IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 20, Issue 11 Ser.4 (November. 2021), PP 01-07
www.iosrjournals.org

Risk factors for food safety from farm to plate

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Abstract
Background: *Unsafe foods are linked to the deaths of an estimated two million people annually including children. Safety of food may break in any stage from farm or where harvested to plate or before serving. The aims of this study were to assess the risk factors of food safety from farm to plate.* ***Methods and Materials****: A cross sectional study was conducted from March,2017 to February,2018 at different rural area in Satkhira districts and different restaurants in Dhaka city. The respondents were farmers in rural area and food handlers at restaurants in urban area. The data was analyzed by using SPSS version 20.* ***Results:*** *This study shows that 67.3% respondent's education level was primary, 21.8% were secondary and 10.9% were higher Secondary level. Among 110 respondents only 22% have knowledge on food safety and 78% have no knowledge. Almost all respondent (90%) use pesticides and 9.1% not use pesticides during cultivation. A majority number of respondents(65.5%) use Pesticides for rapid growth, 18.2% use for more production and 16.4% use for prevention of insects. Only 10.9% respondents know appropriate doses of insecticides. Among all food handlers who participated in this study, 45.4% use chemical to prevent wastage. This study shows that 49% respondents (food handlers) wash food products before processing and 51% respondents (food handlers) do not perform and 50.9% respondents (food handlers) suffer by infectious disease among all respondent and 49.1% are free from it. Majority (74.5%) respondents (food handlers) wash their hands before processing foods and 74.5% respondents (food handlers) have knowledge on appropriate temperature and environment to restore food and 25.5% have no knowledge on this.*

Key Words: Pesticides, Food Handlers, Food Safety

Date of Submission: 05-11-2021 Date of Acceptance: 20-11-2021

I. Introduction:

Food is a significant reason for the considerable number of diseases in the entire world. Bangladesh, a third world developing country of South Asia, is not an exception in this case. Consumption of unsafe food is a serious threat to public health in Bangladesh for last couple of decades ((M. A. Mamunet al, 2013). A survey conducted by the Institute of Nutrition and Food Science, Dhaka University, in early 1980s had Revealed that inadequate diets and intake of adulterated foods are responsible for the malnutrition of 60 per cent of the people of Bangladesh. The Institute of Public Health (IPH) in Dhaka and the World Health Organization (WHO) in their joint study of 1994 on food adulteration tested 52 street vendors and found that, all of the vendors' food samples were contaminated with different types of disease breeding microorganisms (J. C. Cross,et al,2007).Another study of 2003 conducted by the same organizations as above in the capital city revealed that amongst 400 sweetmeats, 250 biscuits, 50 breads and 200 ice creams samples, 96 per cent of sweetmeats, 24 per cent of biscuits, 54 per cent of breads, and 59 per cent of ice creams were adulterated. This 2003 study found that over the preceding decades, some 50 per cent of the food samples tested in IPH laboratory were adulterated. Similarly, a recent official statistics published by the Ministry of Health and Family Welfare (MOHFW) of the of the Government of Bangladesh (GoB) reveals that nearly half of the food samples have been found adulterated tested by the IPH from 2001 to 2009.This GoB statistic indirectly demonstrates that the situation of the prevailing food adulteration concerns in Bangladesh has not improved over the past 10 years. Adulterated food has many deadly affects. The National Taskforce on Food Adulteration (NTFS) made by the GoB find out

that adulterated food stuffs each year causes various food borne illnesses, including diarrhea, malnutrition and other diseases leading to death of many people in Bangladesh. Especially children are more vulnerable than adults as unsafe food is a major cause of child mortality. Universally it is accepted that, unsafe food is an important factor of malnutrition, which causes various types of serious illnesses including diarrhea along with other permanent consequences for the human body. Hence, Bangladesh which has abundant adulterated foods cannot deny the contribution of unsafe foods for malnutrition. In a recent study recognized by the GoB portrayed the depressing picture of child mortality. Pointing the forefinger to the malnutrition as a significant cause of child mortality, this report mentioned that in every 19 children 1 child die before they complete five years.

II. Material And Methods:

Study Design:
This Cross-sectional Study was carried out to assess the risk factors for food safety from farm to plate.

