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To study the practice of food hygiene at household level concerned to home kitchens

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Abstract
Hygiene refers to safety of food from production to consumption. The purpose of food hygiene is to prepare and provide safe and clean food that contributes to a healthy society. A community based descriptive study was conducted on 100 samples among household food handlers in different areas of Hyderabad. A well-structured questionnaire was designed to collect the data regarding kitchen and food hygiene. The collected data was tabulated and statistically analyzed by using formula one sample t-test. The results shows that the p value is >0.010, it is significant at 0.010. This study also found that the food hygiene practices in the kitchen and improper handling of food items leads to food borne diseases and infections. Food handling practices can be Food improved in the community to prevent food borne illnesses.

Keywords: food hygiene, kitchen hygiene, food handling, food borne illnesses

Introduction

When certain disease-causing bacteria, viruses or parasite contaminate food, they can cause food-related diseases. Another word for such a bacterium, virus, or parasite is "pathogen". Since food-related diseases can be serious, or even fatal, it is important to know and practice safe food-handling behaviors to help reduce the risk of getting sick from contaminated food. According to the Codex Aliment Arius Commission (CAC), "food safety is the assurance that food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use". Foodborne diseases are widespread throughout the world. The process by which a foodborne disease spreads begins with the features of the disease, contaminating the food, which in turn threatens both individual and public health by means of the foods. Healthy, or what can be termed as safe food, is food that has not lost its nutritional value, that is clean, in physical, chemical and microbiological terms and that is not stale. The factors causing the contamination of the food may threaten the safe consumption of it and thereby make the foods harmful to human health. For this reason, it is necessary to utilize various resources to prevent the food from being contaminated in all stages of the food chain, from harvest to consumption. The aim of this chapter is to determine the factors affecting food safety and proffer effective intervention strategies against food-related diseases. The diseases caused by food, or the foodborne diseases, are described as the illnesses with which people are infected by the foods they eat. These diseases are a widespread public health issue and are expensive to treat. Foodborne diseases result from the consumption of contaminated foods and products. Contamination of the food at any stage, from production to consumption, produces bacteria, viruses, parasites, chemical agents and toxins, which eventually cause the foodborne diseases. These diseases are seen as a pervasive, permanent problem that can lead to morbidity and, occasionally, to mortality. Foodborne diseases are increasing worldwide, particularly in the developing countries, due to neglect of personal hygiene and food hygiene. Foodborne illnesses pose a threat to international public health safety and economic development. With the increasing amount of trade, travel and immigration, the rate at which dangerous contaminants and pathogens pass through the borders has also risen. Every year, approximately 2.2 million people, a majority of whom are children living in developing countries, die as a result of food and water contamination. Typhoid fever occurs in 16.6 million people and causes 600,000 deaths every year around the world. In the United States, contaminated foods are seen as being responsible for nearly 76 million infections, 325,000 hospital cases and 5000 deaths every year. According to 2011 data from the Centers for Disease Control and Prevention (CDC), it was estimated that in the United States, one out of every six persons was infected with foodborne illness (48 million people) and that foodborne illnesses resulted in 128,000 hospital cases and 3000 deaths.

Improper heating of the food, such as undercooking, re-heating and waiting in the heat, or improper cooling of the food account for 44% of the foodborne illnesses. Inadequate preparation and improper cooking practices, such as those involving cross-contamination, insufficient processing, poor hygiene and the re-use of leftovers, are responsible for causing 14% of these diseases.

The Factors That Affect Food Safety

Foods are the basic building blocks of living things, yet they may pose a threat and become harmful to human health in some situations. Many people throughout the world become ill because of the food they eat. These diseases associated with food consumption are referred to as foodborne diseases, and they may result from dangerous microorganisms. Foods can become harmful to human health or even fatal when combined with bacteria, mold, viruses, parasites and chemical toxins. Therefore, it is absolutely necessary that consumers be provided with a safe food supply. The factors involved in the potential threat caused by foods are inappropriate agricultural practices, poor hygiene at any stage of the food chain, lack of preventive controls during processing and preparation of the

food, incorrect use of the chemical materials, contaminated raw materials, food and water and inappropriate storage. These issues were classified into three categories: food hygiene, personal hygiene of food handlers and kitchen sanitation.

