

# Food Safety and Hygiene Practices percentage ratio assessment study in fried food processing units

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## Abstract

We have seen changes in the foods we eat today; Consumption of fast food, fried food and street food is increased in all areas, particularly in cities. Whether the food we eat is healthy is questionable. The requirement for best, good quality food services has risen among peoples. The food hygiene and safety (FHS) study examine the FHS knowledge and practices of food processors and sellers in Dindigul Corporation and to identify their connected aspects. A cross-sectional study was conducted with 73 food processing units and sellers in study area. The study reveals most of the units following the hygiene safety practices and acceptable level of personal hygiene in food handlers is 32.9% and training, awareness should be performed to ensure food hygiene and safety practices.

Keywords: *Food handlers, Food safety, Food hygiene practice; Dindigul Corporation*

## 1. Introduction

Food is the nutritious materials, it provides energy, strength, power by eat or drink to all living and non-living things. The plants get nutrition by absorption, animals got energy by consumption in order to maintain life and growth. In history people or animals got food by hunting or agricultural activities. Agricultural foods are more healthy, hygiene, organic and non-toxic. Nowadays, there is no food materials or food exchange possible for the growing population. Another criteria, there is a promising chance for acquired good health food. (Santos MJ, Tonder I). Food safety and security are significant parameters for continued existence. Food health, safety and hygiene practices, are monitored by many

food safety authorizes. World resource Institute, World Food programme, Food and Agriculture Organization are a number of authority body working in field. Food security and nutrition implications of intra house hold bias. Food import and export is common across the world today, every nations are responsible to ensuring before every shipment and it being done through the officials and agencies. (Buzby et al, Tahkapaa, S)

Al Suwaidi A. H. E et al., described about the Food Handlers hygiene practices, their level of knowledge, Food handling coaching, and food handling regulations in Dubai. Certain weakness are addressed in proper manner in the field of hand washing, compliance reporting, and wear suitable personal protective equipment's.

MuratBaş the study was to evaluated awareness, assertiveness, and performs regarding food safety subjects concerning food respondents in Turkey, they conducted direct interview and administrating questionnaire with 794 food handlers.

M.B. Egan et al has reviewed the food safety and hygiene training awareness in every business sector. Researcher review has summarizes the procedures and outcomes of revisions led universal on the usefulness of food safety and food hygiene training in the profitmaking sector of the food manufacturing units.

A.M. Omemu et al has studied food safety awareness of street food sellers in Abeokuta. The outcome of the study has concluded with Data on demographics, analysis, findings, evaluation of food safety knowledge, awareness and practices was collected from eighty seven food sellers with spending standardized questionnaire.

Angelillo et al., (2001) has conducted a review to examine the familiarity, awareness, assertiveness and connected performance on nutrition borne illnesses and food handling practices among customers and in specific Italy peoples have poor knowledge in food and safety, and it's clearly pictured from the author. They found that equally men and women required learning programme and counseling by physicians to implement hygienic food control practices.

Hygiene is the run through of making ourselves and our surrounds clean, specifically in order to avoid sickness, infection or the spread of illnesses. Food hygiene organizes in the cornerstone in Codex food safety accomplishments. Microbiological hazards constitute the greatest risk for human health. (C. Heggum) Microorganisms usually connected with foodborne diseases include microorganisms, germs, diseases and infections. Overall deliberations has initiated, instructed by world health organization's regarding the food hygiene practices and health impacts for the people.

