INTRODUCTION

Food safety has emerged as an important global issue with international trade and public health implications. In response to the increasing number of food borne illnesses, governments all over the world are intensifying their efforts to improve food safety. The World Health Assembly adopted a resolution (WHA 53.15) in which, the World Health Organization (WHO) was asked “to give greater emphasis on food safety...with the goal of developing suitable, integrated food safety systems for the reduction in health risk along the entire food chain, from primary producer to the consumers. (Sudershan et al. 2009)

Consumer education is the process by which people learn the workings of the-marketplace so that they can improve their ability to act as purchasers or consumers of those products and services they deem most likely to enhance their wellbeing. Paul N. Bloom, University of Maryland 1976 Consumer education is therefore treated as being rather different than consumer information -- something with which it is often confused. Consumer education is considered to be a learning process which people go through which, of course, cannot be readily observed or heard. Consumer information, on the other hand, is clearly something which can be observed or heard

Sudershan et al. 2009 In order to ensure that the food sectors match up to the best global standards, the Government of India enacted an integrated food law called the Food Safety and Standards Act in August 2006 and in addition a Food Safety Authority is being established shortly. This autonomous authority will set standards and license the manufacture of food products which are healthy and safe.
Food Safety Standards Authority of India (FSSAI) has found that around 13% of food stuff is contaminated across the country. The results of the study came a day after another survey found that milk, an important nutritional component, was found to be adulterated across almost all major cities. *(Zeenews Bureau 11 Jan. 2012)*

The testing showed adulteration rates as high as 40% in Chhattisgarh, 34% in Uttarakhand, 29% in Uttar Pradesh, 23% in Rajasthan and 20% in West Bengal and Himachal Pradesh. Besides, nearly 17% of the food samples tested in Bihar and Chandigarh, 16% in Nagaland, 15% in Punjab, Madhya Pradesh and Orissa, 14% in Haryana, 12% in Tamil Nadu and 10% in Maharashtra were found to be adulterated. Interestingly, adulteration rates in Delhi were low at 4%, while in Karnataka it was just 5%. *(Zeenews Bureau 11 Jan. 2012)*

The legal enforcement is only one measure for the prevention of food adulteration and it will not have any appreciable impact unless and until there is adequate supply of food at a reasonable price which the average consumer can afford, awareness of the small traders about the food standards which they are expected to maintain, awareness of the common consumer regarding the dangers of adulterations and how to take advantage of the legal machinery to force the traders to get the proper food and lastly, a sense of honesty among the food traders, big and small, in the maintenance of the safety and quality of food.

It is undoubtedly a social evil which can be regarded as the outcome of an interaction between a number of social, economic, technical and human behavioural factors. It is a manifestation of a sick society and can be regarded as a crime similar to other crimes like theft, burglary or murder. Like any other crime, food adulteration is expected to continue in our society as long as the existing factors which generate crime will continue. *(Bagchi 1984- prevention of food adulteration: Some thoughts)* The question of eradication of food adulteration, is an impossible task. What is really necessary for consideration is the implementation of measures which can control this crime to a level which will not pose health hazard among the consumers.
Uttar Pradesh reported the maximum number of food adulteration in the country, the union health minister Ghulam Nabi Azad said on Tuesday adding that the country’s average adulteration stood at 11.14 per cent. ([http://www.indiamedicaltimes.com/24/09/2014](http://www.indiamedicaltimes.com/24/09/2014)).

Food is the basic necessity of life. One works hard and earns to satisfy our hunger and relax (enjoy) later. But at the end of the day, many of us are not sure of what we eat. We may be eating a dangerous dye, sawdust, soapstone, industrial starch, and aluminum foil and so on! Contaminated foods and drinks are common sources of Infection. Often, we invite diseases rather than good health.

What is food adulteration? We have noticed the color of water excessively yellowish while washing the pulses than is expected of it. White stone powder is mixed in salt, chalk powder is also mixed in it. Fine pieces of soap bars are mixed in hing. Generally the pure ghee is adulterated with the vanaspati but its testing method is also very easy. Malachite green named chemical is used enormously in green vegetables like green chillies. Haldi powder is mixed up with metanil yellow. (Kumar 2011) Vegetables look excessively reddish than desirable after the chilli powder is dropped into it while cooking. It happens due to the mixing up of rhodamine named chemical and the brick powder is also mixed up into it.