Food Hygiene

Many factors serve to undermine food hygiene. The hygienic quality of the foods is negatively influenced by purchasing low-quality or stale foods, storing food in inappropriate conditions, cooking large amounts of food, more than is necessary, and letting it sit in inappropriate environments, storing raw and cooked foods together and preparing, cooking and storing food using incorrect methods. If foods are contaminated at any stage, from production to consumption, the hygiene of the food is compromised, depending on the temperature, humidity and pH values of the environment it is stored in, and the food then becomes potentially harmful to human health. An infection or intoxication caused by the consumption of a contaminated food or drink is called food poisoning. The causes of food poisoning are classified as microorganisms, parasites, chemicals, naturally created food toxins, naturally created fish toxins, metabolic disorders, allergic reactions and radioactive substances.

Personal Hygiene of Food Handlers

The food processing stage is one of the most important stages in the food chain, and those responsible for performing the duties involved in this stage assume major responsibilities in the prevention of food poisoning cases. The food processing staff should include healthy individuals who do not have any diseases, and they should undergo regular medical check-ups. In addition to being healthy, it is also important that the workers take particular care for their personal hygiene and execute proper food handling behavior. This is especially important because food handlers can cause cross-contamination between raw and cooked foods, and they may jeopardize food hygiene by improper preparation, cooking and storage of foods. A study confirmed by the Food and Drug Administration (FDA) determined that 81 foodborne diseases were caused by foods contaminated via food processing workers. It should be noted that food workers have the power to make a remarkable impact on public health. In reducing the foodborne diseases or food poisoning, the personal hygiene practices of workers at food production sites are a key factor. It is well known that proper personal hygiene is the best way to mitigate the risks associated with contamination by most of the bacteria generally seen as being responsible for foodborne diseases.

The hygiene practices that should be performed by food processing workers include precise adherence to personal hygiene regulations and the wearing of special, protective attire such as bonnets and gloves to help secure their hygiene. It is important that these clothes be regularly cleaned and cared for. Reports have shown that the lack of personal hygiene among workers at food processing sites was among one of the practices that contributed to food borne diseases and that proper hand washing was the most commonly neglected practice. The practice of improper hand washing may be an important factor in the spreading of foodborne diseases by cross-contamination.

Kitchen Hygiene

Issues related to kitchen hygiene should be addressed prior to even completing the construction of the kitchen. The plan and interior design of the kitchen should be arranged in such a way as to facilitate proper hygiene practices (e.g., protection against cross-contamination). The kitchen should be constructed with durable materials that are easy to care for and clean. These materials should be free of any substances that can potentially render the food unsuitable for consumption, such as parasites, pathogenic microorganisms and toxins, or raw materials, food components and others substances used in the production of processed products that have been infected by foreign substances.

The surfaces should be designed in such a way as to not accumulate dirt, to prevent foreign substances from infecting foods and to not allow the creation of dense liquids or mold. Pests should also be prevented from entering the workplace. Drainages should be easy to clean and prevent pests such as rodents from entering and waste liquids from re-entering back into the kitchen environment. The kitchen should have natural or artificial lights that are equal to the natural light of the day, and the intensity and color of the lights should not impact the production or the quality of the foods in a negative way. There should be continuous control on humidity and temperature in the food storage sites. To maintain a hygienic kitchen, the continuity of cleaning and disinfection procedures is as important as the layout plan of the kitchen.

Therefore, a cleaning and disinfection plan should be developed for the kitchen, and all cleaning and disinfection practices should be done according to this plan and recorded. The staff should be trained on the sanitation and disinfection of the kitchen.

Equipment Hygiene

Equipment that comes into regular contact with foods should be made of material able to be cleaned and disinfected, resistant to corrosion and non-toxic. The equipment should be arranged in a way as to enable it and the area around it to be cleaned sufficiently. When it is necessary that chemicals be used to clean the equipment, the instructions governing the use of those chemicals should be followed. Calibration checks of the equipment and tools should be made regularly, and these checks should be recorded.

Aim and Objectives

Aim: To study the practice of food hygiene at household level concerned to home kitchens.

Objectives

- To understand existing sanitation related hygiene practices in the kitchen.
- To assess cleanliness in the kitchen.
- To assess personal hygiene.
- To find out cross contamination or improper handling of food is the cause of food borne illnesses.