(WHO 2008) In this book author has delivered clearly the background of need, requirements models, modeling approaches, qualitative and quantitative analysis, computations, Data characterizations, and etc. In food hygiene practice food equipment facility is very vital. Raw materials, purchasing goods, fitting, constructions, and all should be focusing on minimum risk and less contamination basis. (M. van der Velde)

In Malaysia a study has conducted to define personal hygiene awareness and practices among some food handlers/producers at particular primary schools. Main motto of the study to evaluate knowledge among school children, teachers and employees of organization regarding the title of using gloves, soaps, appropriate apron in laboratory, clean dress code system regularly. It is a systematic approach using detailed consultations was engaged and conducted awareness for the peoples. (S. L.Tan)

Usually several disease spread over the region on the subject of the very Poor Personal Hygiene has been recognized as some of the main hazard reasons in foodborne diseases in other reports (FDA, 2009)

Kumiko Takanashi et al studied a cross-sectional preview was directed to examine the potential features of food-hygiene practices of mothers on the occurrence of diarrhoea among their children. The hygiene analysis has conducted around 206 Mothers in Viet Nam, regarding hand washing, personal discipline, body cleaning, wearing good clothes in children of Viet Nam.

People have right to expect the food they eat to be safe and suitable for consumption, Food borne illness and food borne injury are at best unpleasant; at worst, they can be fatal. But there are also other consequences. Outbreaks of food borne illness can damage trade and tourism, and lead to loss of earnings, unemployment and litigation.

International food trade and foreign travel are increasing, bringing important social and economic benefits. But it also makes the spread of illness around the world easier. Eating habits too, undergone major change in many countries over the last two decades and new food production, preparation and distribution techniques has developed to neglect this. Effective hygiene control therefore is vital to avoid the adverse human health and economic consequences of food borne illness, food borne injury and food spoilage. Everyone including farmers and growers, manufacturers and processors, food handlers and consumers has a responsibility to assure that food is safe and suitable for consumption (1) – General principles of Food Hygiene –CAC/RCP 1-1969.

Especially producers of Ready to Eat (RTE) product understand the importance of developing and implementing procedures to reduce the potential for contamination. Therefore, it is extremely important that manufacturers of RTE products develop and implement effective Good manufacturing Practices (GMPs) and Standard Operating procedures (SOPs) as the foundations of a successful HACCP programme. Combining strong GMPs, SOPs, SSOPs and HACCP will increase the total process control system and help these manufacturers continue to produce the safest products possible. The development and successful implementation of these programs requires full management support and commitment (2) Guidelines for Developing GMP, SOPs and Environmental sampling/Testing Recommendations, for RTE products. April-1999.

Food Safety and Standards Authority of India which is the apex organization in India functions under Ministry of Health and Family Welfare to monitor food throughout its stages and frame standards for all the foods has framed Food Safety and Standards (Licensing and Registration of Food Business) Regulations, 2011. In which the General Hygienic and Sanitary Practices to be followed by Food Business Operators are classified under Part II of Schedule IV. The same was taken as reference to study food safety practices (GHP & GMP) of the fried food processing units and their associated factors in Dindigul Corporation

## 2. Methodology

### Evaluation of Food Safety Practices

Dindigul Corporation presently consists of 48 electoral wards. The fried food units located in all the 48 wards were taken as research area. Keeping the data obtained from the Food Safety Department as a base, conducted detailed survey in all the 48 wards and identified the location of fried food processing unit in Dindigul Corporation. As a result of the survey identified that the total fried food preparation units in Dindigul Corporation are 162. In order to evaluate all the variables, criteria was

framed to fix the research population. The fried food processing units having minimum 50 kg as their per day production capacity were identified, selected and fixed as research population and it was 73. The processing units having lesser production capacity than the criteria are small and unable to evaluate all the variables. Well-structured questionnaire, having been modified based on the output of the pilot study was utilized for collection of data by observation method. All the processing units in the research design i.e. 73 units were personally observed and collected data. Totally 15 parameters have been observed and collected data with the help of the questionnaire.