The detection of allergenic ingredients in food products has received increased attention from the food industry and legislative and regulatory agencies over recent years. This has resulted in the improvement of measures aimed at the protection of food-allergic consumers. The controlled production of food products and control activities executed by food inspection agencies rely on the availability of methods capable of detecting traces of allergenic ingredients. The development of such methods faces a multitude of analytical challenges. Those challenges will be identified and discussed in review. But question of food adulteration is still kept in mind. Hink and sink about food safety, adulteration and consumer education. (Hengel 2012)

Every housewife loves to search on newer recipes, putting into hours together of labour in kitchen
to prepare the recipes and dish it out to her family members. It gives them immense pleasure. But it always haunts their mind whether there are any kinds of adulterations in the ingredients they have used. (Kumar 2011)

It is common in almost all developing countries. And its ugly face is come out in the form of its harmful effects as stomach disorder, giddiness and joint pain, diarrhea, liver disorder, dropsy, gastrointestinal problems, respiratory distress, oedema, cardiac arrest, glaucoma, carcinogenic effects, paralysis etc. (Bagchi 1984) In a developing country which is at the lowest rung of the development ladder, food adulteration consists of relatively simple measures.

World Health Organization (WHO) has expressed its anxiety about the impact of food safety upon public health in Bangladesh in its website. It reveals that unsafe food can be a significant reason of many chronic and non-chronic diseases including but not limited to diarrhoea, cancer, heart diseases, various kidney diseases and birth defects.

In India under the law includes both willful adulteration of food and "substandard" foods which causes of adulteration could be identified: Inadequate availability of food to meet the demands of the consumer prompting the unscrupulous food traders to use any means to stretch the supply to earn more money, the more important reason is the basic dishonesty of the food traders and an urge to make quick and easy money, there are significant numbers of cases of food adulteration committed by small traders due to their ignorance about the standards they are expected to maintain. (Bagchi 1984)

Food safety programs have become increasingly necessary due to technological advances in food and agricultural sectors and also due to social changes introducing new food habits. In the past, food was consumed by those who produced it or by their immediate neighbors. Increased world production,
urbanization, industrialization and migration have however introduced new food safety problems into our food supply. *(Sudershan et al. 2009)*

The domestic food processing industry in India which has been reeling under uncertainties for years, is now facing fierce competition from the developed and some of the developing countries. This could be due to the wide variations in the usage of food additives and consequent technologies. *(Sudershan et al. 2009)* With the government's economic policy and the influx of imported food items containing ingredients not permitted under the PFA Act in India, the regulatory authorities are flooded with requests to liberalize food laws and permit the use of a greater variety of food additives.

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The legal enforcement is only one measure for the prevention of food adulteration and it will not have any appreciable impact unless and until there is adequate supply of food at a reasonable price which the average consumer can afford, awareness of the small traders about the food standards which they are expected to maintain, awareness of the common consumer regarding the dangers of adulterations and how to take advantage of the legal machinery to force the traders to get the proper food and lastly, a sense of honesty among the food traders, big and small, in the maintenance of the safety and quality of food. *(Bagchi 1984)*

It is felt that there is an urgent need for an impartial scientific study to determine the prevalence of food adulteration at household level in the country. Such study should not be undertaken by an interested party, the consumers or the law enforcers, but should be undertaken by a research institution in a properly designed and controlled manner. The National Institute of Health and Family Welfare and the Indian Council of Medical Research are ideally suited to
undertake such a study in various parts of India in order to find out the extent of food adulteration, the types of foods which are commonly adulterated, the types of adulteration adopted, the common adulterants used, the health hazards of such type of adulteration and lastly, to explore as far as possible the motives for such adulteration. In other words, such a study will generate for the first time data on the basis of which one can develop an "anatomy of food adulteration" and possibly, get an idea of the "profiles of the food adulterators" and the reasons for such adulteration. The results of such a study will be an eye opener for the consumers, law enforcers and also for those who are brooding for decades as to the reasons of food adulteration and how to prevent this menace. (Bagchi 1984)

**Justification of present study**

Food is essential for sustenance of life. Adulteration of food cheats the consumer and can pose serious risk to health in some cases.