Review of Literature

A study was conducted by Juan C. Archila-Godinez and Han Chen et al. in 2022 on Low-income families are reported to have a limited knowledge of food safety and resources to follow food safety practices compared with the

rest of the population. This virtual educational program improved low-income individuals' food safety knowledge and changed their food safety attitudes and behaviors, giving a path to develop and evaluate more virtual food safety educational programs in the future.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8834591/

The study was conducted by Mark Raguindin Limon in the year 2021 to assess the self-reported and observed food safety practices (FSP) of food handlers, who deliver food products that are prepared and cooked at home during the COVID-19 pandemic in the Philippines. Several studies revealed that the home kitchen is generally the point of origin of food contamination, which may happen at any point of the food supply chain. Food can be mishandled consciously or unconsciously at several points in this chain. Therefore, training of concerned individuals, regarding the acceptable procedures, becomes crucial in reducing if not eradicating incidences of foodborne disease outbreaks.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7903060/

The study was conducted by Ola H. moghnia and Vincent O. Rotimi *et al*. in 2021 on Safe food handling and proper hygiene practices performed by food handlers (FHs) in catering establishments are fundamental elements in reducing foodborne diseases. This study aimed at assessing food safety knowledge and compliance of hygiene practices of FHs within food establishments (using a structured questionnaire). A cross-sectional study was carried out from May 2016 to March 2018 on FHs working in community and healthcare settings. The hygiene assessment score was 95.8%. In general, FHs have adequate knowledge and compliance with food safety practices. It is recommended that regular and ongoing training on hygienic practices and proper food safety techniques must be given to all FHs to ensure food safety.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7915981/

A study was conducted by Leila Arfaoui and Wejdan Alghafari in 2021 on Food safety behavior and handling practices among Saudi women during the COVID-19 pandemic. In this cross-sectional study, we assessed the changes in the food purchasing habits, food safety behavior, and food handling practices among Saudi women during the COVID-19 pandemic. The study included 1356 women who were randomly approached via convenience sampling using an anonymous questionnaire distributed through various social media platforms. However, our results highlight the need for more customized public education programs for Saudi women, who are the primary food handlers in most households, particularly during food preparation, to further improve food safety practices and prevent potential food mishandling, which will eventually help preventing the spread of COVID-19.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9070633/

A study was conducted by kevin serrem and Csaba ballint illes in 2021 on Inadequate catering facilities in Kenyan public universities compel students to handle and prepare their own food, in environments not designated for food preparation such as rooms in hostels. This study investigated the level of food safety and sanitation knowledge, attitude, and practice, among students in an effort to prevent food-borne diseases. A cross-sectional study was conducted among 535 students from two public universities in Kenya. ANOVA results revealed significant correlation between the gender and knowledge and practice of food safety and sanitation Kenyan universities should consider introducing food safety courses that emphasize Food Safety Management System (FSMS) and Hazard Analysis Critical Control Point (HACCP) practices and procedures especially to non-science-based courses, in addition to providing students with proper cooking and food handling facilities.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8358354/

This study was conducted by Adenilma da Silva Farias and Rita de Cassia Coelho de Almeida Akutsu et al. in 2020 aimed to analyze the food safety conditions in home kitchens from the Brazilian Federal District. A previously validated instrument composed of 77 items (in four blocks) was used to evaluate the safety conditions in home kitchens. A survey was carried out with on-site application with 226 home kitchens' food handlers in the Federal District, Brazil to evaluate Brazilian home kitchens' good practices. The result of the on-site evaluation shows that the instrument was able to measure food safety conditions in Brazilian Federal District domestic kitchens. Such findings can contribute positively to the development of actions in health education that help in the adoption of good practices of food manipulation and, consequently, in the reduction in foodborne disease outbreaks in residences.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7369695/

The study was conducted by Chengzhang Zhong and Amy R. Reibman et al. in 2020 on A majority of foodborne illnesses result from inappropriate food handling practices. One proven practice to reduce pathogens is to perform effective hand-hygiene before all stages of food handling. Our results demonstrate that a carefully designed video action recognition system can play an important role in improving hand hygiene for food safety.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8321164/