Study period:
April, 2017 to March,2018

Study Place and Population:
Farmers of rural area of Satkhira District and food handlers at Dhaka City.

Sample size and sampling:
The sample was selected through purposive sampling and the sample size was total in 200.

Sampling Technique :
Purposive sampling (non-randomized) according to considering the inclusion and exclusion criteria.

Data Collection Procedure:
Data was collected by face to face interview with a pre-tested structured questionnaire. Check-list also used for datacollection.

Data analysis:
Data was checked, coded and recoded according to key variables. The analysis done by using SPSS version 20. The results were presented in tables, figures according to the findings of the objectives of the study. . Knowledge related variables were presented by figures and charts along with tables.

Ethical issues:
Ethical clearance for the study was taken from the Institutional Review Board (IRB) of funding institution.Permission was taken from the rural and urban corresponding authority and informed written consent was taken from the respondents after duly informing the possible advantages and disadvantages considering all ethical issues.

III. Results:

Distribution of Respondent by Age:

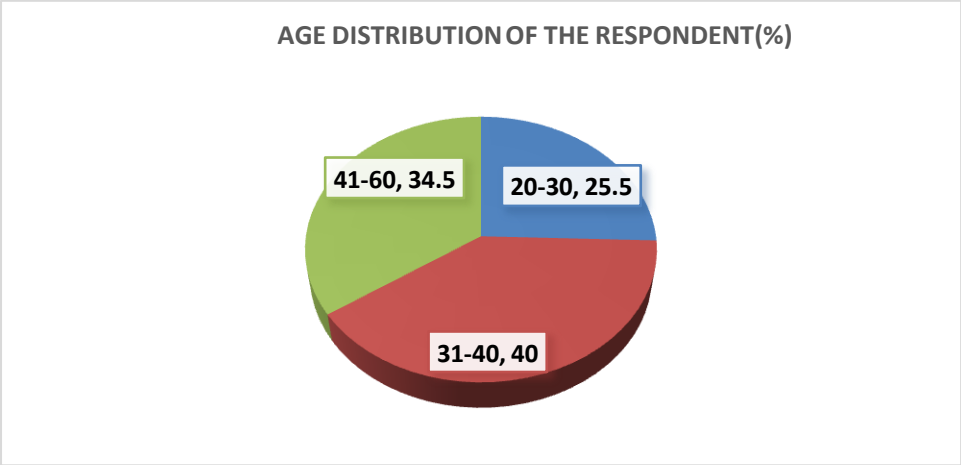

Fig:1 Reveals that 40% respondent were in 31-40 age group,34.5% were in 41-60 and 25.5% were in 20-30 age group.

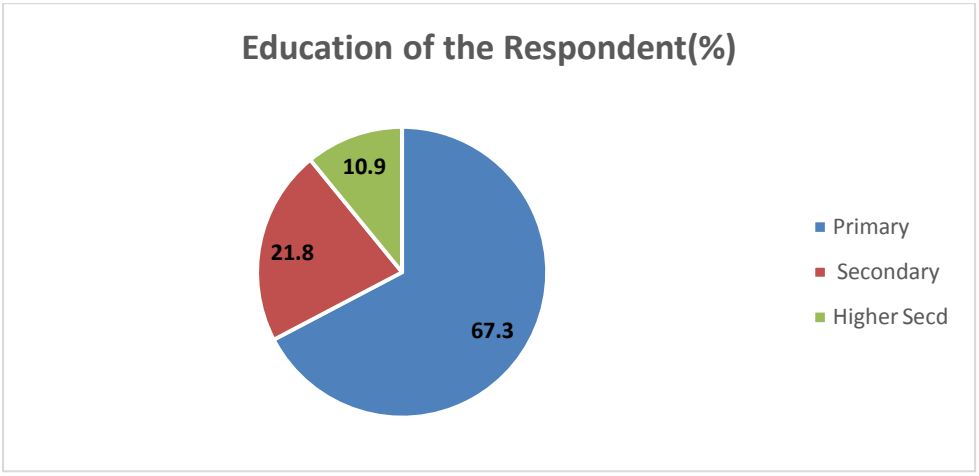

Fig: 2 Reveals that 67.3% respondent's education level were primary,21.8% were secondary and 10.9% were primary level.