The following are the parameters evaluated taking the segmented criteria into account,

- ❖ Location, Layout & Surroundings
- ❖ Equipment & Fixtures
- ❖ Water Supply
- ❖ Storage System
- ❖ Air Quality and Cross ventilation is provided
- ❖ Procurement of Raw Material
- ❖ Operational Features
- ❖ Pest & Rodent Control System.
- ❖ Food Packaging
- ❖ Conveyance & Transportation
- ❖ Personal Hygiene
- ❖ Audit/Documentation and Records
- ❖ Product information & Consumer awareness
- ❖ Training
- ❖ Visitors

### 3. Results and Discussion

#### a) Categorization of Good Hygiene Practices in unit wise

Table 1 GHP in fried food processing units

GHP	No.	
<b>1.LOCATION , LAYOUT &amp; SURROUNDINGS</b>	Low	22
	Medium	28
	High	23
<b>2.EQUIPMENT &amp; FIXTURES</b>	Low	33
	Medium	28
	High	12
<b>3. WATER SUPPLY</b>	Low	28
	Medium	36
	High	9
<b>4. STORAGE SYSTEM</b>	Low	29
	Medium	24
	High	20
<b>5.AIR QUALITY, VENTILATION &amp; LIGHTING</b>	Low	25
	Medium	24
	High	24
<b>6.PROCUREMENT OF RAW MATERIAL</b>	Low	27
	Medium	34
	High	12
<b>7.OPERATIONAL</b>	Low	37

<b>FEATURES</b>	Medium	12
	High	24
<b>8.PEST &amp; RODENT CONTROL SYSTEM</b>	Low	28
	Medium	28
	High	17
<b>9.FOOD PACKAGING</b>	Low	35
	Medium	24
	High	14
<b>10. CONVEYANCE &amp; TRANSPORTATION</b>	Low	21
	Medium	45
	High	7
<b>11.PERSONAL HYGIENE</b>	Low	24
	Medium	25
	High	24
<b>12.AUDIT/DOCUMENTATION AND RECORDS</b>	Low	33
	Medium	25
	High	15
<b>13.PRODUCT INFORMATION &amp; CONSUMER AWARENESS</b>	Low	45
	Medium	16
	High	12
<b>14. TRAINING</b>	Low	47
	Medium	25
	High	1
<b>15.VISITORS</b>	Low	22
	Medium	40
	High	11
<b>Total</b>		<b>73</b>

Table 1 reveals the evaluation of fried food unit's good hygiene practices in Dindigul district. Assessment of food safety practices with respect to location; layout and surroundings are categorized as in low, medium, and high. Out of 73 units 22 units, 28 units and 23 units classified as low, medium and high respectively. Table 1 Shows the Calculation of food safety practices wrt Equipment's and Fixtures characterized clearly 33 units as low, 28 units as medium and 12 units as high. Table 1 vividly shows the analysis of GHP with respect to water supply, Out of 73 units 28 units are low, 36 units are medium, and 9 units are high. Table 1 exhibits the GHP of the fried food units especially in storage system 29 units are in low, 24 units are medium and 20 units are in high. Table 1 displays the GHP in the food safety practices especially with respect to Air quality, Ventilation and lighting system, 25 are in low, 24 units are in medium and 24 units are in high. Table 1 shows the GHP in the fried food units concentrating on Procurement raw materials, out of 73 units 27 were in low, 34 were in medium and 12 units were in high. Table 1 shows the GHP of the fried food units taken operational features in the units under study, out of all 37 are in low, 12 units are medium and 24 units are in high. Table 1 shown the GHP of fried food units observing Pest & Rodent control system in the study units, In that 28 units are in low, 28 units are medium and 17 units are in high. Table 9 shows the unit analysis of GHP taking Food Packaging into account, in study units, out of all 35 units are in low, 24 units are in medium and 14 units