A study was conducted by Tae Jin Cho and Sun Ae Kim et. alin 2020 on a closer look at changes in high risk food handling behaviours and perceptions of primary food handlers at home in south korea across time. In conclusion, our findings supported the understanding of the risks in domestic food safety necessary for the development of effective perception-behavior interventions to narrow the risk perception-behavior gap. This study is expected to act as a leading role of the representative work for the novel research design (i.e., comparative analysis on the individual consumer surveys conducted with same questionnaires at different time-points for identifying unchanged distinct gaps in risk perception-behaviors over time), highlighting the necessity for the following surveys from various regions and time-points to expand the body of knowledge on food safety for consumers.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7602069/

A study was conducted by Lakshmi n. and Ramya m. r. et al. in 2020 on Domestic food hygiene practices among households in Pulipakkam Village, Kanchipuram Food hygiene implies measures necessary to ensure safety of food from production to consumption. Food can become contaminated at any point during harvesting, processing, storage, distribution, transportation and preparation. Lack of proper food hygiene can lead to food borne diseases and death of the consumers. The purpose of food hygiene is to prepare and provide safe food and consequently contribute to a healthy and protective society. The study revealed that 74%of respondents handle drinking water unsatisfactorily. 89% of people don't store cooked food in the refrigerator within 2 hours and nearly 54% of them don't boil water before drinking. Only 48% of them separated raw food from cooked food. The results of the study showed that food hygiene practices should be improved in the community to safe guard them against food-borne diseases.

https://www.ijcmph.com/index.php/ijcmph/article/view/7351

a study was conducted by Enunwaonye H. C and Olugbade A. C et al. in 2020 Food Safety and Hygiene Practices among Food Handlers in Selected Markets in Benin-City, Edo State, Nigeria. . Aim To examine the safety practices among food handlers regarding food hygiene in selected markets in Edo State, Nigeria and examine relationships among variables within study. Results Study found that majority of market food handlers reported good practice of food hygiene. Evidence of relationship between the level of education, sex and practice of food hygiene was statistically significant in this study. Also, years of handling food and food hygiene and safety practices were not correlated. The relationship between the practice of food hygiene and knowledge of food hygiene was also statistically significant in our study. Conclusion This current study concludes that reported practice of food hygiene and safety differ from observed practices among food handlers in Markets.

https://www.ijsr.net/get_abstract.php?paper_id=SR20421150023

This study was conducted by Ligia Isoni Auad and Veronica Cortez Ginani et al. in 2019 aimed to investigate food truck consumers' profile, choices, preferences, and food safety importance perception. We conducted structured interviews with a convenient sample of 133 food truck consumers in the Federal District, Brazil. The findings of this study indicate that there remains the need for consumers to comprehend their role in the food supply chain. Food safety and food handling practices are of public concern, and strategies are required to prevent foodborne diseases. Future public health interventions aiming to increase consumer knowledge and awareness of food safety should be emphasized.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6566650/

a study was conducted by Charles Odilichukwu R. Okpala and Ifeoma M. Ezeonu in 2019 on food hygiene /microbial safety in the typical household kitchen: some basic must knows for the general public The primary objective of food hygiene is to eliminate or reduce the risk of exposure to foodborne illness. Biological, chemical and/ or physical agents contaminating food may cause foodborne illness, but by far the most common causes are biological agents, with microorganisms constituting a major proportion. Therefore, food hygiene/ microbiological safety should target, not necessarily to totally eliminate microorganisms from food, but to prevent any continued proliferation and/or production of toxins in food. Understanding the food hygiene/microbiological safety concept (s) definitions can help to enhance the knowledge base of kitchen user (s) with respect to principles of foodborne diseases and food safety practices. In this concise review also, some common modes of microbial contamination in household kitchen as well as food safety practices will be discussed, to help educate the general public as well as reduce the incidence of foodborne illnesses within household kitchen contexts.

https://microbiologyjournal.org/food-hygiene-microbiological-safety-in-the-typical-household-kitchen-some-basic-must-knows-for-the-general-public/

a study was conducted by Akoma Okugn and Demelash Woldeyohannes in 2018 on Food hygiene practices and its associated factors among model and non-model households in Abobo district, southwestern Ethiopia: Comparative cross-sectional study. This study revealed that good food handling practice is low among model and non-model households. While type of household (model versus non model households), sex, knowledge of solid waste to cause diseases, availability of functional hand washing facility, and availability of liquid wastes disposal pit were the factors associated with outcome variable. Health extension workers should play a great role in educating households regarding food hygiene practices to improve their knowledge and practices of the food hygiene.