Adulteration in food is normally present in its most crude form; prohibited substances are either added or partly or wholly substituted. In India normally the contamination/adulteration in food is done either for financial gain or due to carelessness and lack in proper hygienic condition of processing, storing, transportation and marketing. This ultimately results that the consumer is either cheated or often become victim of diseases. Such types of adulteration are quite common in developing countries or backward countries. However, adequate precautions taken by the consumer at the time of purchase of such produce can make him alert to avoid procurement of such food. It is equally important for the consumer to know the common adulterants and their effect on health. ³

Selection of wholesome and non-adulterated food is essential for daily life to make sure that such foods do not cause any health hazard. Although it is not possible to ensure
wholesome food only on visual examination when the toxic contaminants are present in ppm/ppb level. However, visual examination of the food before purchase makes sure to ensure absence of insects, visual fungus, foreign matters, etc. Therefore, due care taken by the consumer at the time of purchase of food after thoroughly examining can be of great help. Secondly, label declaration on packed food is very important for knowing the ingredients and nutritional value. It also helps in checking the freshness of the food and the period of best before use. The consumer should avoid taking food from an unhygienic place and food being prepared under unhygienic conditions. Such types of food may cause various diseases. Consumption of cut fruits being sold in unhygienic conditions should be avoided. It is always better to buy certified food from reputed shop.

This study will be conducted to make people aware about adulteration and its ill effects on health from their daily meal item, either, in cereals, pulses, fruits and vegetables or in milk and milk products and spices. Therefore, it is a need to make them aware with simple and easiest methods of detection of adulteration at household level with low cost value. Because most of the people are well aware with adulteration and its ill effects but due to their busy life, less time availability and costly methods of adulteration detection techniques was done by laboratories only. People ignore this one of the major health problem causing element at community level.

1.2 Objectives of the study:

1. To know the existing knowledge of consumer toward food laws, food safety, consumer behavior, health hazard at study area.

2. To elicit and classified adulteration in food stuffs used at household preparation in day to day life as per five food groups.
3. To give demonstration and detection of adulteration of selected food stuffs with using low cost method.

4. To examine food quality by using sensory evaluation techniques and detection kits.

5. To evaluate domestic methods for adulterated foods by using learning kits in the study area.

6. To study correlated factors with adulteration and its impact on health hazard as well as consumer behavior before and after intervention.

1.3 Hypothesis:

H₁: A significant difference of knowledge towards consumer education and magnitude of food adulterant.

H₀: There is no significant difference on KAP score of pre and post intervention criteria of adulterant found in food stuffs.

H₀: The lower knowledge of adulterant having higher risk of health hazard.

1.4 Brief outline of the study

This study was carried out in urban area of Lucknow City. For this study 300 women belonging to reproductive age groups (15 to 49 years) who carried their family were selected from three Mohall’s of Lucknow city by adopting multistage random sampling procedure for preliminary study. For interventional study first 150 respondents were selected from 300 respondents who were self-interested for this intervention. No. of study subjects evaluated the same 150 respondents who were already intervene during intervention phase. The tools in the study were pre-designed and pre-tested questionnaire comprising of family and individual schedule, consumer education, type of adulteration, methods of detection of adulteration and harmful effects of adulteration for preliminary study. During interventional study a low cost adulteration detection kit was developed to give demonstration through sensory evaluation technique (Duo-trio-test) and through low cost detection kit at household level. A score card
has been developed for post study to evaluate the KAP score for consumer education, adulteration detection in food stuffs and harmful effects adulteration in food stuffs of study subjects after intervention.

The data was analyzed using Statistical Package for Social Sciences version 15.0. Data has been represented as frequency and percentages for categorical and as mean and standard deviation for continuous variables. For the purpose of analysis, chi-square test has been used for categorical and Independent samples 't'-test and Analysis of variance (ANOVA) for continuous data. The confidence level of the study was kept at 95%, hence a 'p' value less than 0.05 indicates a statistically significant association.

1.5 Scope of the Study

Further these tools applicable for day to day life to evaluate adulterant in food stuffs and the present study will also enlighten with prevailed in the population as adulterant was only detect at laboratory level. It also further discuss when these kits are mobilize more and more population. Adulteration percentage in coming year must be checked and government may bound to some extent. Create policies and programs like pulse polio abhiyan like that for health and quality of life. They must be sensitize and specify during special occasion /festivals celebrated by us and used their consumer education behavior and use more and more low cost available adulteration kit to identified adulterant in food stuffs. So, that we extend livelihood on the parameter of human and development index and quality of life parameter.

1.6 Limitation of the study
• Due to unawareness and lack of importance toward adulterant, the study subjects are limited in their subject size.

• Before and after intervention only compared those who were intervene.