are in high. Table 1 shows the GHP of fried food processing units especially concentrating on conveyance and Transportation, out of 73 units, 21 are in low, 45 units are medium and 7 units are in high. Table 1 illustrates the GHP in fried food processing units given attention to Personal Hygiene, Outcome of the analysis shows that out of 73 units, 24 are in low, 25 are medium and 24 are in high. Table 1 shows the GHP of the 73 fried food processing units which are under study taking Audit/Documentation and records as the criteria, Around 33 units are categorized as low, 25 units are as medium and 15 units are as high. Table 1 shows the GHP in fried food processing units specifically on Product information and Consumer awareness, 45 units as low, 16 units as medium and 12 units as high. Table 1 shows the GHP in fried food processing units especially in Training in fried food processing units in Didigul Corporation, from our 73 units study sector, 47 number of units were in low, 25 units were medium and 1 units were in higher percentage (1.4 %). Table 1 represents the outcome of the analysis of GHP in fried food processing units especially on the variable 'Visitors'. Out of 73 units, 22 are categorized as low, 40 are categorized as medium and 11 are categorized as high.

**b) Percentage Ratio of Good Hygiene Practices**

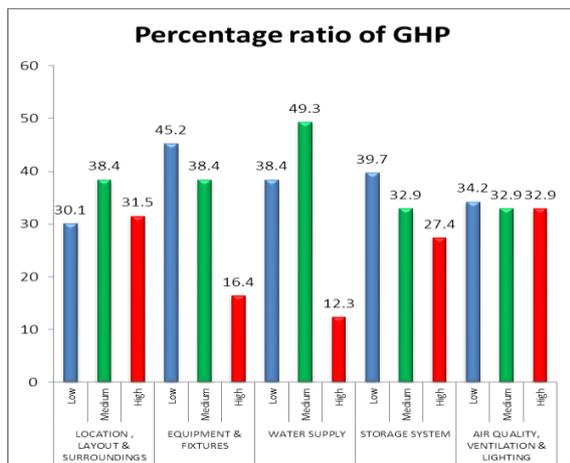


Figure 1 GHP wrt Location, layout & surroundings, Equipments and Fixtures, water supply, Storage System, Air quality Ventilation & Lightings of the fried food processing units

Figure 1. Shows the assessment of food safety practices with respect to location; layout and surroundings are categorized as percentage. Out of 73 units, 30.1% are in low 38.4 % are in medium and 31.5 % are high. In Equipment's and Fixtures displays clearly 45.2% of units are low, 38.4 % units are medium and 12 units as 16.4 %, are classified as high. In water supply schematic represents, Out of 73 units 45.2%, 38.4 % and 16.4 % units are classified as low, medium and high respectively. In storage system, Figure 1 schematically presents 39.7% units

are in low, 32.9 units are medium and 27.4% units are in high. In Air quality, Ventilation and lighting system, in figure presents 34.2% in low, 32.9% are medium and high respectively.

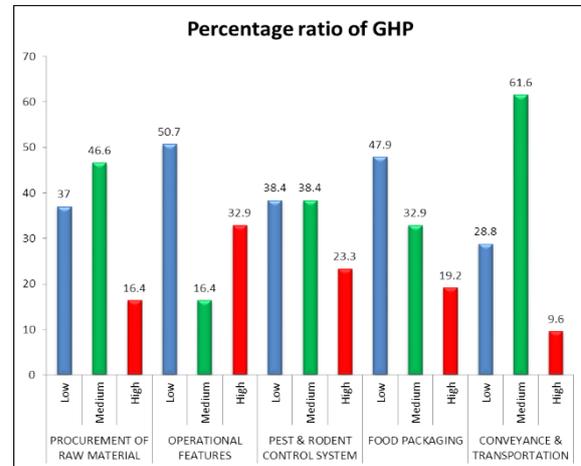


Figure 2 GHP wrt Procurement of Raw material, Operational features, Pest & Rodent Control System, Food packaging, and Conveyance & Transportation of the fried food processing units.