https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0194391

This study was conducted by Mveli Cyril Mkhungo and Ajibola Bamikole Oyedeji et al. in 2018 to determine the level of food safety knowledge and practices during food handling and preparation at household level in selected areas in KwaZulu-Natal province of South Africa. Fifty households were selected to participate based on their monthly income, age and educational level. Samples of raw foods were randomly collected from the participating households for microbial analyses. Swabs from food contact surfaces were also collected and analyzed for the presence of pathogens. Food safety knowledge and proper food handling practices were found to be inadequate in the areas studied and urgent intervention is required to prevent fatal incidences of food borne illnesses.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6036997/

a study was conducted by Nora a. Moreb and Anushree priyadarshini et al. in 2017 Food safety concerns have existed for a long time, as millions of people across the globe suffer from food borne disease every year. Contamination of food owing to limited knowledge of food safety practices primarily increases the risk of food borne illnesses The results of the present study also showed that, the level of knowledge of food safety practices varies amongst the residents based upon their gender, age, place of residence, education level, and marital status, while no significant difference in the knowledge level was observed based upon their per capita income. The study thus, highlights that there is scope for improvement for the residents to advance their knowledge of food safety practices. Therefore, it can be recommended that researchers, educators, food safety communicators, and the media can engage in educating the population, to help the residents advance their food safety knowledge to safer food practices.

https://www.researchgate.net/publication/317053225_Knowledge_of_Food_Safety_and_Food_Handling_Practices_amongst_Food_Handlers_in_the_Republic_of_Ireland

The study was conducted by Om Prasad Gautam and Wolf-peter Schmidt et al. in 2017 on intervention to improve five food hygiene behaviors among mothers of young children in rural Nepal. This novel intervention targeted five behaviors; cleanliness of serving utensils, hand washing with soap before feeding, proper storage of cooked food, and thorough reheating and water treatment. Based on formative research and a creative process using the Behavior-Centered Design approach, an innovative intervention package was designed and delivered over a period of 3 months. The intervention appeared to be equally effective in improving all five behaviors in all intervention clusters. This study shows that a theory-driven, systematic approach employing emotional motivators and modifying behavior settings was capable of substantially improving multiple food hygiene behaviors in Nepal.