Distribution of Respondent by Monthly Income:

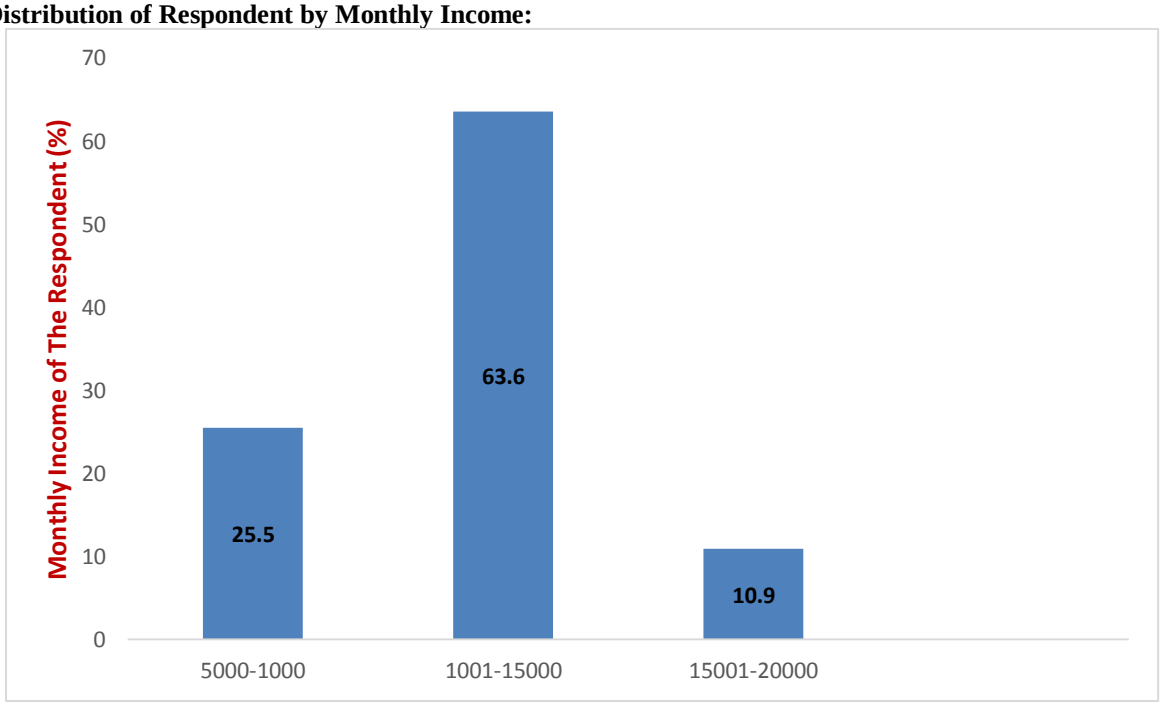

Fig 3 Reveals that 63.6% respondents were in (10001-15000),25.5% were in (5000-10000) and 10.9% were in (15001-20000) income group.