Figure 2 graph presentations for Procurement of raw materials with respect to GHP, out of 73 units 37% are in low, 46.6% are in medium and 16.4% units are in high. Figure 2 graphical representation of Operational features in the units with respect to GHP of the fried food units, out of 73 units, 50.7% are in low, 16.4% units are in medium and 32.9 units are in high. In Pest & Rodent control system with respect to GHP percentage ratio of fried food units, in that 38.4%, 38.4% and 23.3% units are in low, medium and high respectively. Figure 2 shows the percentage analysis of GHP taking Food Packaging into account, out of 73, 47.9%, 32.9% and 19.2% low, medium and high receptively. Figure 2 graphically represents GHP with respect to Conveyance & Transportation, out of 73 units 28.8% are in low, 61.6% units are in medium and 9.6% units are in high.

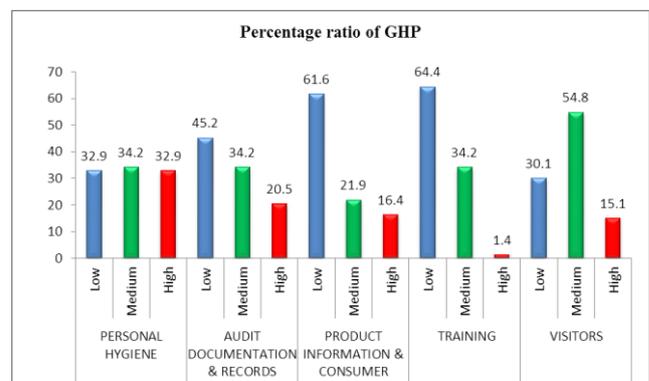


Figure 3 GHP wrt Personal Hygiene, Audit Documentation & Records, Product information & Consumer Awareness, Training and Visitors of the fried food processing units

Figure 3 illustrates the GHP in fried food processing units given attention to Personal Hygiene. Outcome of the analysis shows that out of 73 units, 32.9% are in low, 34.2% are medium and 32.9% are in high. Figure 3 shows the GHP of the 73 fried food processing units which are under study taking Audit/Documentation and records as the criteria, around 45.2% units are as low, 34.2 units are as medium and 20.5% units are as high. Figure 3 shows the GHP in fried food processing units specifically on Product information and Consumer awareness, 61.6% of units as low, 21.9% units as medium and 16.4% as high. Figure 3 graph demonstrates the GHP in fried food processing units especially in Training details in fried food processing units in Dindigul Corporation, from our 73 units study sector, 64.4% of units are in low, 34.2 % units are medium and 1.4% units are in high. Figure 3 represents the outcome of the analysis of GHP in fried food processing units especially on the variable 'Visitors'. Out of 73 units, 30.1%, 54.8% and 51.1% are categorized as low, medium and high respectively.

#### 4. Conclusion

From our study we concluded the assessment study of good hygiene practices in Dindigul Corporation effectively. In Dindigul Corporation around 31.5 % of the fried food processing units were located away from source of contamination. The possibility of contamination of food due to location and surrounding is less. Nearly 32.9% of units were provided with adequate facility to maintain air quality, ventilation and lighting which ensures the health of the food handlers and food safety as well. Personal Hygiene of the Food Handlers also in the acceptable level ie 32.9% of units were keeping their food handlers in good hygiene so that preventing the cross contamination of food. No units have obtained level of satisfaction up to 50% with respect to all the evaluated parameters. Most of the parameters were only moderately provided with and maintained. The parameter Operational Features has to be taken care for the betterment and requires immediate action. Since the low percentage is 50.7%. The parameter Procurement of Raw Material also to be given attention since it scored a high level of 37.0% as low. Water supply parameter requires attention since it scored 38.4% as its low. Equipments & Fixtures has scored a level of 45.2% as its low requires special attention. Pest Control measures to be taken intensively in most of the units since it is not adequately provide in 38.4% of units. Audit /Documentation and Product Information have scored 45.2% and 61.6% respectively as its low, which indicates the requirement concentration of the FBO. Food Packing scored 47.9% as its low, attracts the attention of the FBO for the betterment.

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