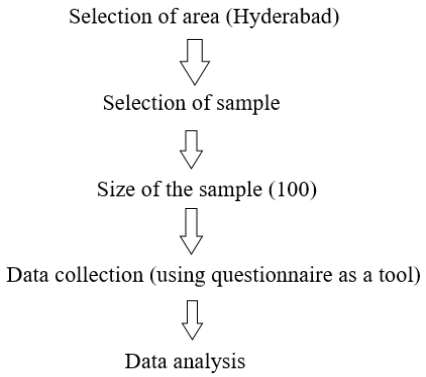
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5462581/
A study was conducted by Anna K. Jones and Paul Cross et al. in 2017 on estimating the prevalence of food risk increasing behaviors in UK kitchens. Foodborne disease poses a serious threat to public health. In the UK, half a million cases are linked to known pathogens and more than half of all outbreaks are associated with catering establishments. The UK Food Standards Agency (FSA) has initiated the UK Food Hygiene Rating Scheme in which commercial food establishments are inspected and scored with the results made public. In this study we investigate the prevalence of food risk increasing behaviors among chefs, catering students and the public. Chefs in fine-dining establishment were less likely to wash their hands after handling meat and fish and those who worked in award winning restaurants were more likely to have returned to work within 48 hours of suffering from diarrhea and vomiting. We found no correlation between the price of a meal in an establishment, nor its Food Hygiene Rating Score, and the likelihood of any of the food malpractices occurring.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5489142/
A study was conducted by Fosiul A. Nizame and elli leontsini et al. in 2016. This study explored the steps of food preparation, related hand washing opportunities, current practices, and community perceptions regarding foods at high-risk of contamination such as mashed foods and salads. In three rural Bangladeshi villages, we collected qualitative and observational data. Food preparation was a complex and multistep process Among 24 observed caregivers, of 85 opportunities to wash hands with soap during food preparation, washing hands with soap occurred twice, both times after cutting fish, whereas washing hands with water alone was common. A simple and feasible approach is promotion of hand washing with soap upon entering and re-entering the food preparation area, and ensuring that everything needed for hand washing should be within easy reach.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4973173/
The study was conducted by Megan L. Clayton and Katherine Clegg Smith et al. in 2015 on factors that impact proper health and hygiene practice in food service Foodborne disease is a significant problem worldwide. Research exploring sources of outbreaks indicates a pronounced role for food workers' improper health and hygiene practice. Issues raised by interviewees include factors across the five levels of the social ecological model, and confirm findings from previous work. Interviews also reveal many factors not highlighted in prior work, including issues with food service policies and procedures, working conditions (e.g., pay and benefits), community resources, and state and federal policies. Food safety interventions should adopt an ecological orientation that accounts for factors at multiple levels, including workers' social and structural context, that impact food safety practice.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4727591/
a study was conducted by carol byrd-bredbenner and Jacqueline berning, et al.in 2013 on Food Safety in Home Kitchens, Although foodborne illness is preventable, more than 56,000 people per year become ill in the U.S., creating high economic costs, loss of productivity and reduced quality of life for many. Experts agree that the home is the primary location where foodborne outbreaks occur; however, many consumers do not believe the home to be a risky place. However, the high rate and cost of foodborne illness highlights the need for health professionals to develop and implement more effective (*i.e.*, behaviorally focused, theory-driven, tailored, and personalized) food safety educational programs that result in safer food handling practices of consumers at all ages .Clearly, there are many opportunities for health professionals to extend their practice by incorporating safe food handling in consumer communications.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3799528/
a study was conducted by Elisa Langiano and maria ferrara in 2012 Aim To define food safety and risk perception of foodborne diseases in the private home setting and identify specific behaviours during food purchase, storage and preparation in a large survey study. Results Our data showed that there was an insufficient amount of knowledge regarding foodborne diseases and pathogens. In most families, we found that there was a lack of correct adherence to food hygiene, mainly due to errors during both food preparation and storage. There was a higher risk for food safety errors in families with children, older persons and pregnant women. Conclusion Our findings confirm that the home environment represents an important site for the spread of pathogens responsible for foodborne diseases. In order to adopt good hygiene practices in the home setting, consumers need to be informed about safety procedures of domestic food handling, storage and preparation.
https://www.researchgate.net/publication/221845171_Food_safety_at_home_Knowledge_and_practices_of_consumers
a study was conducted by Elizabeth c Redmond and Christopher j Griffith in 2009 on The importance of hygiene in the domestic kitchen: Implications for preparation and storage of food and infant formula Public concerns relating to food safety remain high with most attention focused on manufactured foods and those served in catering operations. However, previous data have suggested that the home may be the main location for cases of food-borne disease. The aim of this paper is to review the microbiological risks associated with hygiene in the domestic kitchen related to food and infant fo Incidence data identify the home as an important location for acquiring food-borne disease. The domestic kitchen can be used for a variety of purposes and is often contaminated with potentially harmful micro-organisms such as *Campylobacter* and *Salmonella*. Consumer hygiene habits have frequently been found to be inadequate and relate both to microbial growth, survival and cross-contamination. Due to the reduced immune response of infants, the activities associated with the preparation of infant formula and associated bottles and equipment are of particular concern.
https://journals.sagepub.com/doi/abs/10.1177/1757913908101604
A study was conducted by Kumiko Takanashi_and Yuko Chonan et al. in 2009 to investigate the potential factors of food-hygiene practices of mothers on the prevalence of diarrhea among their children. Mothers who had children aged 6 months–5 years were recruited in a hamlet in Viet Nam. The food-hygiene practices included hand-washing, method of washing utensils, separation of utensils for raw and cooked food, and the location where foods were prepared for cooking. A face-to-face interview was conducted, and data on 206 mothers were analyzed The results indicate that food-hygiene practices of mothers, such as avoiding preparing food for cooking on the ground, has a