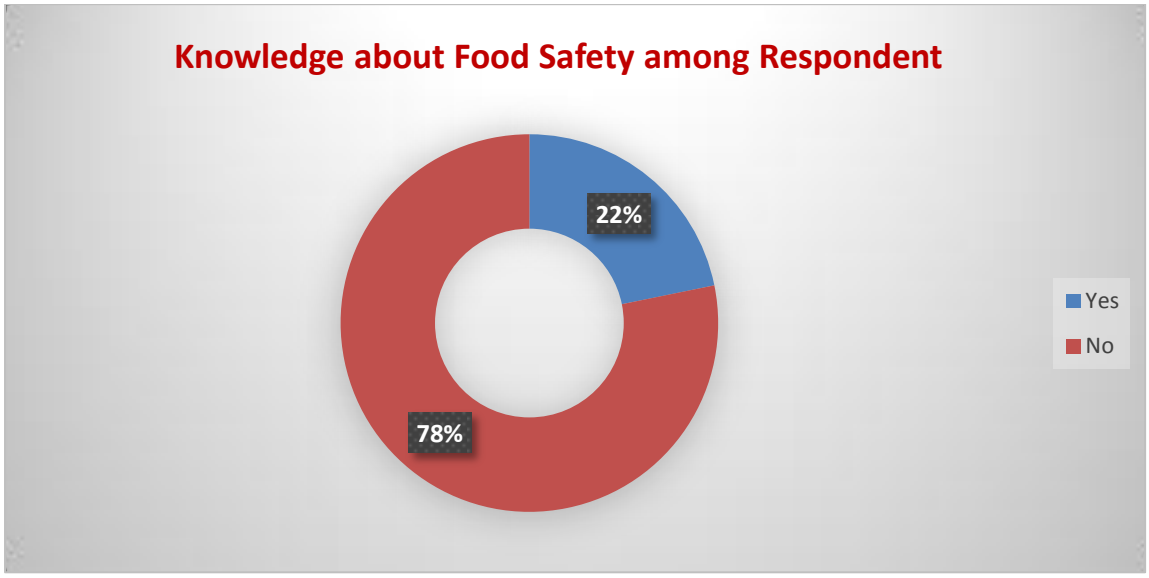

Fig 4 Reveals that only 22% respondents have knowledge on food safety and 78% have no knowledge.

Distribution of Respondent by use of pesticides during cultivation:

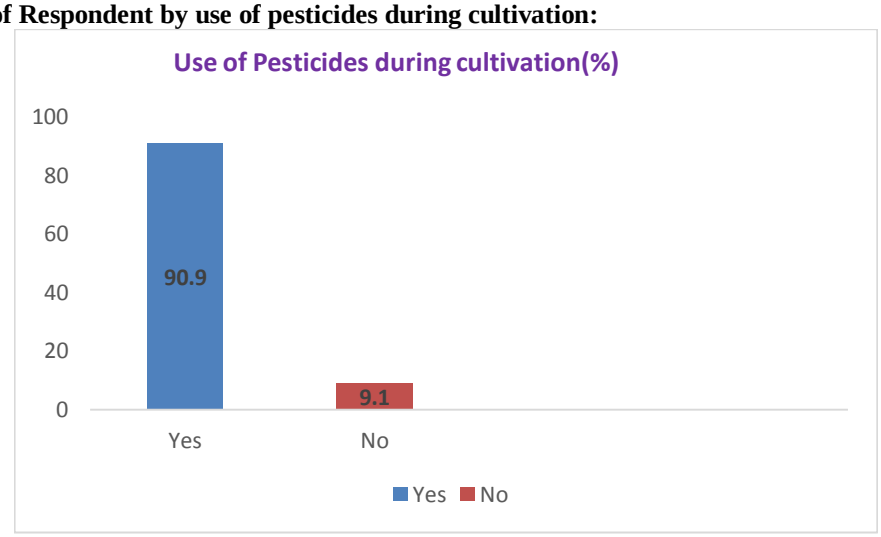

Fig 5 Reveals that almost all respondent (90%) use pesticides and 9.1% not use pesticides during cultivation

Distribution of Respondent by Reason of Using Pesticides:

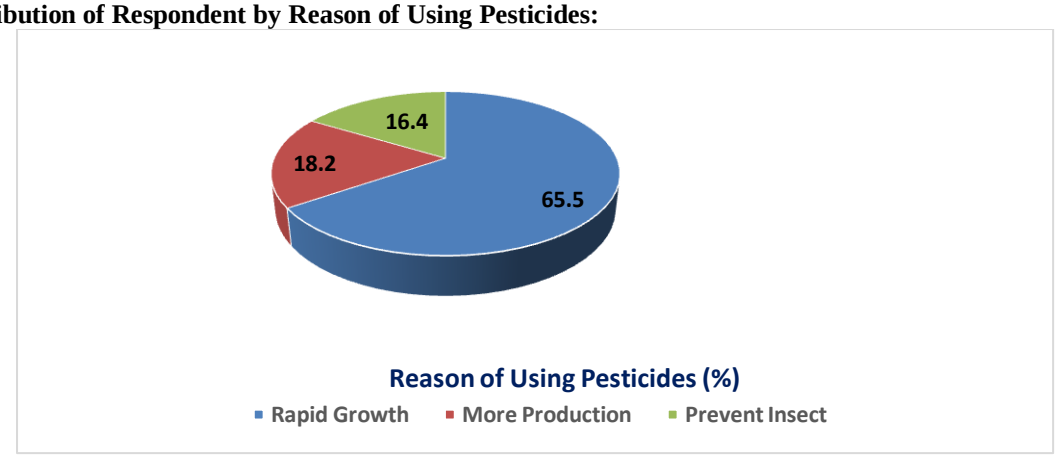

Fig 6 reveals that 65.5% respondent use Pesticides for rapid growth,18.2% use for more production and 16.4% use for prevention of insects.

