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Evaluation of Food Safety Practices in Fried Food Units in Dindigul Town

J. Lawrence¹, Dr. Anitha Pius², Dr. G.V.Gopinath³, Dr. C. Vedhi⁴

¹Research Scholar, Centre for Futures Studies, Gandhigram Rural University, Gandhigram, TN., India

²Professor, Department of Chemistry, Gandhigram Rural Institute Gandhigram, Dindigul, TN, India

³Assistant Professor, Department of Zoology, APSA College, Thirupathur, Tamilnadu, India.

⁴Assistant Professor, Department of Chemistry, V.O.C. College, Tuticorin. Tamilnadu, India.

Abstract: *Present research is of descriptive type to evaluate the food safety practice in fried food units in Dindigul town. The Research population was identified by conducting survey and based on the data collected from food safety department. The criteria for fixing the research population are defined as per the production capacity of the fried food units. Units having more than 50 kg as per day production capacity are being fixed as research population and it is 36. Data on food safety practices of each units are collected by direct observation method. The collected data is analysed taking the Food Safety and Standards Act, 2006 as reference. Finally based on the data analysis observations and suggestions are narrated providing scope for further studies.*

Keywords: *Food Safety, Hygienic Practices, Fried Food Units.*

I. INTRODUCTION

Eating is a necessity for staying alive and when we eat food we logically expect it to be safe, good and a pleasant experience. A food borne illness is a disease or an injury caused by ingestion of food contaminated with food safety hazards that gain access to the food at any point in the chain from primary production, through processing, storage, distribution and upto the point of consumption. Hygiene is the creation and maintenance of healthful conditions to prevent food contamination and meeting consumers requirements. Hygiene is directed towards elimination and correction of contamination that occurs. As mentioned above, fried foods are contaminated with food safety hazards and other contaminants will get exposed to harmful microorganisms during preparation and production. The food safety practices which include the hygienic establishment requirements fulfils and prevent the contamination that enters into food system at the production level. The fried food units personnel should have at most level of realising the importance of hygienic practices that have vital impact on food safety of the end product such as sweets and snacks. Fried foods called as Ready To Eat (RTE) products 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 Standards Operating procedures (SOPs) as the foundation of a successful HACCP program. Combining strong GMPs, SOPs, SSOPs and HACCP will increase the total control system and help there implementation of these programs requires full management support and commitment.(1). Food Handlers are anyone who works in a food processing units who handles food, or contact with any equipment or utensils that are likely to have in contact with food, such as cutlery, plates, bowls or chopping boards.(2). Food handlers with poor personal hygiene working in food establishments could be potential sources of infections of many intestinal helminthes, protozoa, and pathogenic bacteria (2). Many parameters have influence on the food safety of the fried foods which includes Location, layout & surrounding of the processing units, Equipments and fixtures, Water supply, Storage system, Air quality, ventilation & lighting, Procurement of raw material, Operational Features, Pest control system, food packaging, conveyance and transportation, personal hygiene of the food handlers, Audit and documentation, product information & consumer awareness, training to the food handlers and visitors. This study is to evaluate the mentioned parameters in the fried food processing units in Dindigul town.

II. METHODOLOGY

Present study is of the type descriptive which involves participatory observational tool. Basic data to identify the research population is collected from TamilNadu Food Safety Department further ward wise survey has been conducted to identify the fried food units. The criteria to fix the research population is framed based on the per day production capacity of the processing units and fixed as 50 kg. On applying the criteria it is identified total number of 36 fried food units in Dindigul town and hence fixed the

research population as 36. (100%).Framed pre-planned well scrutinized questionnaire to evaluate the food safety practices of the estimated populations. Collected the data by observational method.

III. DATA ANALYSIS

Collected data are analysed by taking Food Safety and Standards Act,2006 (Food Safety and Standards (Licensing and Registration of Food Businesses) Registration,2011 as reference.