potential impact in preventing diarrhoea among children in Viet Nam.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2928088/
A study was conducted by Anna Stenberg and Clare Macdonald et al. in 2006 To assess whether domestic kitchen hygiene is an important contributor to the development of diarrhea in the developed world. Some 14 studies were finally included in subsequent analyses. Of the 14 studies included in this systematic review, 11 were case-control studies, 2 cross-sectional surveys, and 1 RCT. Very few studies identified any significant association with good environmental kitchen hygiene. Although some of the variables in the reanalysis of the UK IID study were statistically significant no obvious trend was seen. The balance of the available evidence does not support the hypothesis that poor domestic kitchen hygiene practices are important risk factors for diarrheal disease in developed countries.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2266741/
The study was conducted by SF Bloomfield and R Stanwell-smith et al. in 2006 on 'hygiene hypothesis' as originally formulated by Strachan, proposes that a cause of the recent rapid rise in atopic disorders could be a lower incidence of infection in early childhood, transmitted by unhygienic contact with older siblings. Although this review concludes that the relationship of the hypothesis to hygiene practice is not proven, it lends strong support to initiatives seeking to improve hygiene practice. It would however be helpful if the hypothesis were renamed, e.g. as the 'microbial exposure' hypothesis, or 'microbial deprivation' hypothesis, as proposed for instance by Bjorksten. Avoiding the term 'hygiene' would help focus attention on determining the true impact of microbes on atopic diseases, while minimizing risks of discouraging good hygiene practice.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1448690/

Methodology
Methodology is a significant part of any research study, which enables the research to produce a blue print of the research undertaken.
Methodology of present study is discussed under the following heads:-

- Research design
- Selection of area
- Size of sample
- Data collection
- Data analysis

Research Design
Non-experimental. Design of the study is in the following chart.



Research Approach
Community study

Selection of Area
The place of Study was done in different areas of Hyderabad.

Selection of Sample
The 100 samples from general population was selected for survey.

Duration of Study
The duration of study was 2 months.

Collection of Data
Questionnaires
The questionnaire contain questions related to general information, Anthropometric measurements, about shifts, dietary pattern and other questions related to health.

General Information
It was collected to get the following details like personal information of respondents via name, age, gender, occupation.

Dietary Assessment Method
This method is used to find dietary intake of food habits. The effect of lifestyle and dietary practices were included in questionnaire to assess the dietary pattern of the subjects. Each subject was interviewed about dietary pattern and asked to fill the sheet.

Data Analysis
The data collected was tabulated and calculated by using statistical formula, chi square of independence

Formula,

$$t = \frac{\bar{x} - \mu}{\frac{S}{\sqrt{n}}}$$

Where,
$\bar{X}$ is the sample mean,
μ is the hypothesized population mean,
S is the standard deviation of the sample and
n is the number of observations in the sample.

Results and Discussion

Table 1: Education Level

option	frequency	Distribution
Intermediate	19	19
Bachelor's	40	40
Master's	20	20
Others	21	21

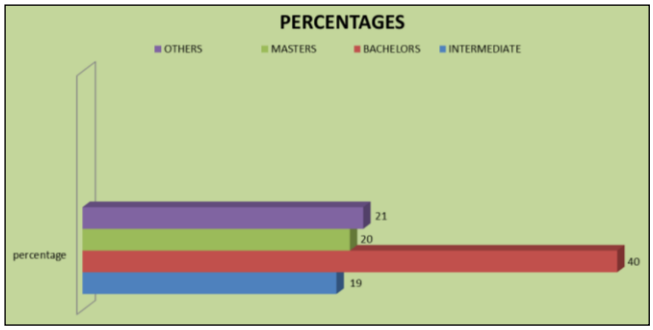


Fig 1

Discussion

the above table shows that out of 100 subjects 19% were found to be intermediate, 40% were found to be bachelor's, 20% were found to be master's and 21% were others.

Table 2: Cleaning the Kitchen

options	frequency	Percentage %
daily	56	56
once a week	25	25
twice a week	4	4
fortnightly	8	8
once a month	5	5
occasionally	2	2

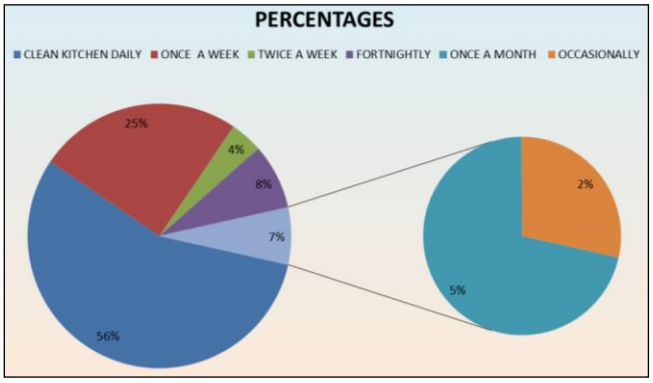


Fig 2

Discussion

the above table shows that out of 100 subjects 56% were found to be clean kitchen on a regular basis,25% once a week, 4%twice a week ,8% fortnightly, 5% once a month and 2% were found to be clean kitchen occasionally.