Distribution of Respondent by Knowledge on approved doses of pesticides:

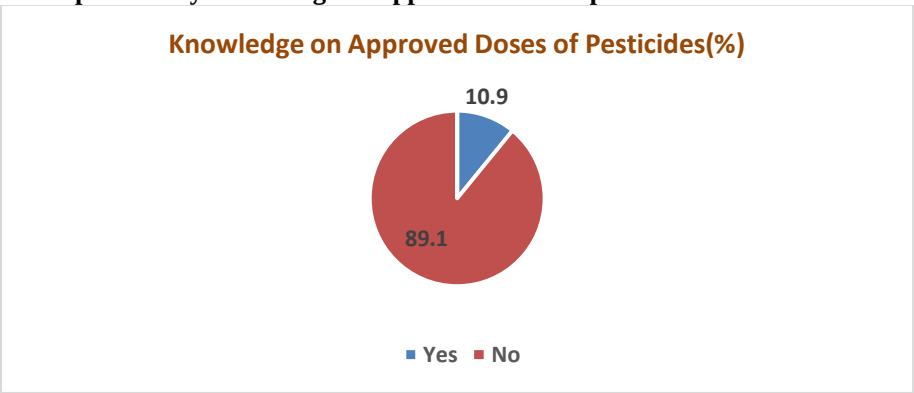

Fig 7 Reveals that only 10.9% respondents know appropriate doses of insecticides to use and89.1% don't know.

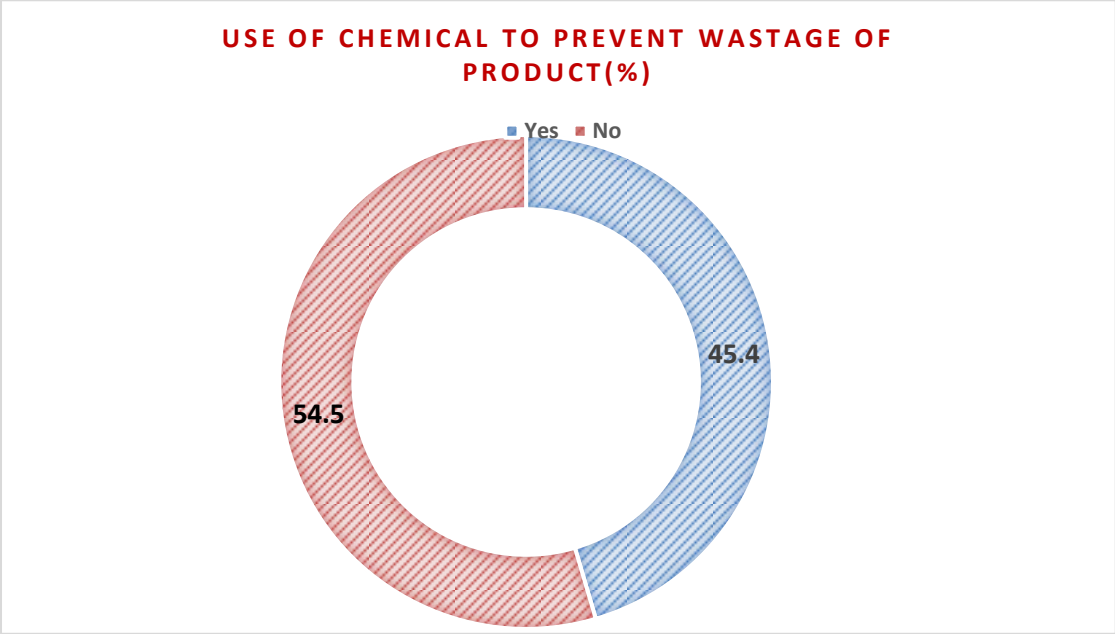

Fig 8 Reveals that 45.4% respondents use chemical to prevent wastage their product and54.5% don't use.