A. Location, layout & Surroundings

For producing safe food, one should consider potential sources of contamination from the environment throughout the food chain. In general the fried food production should not be carried on in areas where the presence of potentially harmful substances would lead to an unacceptable level of such substances in food. The plant site should be chosen such that it is free from conditions that might interfere with the sanitary operation of the plant. Generally, a minimum set-back of 30mts is recommended from potential sources of contamination .However, a greater or lesser distance could be accepted depending on specific site conditions. While deciding the location of the processing unit one needs to consider any potential sources of contamination as well as the effectiveness of preventive measures to counter them if any. On observation and analysis of collected data it is observed that the degree of complying the parameter ideally located from the source of contamination is classified as 5.5 % are not in order, 16.7 % are partially in order and 77.8% are in order. Ceilings and overhead fixtures should be constructed and finished to minimize the build up of dirt and condensation, and the shedding of particles. Windows should be easy to clean, be constructed to minimize the build up of dirt and where necessary, be fitted with removable and cleanable insect proof screens. Doors should have smooth, non-absorbent surfaces and be easy to clean and where necessary disinfect. On observation and analysis of collected data it is observed that the degree of complying the parameter- ceiling roof is of permanent is classified as 5.5% are not in order,8.3% partially in order and 86.2% are in order.

B. Equipment & Fixtures

Structures within fried food units should be soundly built of durable materials and be easy to maintain, clean and where appropriate. Specifically the fried food units should be provided with adequate venting and lighting facility. The walls should be impervious and permanent and should be free from flakes, pitting and creaks. Wall and partitions should have a smooth surface up to a height appropriate to the operation & well maintained. Floor should be rough enough not to make slip due to spillage of oil drops. Adequate foot mat wherever necessary to be provided. Floor to wall joints should be covered(generally a 15cm extension is recommended) and sealed for ease of cleaning and maintenance and be kept clean and in good repair. On observation and analysis of collected data it is observed that the degree of complying the parameter- Equipments kept clean, washed, dried and free from moulds and fungi is classified as 11.1% are not in order,27.8% are partially in order,61.1% are in order, the parameter - Utensils / containers are kept in a clean place is classified as 16.6% are not in order, 41.7% are partially in order and 41.7% are in order and the parameter - Appropriate facilities for cleaning preferably cleaning in place system are adopted is classified as 27.8% are not in order 50% are partially in order,22.2% are in order.

C. Water Supply

An adequate water supply is necessary to ensure effective cleaning and other processing operation. As such, it must be supplied in quantities that encourage adequate rinsing and cleaning. The water supply utilized in cleaning and other processing operations must be of a safe and sanitary quality in order to avoid the contamination of the equipment, containers or food products. An adequate supply of potable water with appropriate facilities for its storage, distribution should be available wherever necessary to ensure the safety and suitability of food. On observation and analysis of collected data it is observed that the degree of complying the parameter -Adequate supply of potable water is classified as 11.1% are not in order, 72.2% are partially in order and 16.7 % are in order and the parameter-Appropriate facilities for safe & clean storage of water is classified as 11.1% are not in order, 72.2% are partially in order and 16.7 % are in order. The parameter -The water is examined chemically and bacteriologically by a NABL accredited laboratory is classified as 83.3% are not in order and 16.7 are partially in order and in order percentage is only 0.

D. Storage System

Appropriate food storage facilities should be designed and constructed to permit adequate maintenance and cleaning, avoid pest access and harbourage, enable food to be effectively protected from contamination, cross contamination during storage and Also appropriate facilities for storing idle food processing equipment, tools, materials, and spare parts for repair and maintenance of

equipments should be provided. The storage of oil is main aspect since open storage activates the catalytic action and auto oxidation of oil which lead to auto oxidation in other words degradation, usage of which caused increased level of trans fat content in the fried food. On observation and analysis of collected data it is observed that the degree of complying the parameter - Adequate arrangement for storing oil, food ingredients provided and segregated and labelled is classified as 19.5% are not in order, 58.3% are partially in order and 22.2% are in order. The parameter - Containers used for storage are made of non toxic material is classified as 66.7% are not in order, 22.2% are partially in order and 11.1% are in order. The parameter - Containers are provided with appropriate lid is classified as 55.6% are not in order, 27.8% are partially in order and 16.6% are not in order.