Table 3: Have They Suffered From Any of the Food Borne Illnesses

options	frequency	Percentage %
yes	69	69
no	31	31

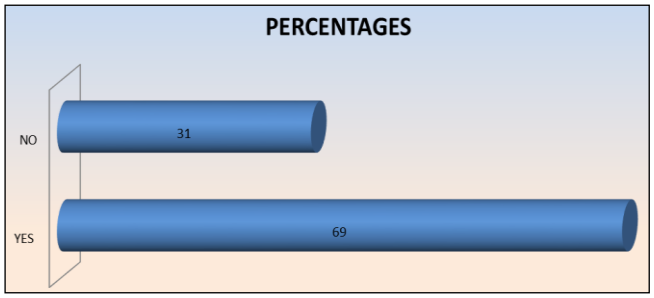


Fig 3

Discussion

The above table shows that out of 100 subjects 69% subjects were found that they have suffered from food borne diseases and 31% were found that they have not suffered from them.

Table 4: Managing Leftovers in the Kitchen

options	frequency	Percentage %
leave at the platform	9	9
refrigerate it	65	65
reheat it	9	9
discard it	17	17

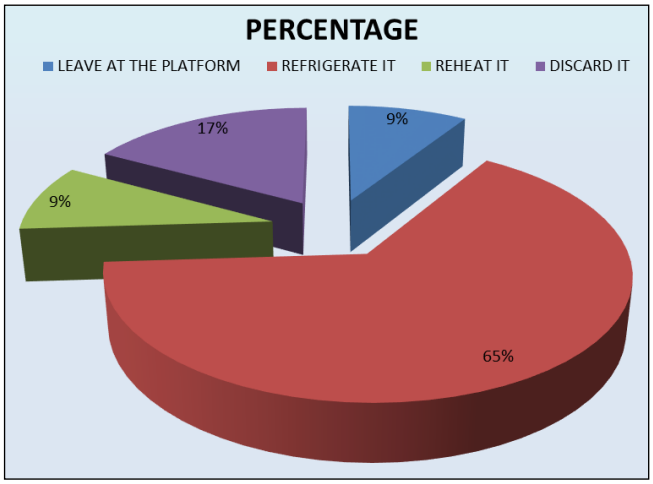


Fig 4

Discussion

The above table shows that out of 100 subjects 9% were found to leave leftovers of the kitchen at the platform, 65% were found to refrigerate it, 9% were found to reheat it, and 17% were found to discard it.

Table 5: Handling Mechanically Spoiled Food

options	frequency	Distribution
trim and utilize	44	44
discard	56	56

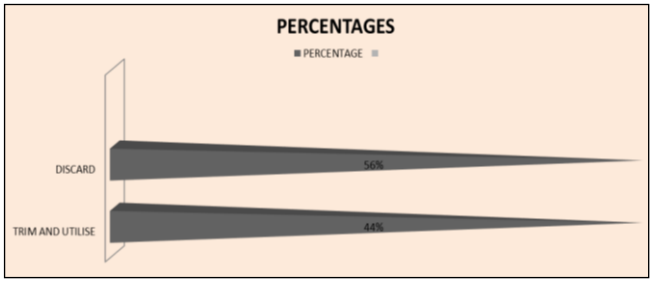


Fig 5

Discussion

The above table shows that out of 100 subjects 44% were found to be trim and utilize mechanically spoiled food, 56% were found to discard it.

Conclusion

The data was tabulated and analyzed statistically by using the formula sample t- test the results shows that p value is ($p>0.010$) it is significant at 0.010 and hence alternate hypothesis is proved. Thus study concludes that food hygiene practices should be improved in the community to prevent them against food-borne diseases.

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