provides statistical data on the prevalence of respiratory problem among a sample of 60 individuals. According to the table, 38 individuals, representing (63%) of the sample, reported experiencing joint pain, while only 22 individuals, accounting for (37%) did not reported any respiratory problem. The total sample size sums up to 60, confirming the completeness of the data. This table highlights that respiratory problem is a common issue among the surveyed individuals, affecting a significant majority of the group.

3.3.2 Table.15

Skin Allergy

S.No	Skin allergy	Frequency	Percent
1	Yes	13	22
2	No	47	78
Total		60	100

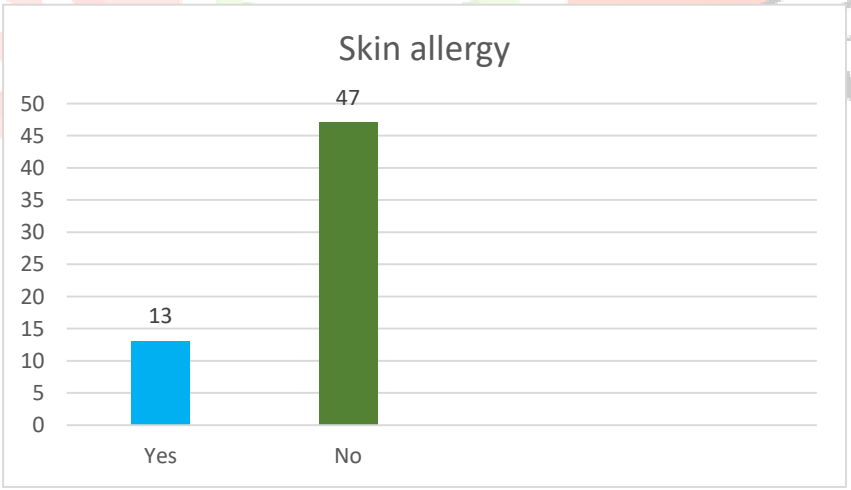


Figure.15

The table presents data on the prevalence of allergy symptoms among employee. Out of 60 respondents, only 13 (22%) reported experiencing allergy symptoms, while the vast majority, 47 (78%), did not from any allergies. This suggest that workplace allergens may not be a significant issue for most employee. However, for those affected, potential allergens such as dust, chemicals, or airborne particles should be identified and controlled to ensure a healthier work environment. Implementing air filtration systems, regular cleaning, and providing protective measure can help mitigate allergic reactions and improve workplace comfort.