Distribution of Respondent (Food handlers) by contamination of infectious disease

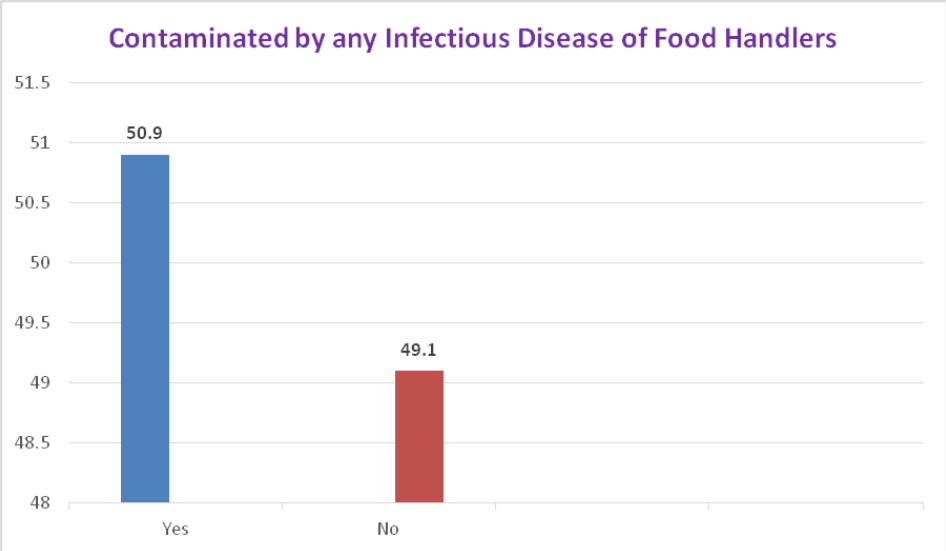

Fig 9 Reveals that 50.9% respondents (food handlers) suffer by infectious disease among all respondent and 49.1% are free from it.

Distribution of Respondent (Food handlers) by Washing of hands before processing food:

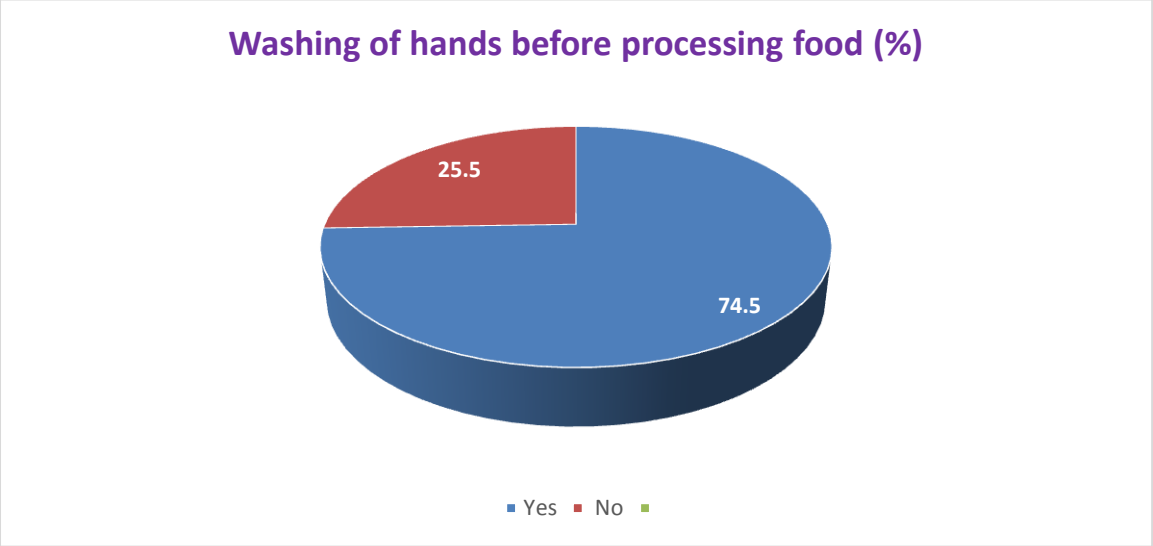

Fig 10 reveals that 74.5% respondents (food handlers) wash their hands before processing foods and 25.5% don't do this.