E. Air Quality, Ventilation & Lighting

Adequate ventilation is required to prevent excessive fume, smoke, dust accumulation, aerosols of build-up of condensation droplets on equipment, walls and ceiling. Designed to cause the direction of air follow to be form the processing areas outward to other areas of the units .Air intakes and outlets shall be located to minimized the chance of contamination. Air intakes and outlets and filters shall be maintained to minimize contamination. Ventilation system should be designed and constructed so that air does not flow from contaminated areas to clean areas and where necessary they can be adequately maintained and cleaned. Unclean air, excessive dust, odours or build-up of condensation are all potential sources of contamination. On observation and analysis of collected data it is observed that the degree of complying the parameter- Chimney and exhaust fans are provided at a proper height is classified as 33.3% are not in order, 50.0% are partially in order and 25.0% are in order. The parameter - Adequately provided with natural / artificial lighting is classified as 36.1% are not in order, 50.0% are partially in order and 13.9% are not in order. The parameter - Electrical fittings are appropriate is classified as 19.4% are not in order, 55.6% are partially in order and 25% are in order.

F. Procurement of Raw Material

The main raw material for fried food units are the oil. The chemical and colours used for the preparation of fried food also contribute to safe food. Oil should not be accepted at the time of purchase if found. On observation and analysis of collected data it is observed that the degree of complying the parameter - Raw material including oil, additives, spices are conforming to FSS Standards is classified as 8.3 % are not in order, 55.6% are partially in order and 36.1% are in order.

G. Operational Features

As far as fried food units are concerned, the operational features play a key in the safety of the fried food prepared. The temperature control, usage of chemicals for the preparation, removal of sediments, purging of used oil, reusing of oil. On observation and analysis of collected data it is observed that the degree of complying the parameter – Reusing of frying oil is classified as 78% are not in order, 19% are partially in order and 2% in order. The parameter – Removal of sediments is classified as 73% are not in order, 20% are partially in order and 07% are in order.

H. Pest & rodent Control System

Preventive measures to be taken adequately to prevent the access of pests, rodents, insects and birds. These pests pose a major threat to the safety and suitability of food. Hotles, drains and other places where pests are likely to gain access should be kept sealed. potential food source should be stored in pest proof containers so that arrest the availability of food to the pests. Suitable inside and outside devices should be provided and that should be located in suitable locations. The approved chemicals only be used. All efforts should be made to prevent the likelihood of contamination of food and food contact surfaces with pesticides. On observation and analysis of collected data it is observed that the degree of complying the parameter- Adequate control measures are in place to prevent insect & rodents from the processing storing area is classified as 47.2% are not in order, 27.8% are partially in order, 25% are in order.

G. Food Packaging

In order to avoid contamination from the external sources every food should be packed. The packaging material used should be of edible grade. In most of the units the packaging is not done. They kept in the open container mainly of silver drums and kept for retail sale in loose condition. On observation and analysis of collected data it is observed that the degree of complying the parameter -Where food comes in direct contact with the packaging material, food grade packaging materials are used as classified as 83.3% are not in order, 16.7% are partially in order and 0% are in order. The parameter - Packaged are complying the FSS labelling Regulations is classified as 83.3% are not in order, 11.1% are partially in order and 5.6% are in order.

I. Conveyance & Transportation

During transportation it should be ensured that there is no contamination, deterioration or damage, tampering of the product. It is observed that many of the units used two wheelers and some of the units are provided with four wheelers for the transportation. The same vehicle is utilized for multi-purposes like purchase of raw material. On observation and analysis of collected data it is observed that the degree of complying the parameter - Conveyance & Transportation of food being done in an appropriate state of cleanliness, particularly if the same vehicle have been use dot carry no food items is classified as 41.7% are not in order, 41.7% are partially in order and 16.6% are in order.