3.3.3 Table.16
Chemical exposure

S.No	Chemical exposure	Frequency	Percent
1	Yes	5	8
2	No	55	92
Total		60	100

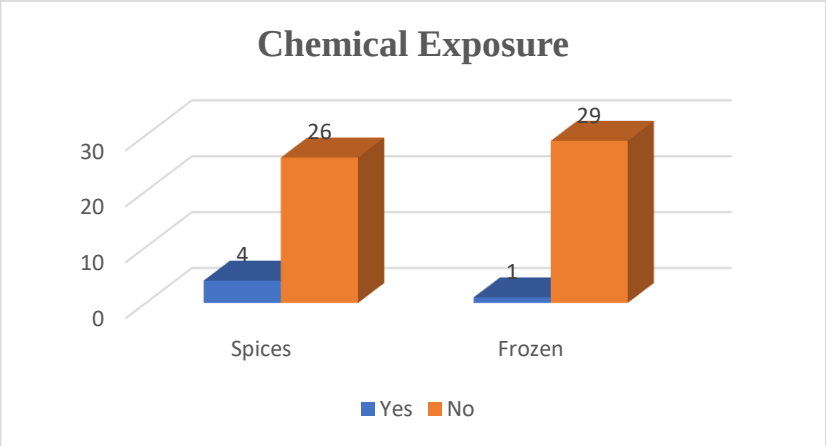


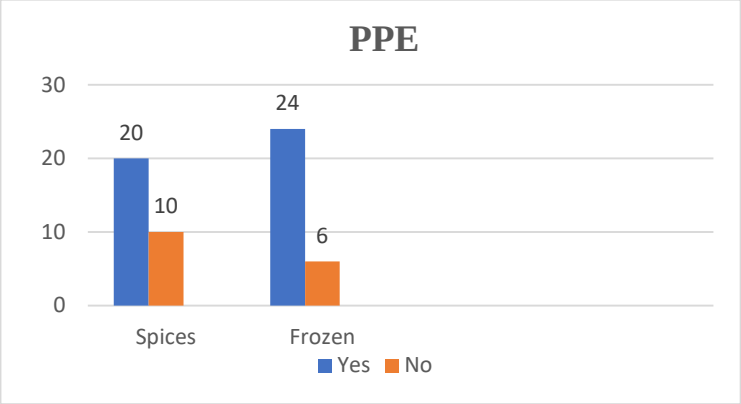
Figure.16

The table provides statistical data on the exposure of chemicals on the workplace this problem surveyed on each individual in food processing industry. Out of total 60 participants, 5(8%) individuals reported experiencing chemical exposure on work place, like liquid nitrogen, benzoates, nitrites, sulphites and cryoprotectants, 55 (92%) individuals didn't report any issues on chemical exposure. This indicates majority of surveyed individuals did not face any problem on chemical exposure at work place. But prolonged exposure leads to a lot of potential hazards.

3.3.4 Table.17
Usage of PPE

S.No	PPE	Frequency	Percent
1	Yes	52	87
2	No	8	13
Total		60	100

Figure.17



The table presents data on the usages of personal equipment (PPE) in the workplace. Out of 60 respondents, 52(87%) reported that they use PPE, while 8(13%) indicated that they do not. These finding suggest that PPE usage is relatively balanced, with a slight majority of employees adhering to safety measures. However, the high percentage of non-users raises concerns about workplace safety and potential exposure to hazards. Implementing stricter enforcement, training programs, and awareness campaigns on the importance of PPE could help increase compliance and ensure a safer work environment.

3.3.5 Table:18
First aid kit

S.No	First aid kit	Frequency	Percent
1	Yes	58	87
2	No	8	13
Total		60	100

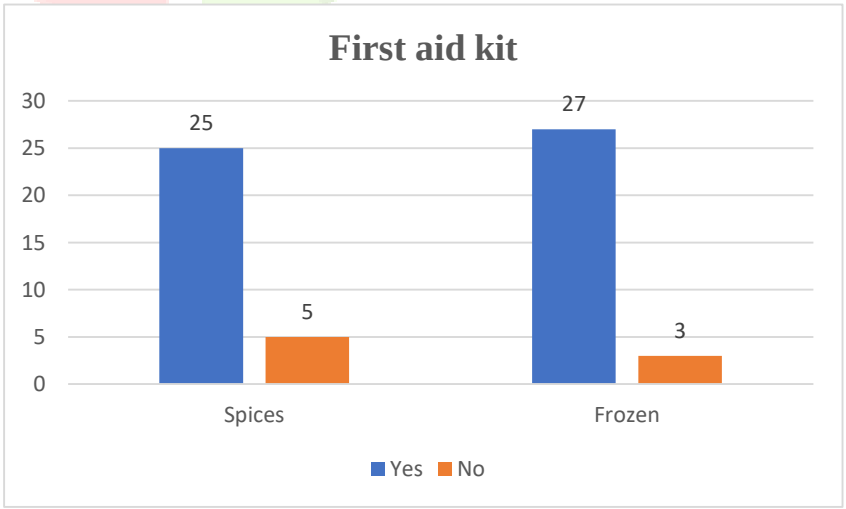


Figure.18

The table presents data on the availability of a first aid kit in the work place. Out of a total of 60 respondents, 52(87%) reported that a first aid kit is available, while 8(13%) indicated that their work place lacks a first aid kit. These findings highlight that while the majority of work place are equipped with essential medical supplies for emergencies, a small percentage still lack this critical safety measure, which could impact employee well-being and emergency response efficiency. The usage efficacy of first aid kits should be taught to all workers.

IV.CONCLUSION

The exposure to pungent spices for a long- time, results in a lot of potential hazards that affects the health of workers by affecting their lung capacity, lead to bronchitis, bronchial spasms, skin irritations due to organic dust particles. The freezing temperature affects the individuals and lead to frost bite, hypothermia etc. Even though, a lot of preventive measures are available, like safe jackets, masks and ear muffs, the workers are unaware of it. The employers are not willing to provide the basic facilities, necessities to protect them from hazards. A proper safety management system has to be enunciated and made mandatory to all food industry before providing them license under FSSAI to safeguard the life of workers.

V. REFERENCE

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