Distribution of Respondent (Food handlers) by knowledge on temperature for food reservation

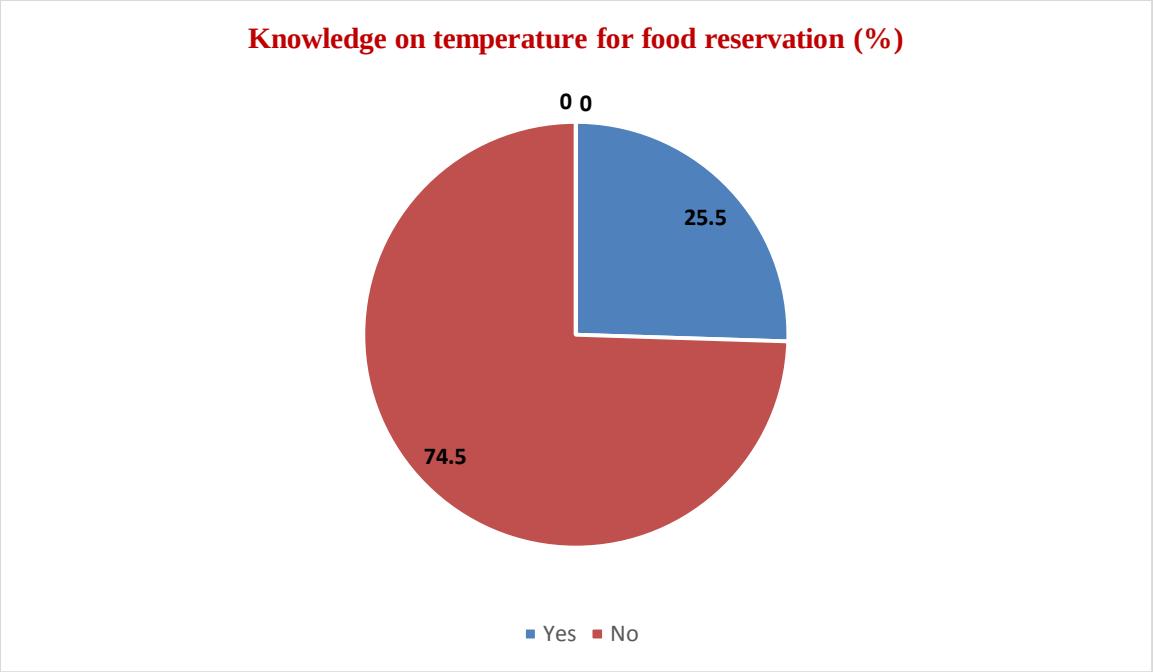

Fig 11 reveals that 74.5% respondents (food handlers) have knowledge on appropriate temperature and environment to restore food and 25.5% have no knowledge on this.

IV. Discussion:

This study demonstrates that farmers and food handlers do not have formal adequate education; especially food handlers have no training on food preparation in restaurant in Dhaka City. Among all respondent of this study 40% were in 31-40 age group,34.5% were in 31-40 and 25.5%were in 20-30. Monthly income of these respondent were 10001-15000 tk of 63.6%.

In our study reflects that level of knowledge on food safety is very poor among respondent; only 22% respondent known with food safety. Alarming observation of this study shows that most of the farmers (90.9%) use pesticides during cultivation of their crops. They use pesticides for rapid growth of crops although most of

the farmers (62%) know that pesticides are harmful to human health. Besides it another reasons of using pesticides are more production and prevent from insect or as insect control.

This study shows that a little number of farmers (10.9%) knows about approved doses of insecticides, there is a conception more using insecticides make more effective. Most of the respondents (81%) direct sell their products to local market and rest of them sell to whole seller and almost half of them(45.5%) use chemical to prevent wastage of their product.

In this study, during data collection we observed a majority number of food handlers (49.1%) do not washes raw food products before cooking or processing and 74.5% food handlers wash their hands before processing. Beside this 50.9% food handlers suffering by any kind of infectious disease.

V. Conclusion:

Farmers and food handlers do not have formal adequate education and knowledge; especially food handlers have no training on food preparation in restaurant in Dhaka City. Governments play major roles in managing risks to protect the public from hazards in the food supply. Regulatory agencies are empowered to prescribe rules, standards, and processes to control risks; to develop and maintain research programs to apply contemporary science and technology to safety decisions; to monitor risks in the food supply; and to provide information and education to all components of the food system.

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