J. Personal Hygiene

Since people in the processing unit come into proximity to food and the environment, their health, hygiene and cleanliness affects the food and its environment. People who do not maintain an appropriate degree of personal cleanliness, who have certain illness or conditions or who behave inappropriately, can contaminate food and transmit illness to consumers. Habits like hand washing, personel behaviour, eating & drinking and smoking, garments, and personal items are the main parameters to measure the personal hygiene of the food handlers. On observation and analysis of collected data it is observed that the degree of complying the parameter- Suitable aprons, head cover, disposable gloves & foot wear are provided wherever necessary is classified as 41.7% are not in order, 44.4% are partially in order and 13.9% are in order. The parameter - Adequate facilities for toilets, hand wash and foot mats, with provision for detergent, soap, hand drying facility and nail cutter are provided is classified as 41.7% are not in order, 44.4% are partially in order and 13.9% are in order. The parameter - Arrangements are made to get the staff medically examined once in six months to ensure that they are free from infections & non infectious diseases is classified as 83.3% are not in order and 16.7% are partially in order and 0% is in order. The parameter - No employee who is suffering from injury, skin infection or clinically recognized able infectious diseases is classified as 69.4% are not in order, 22.2% are partially in order and 8.4% are in order. The parameter - First aid materials are available is classified as 86.1% are not in order and 13.9% are partially in order and 0% are in order.

K. Audit / Documentation and Records

Food safety audit and documentation regarding all operations including raw material purchase, storage, daily production, sale play key role in keep the fried food safe. On observation and analysis of collected data it is observed that the degree of complying the parameter - A periodic audit of the whole system according to the SOP conducted regarding GMP/GHP systems classified as 83.3% are not in order, 16.7% are partially in order and 0% are in order. The parameter - Records of sale and purchase that the food product sold to licensed vendor and raw material purchased from registered supplier is classified as 77.8% are not in order, 16.7 are partially in order and 5.5% are in order. Documents should be retained for a period that exceeds the shelf life of the product. Documentation can enhance the credibility and effectiveness of food safety control system.

L. Product information & Consumer Awareness

All food products should be accompanied by or bear adequate and clear information to enable the next person in the food chain to handle, display, store and prepare nad use the product safely and correctly. On observation and analysis of collected data it is observed that the degree of complying the parameter- All packaged food products carrying label and requisite information as per Regulations are made is classified as 41.7% are not in order, 36.1% are partially in order and 22.2% are in order. Where a product has been withdrawn because of an immediate health hazard, other products which are produced under similar condition, and which may present a similar hazard to public health, should be evaluate for safety and may need to be withdrawn which is called recalling. The parameter -Recall plan is classified as 97% are not in order and 03% are partially in order and 0% are in order.

M. Training

Employees in the fried food units play a critical role in ensuring the safety of foods produces at the plant. In addition, employees should not contaminate or be a source of cross contamination of food. The primary consideration for this pre requisite is that those engaged i food operations who come directly or indirectly into contact with food should be adequately tatine, supervised and follow their work relate tasks, personal hygiene requirements and acceptable personal hygiene practices to a level appropriate to the operations they are to perform. On observation and analysis of collected data it is observed that the degree of complying the parameter - Food production personnel underwent appropriate food hygiene training with periodic interval is classified as 83.3% are not in order and 16.7% are partially in order and 0% are in order

N. Visitors

The access of the visitors and non company personnel to mainly the food handling area and food plant should be controlled to avoid any potential source of contamination. This control should apply to even the family members of personnel, supplier, customer, Govt. Inspector, plant tours, non-company people working on the premises. The allowed visitors should follow same personal practices and hygiene provisions as the plant personnel. On observation and analysis of collected data it is observed that the degree of complying the parameter - Visitors are not allowed in the processing area is classified as 38.9% are not in order, 50% are partially in order and 11.1% are in order.

IV. CONCLUSION

Most of the fried food units in Dindigul Town are to be concentrated on their Standard Operating Procedures and Good Hygienic Practices mainly in the case of raw material purchase, Storage of raw materials. The majority of the fried food processor purchase the frying oil from the wholesalers in containers without labelling information so that unable to get vital information like shelf life and manufacturer of the oil. Majority of the fried food units purchased the oil in the tin container which are used for many times which may cause contamination to the fresh oil. Most of the tins are not fitted with Traditional lid like banana trunk which are not air tight which will cause auto oxidation and degradation of the oil in it. Most of the food handlers in the fried food units are traditionally trained but not technically trained. Label information of the prepared food mainly in sweets and snacks are not there in the products. Documentation is not done most of the units. Hence the units should concentrate on Standard Operating Procedure and Food Safety and Management System.

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