

## Perspective of Undergraduate Students of University in Edo State on the Side Effect of Food Additive on Human Health

Patience Aluyor<sup>1</sup> Christabel Ofure<sup>2</sup>

<sup>1</sup>Ambrose Alli University Ekpoma, Edo State Nigeria  
pataluyor@yahoo.com, 07063149091

### Abstract

This study examined the perspectives of undergraduate students on the side effects of food Additives to human health. Two research questions were raised to guide the study. The population of this study comprised of all undergraduates students in Edo State. The study adopted the descriptive design. The sample size for this study comprised one hundred undergraduate students in Ambrose Alli University Ekpoma, Edo state, Nigeria. using random sampling techniques. Questionnaire was used to collect data for this study, the questionnaire was made up of two parts, section A and B, section A contains demographic information of the respondents, section B contains research area of investigation, the instrument was validated by experts in Home Economics Education, department of vocational and technical education, AAU. Split half method was used to obtain reliability coefficient of 0.76 . The researcher personally administered the copies of the questionnaires to the respondents. It contains twenty items. The questionnaires were collected immediately to avoid loss of data's. The findings of this study revealed that most undergraduate students are not aware of side effect of food additives to human health, it was also revealed that the respondents consumed some harmful additives in large quantity, which is dangerous to human health, it was recommended among others that Government should create awareness on the side effect of food additive to human health. The public should avoid harmful food additives and reduce consumption of processed food.

**Keywords:** Food Additives, Types of Food Additives, Effects of Food Additives, Undergraduate Students.

**DOI:** 10.7176/JEP/14-15-06

**Publication date:** May 31<sup>st</sup> 2023

### Introduction

Food additive are substances that are added intentionally to foodstuffs which have no nutritive value but are used in the storage and processing of foods, such as food preservatives, food coloring agents, and anti-infective agents. The history of food additives dates back to ancient times, 'populations grew and so did the demand for food. In ancient cities where the climate was not conducive to food storage, especially due to the heat, people started looking for ways to extend the shelf life of products. Common practices included the addition of salt, curing, dehydration by sun, fish and meat smoking, (Carocho, Morale and Ferreira, 2015).

It was discovered that microorganisms were responsible for food spoilage, new chemical compounds were discovered that were able to inhibit the growth of microbes. Some substances when added to food often had disastrous consequences. Insufficient knowledge of toxicology and additives resulted in consumer poisonings and even death. (Afolayan, 2017) the increasing number of additives being used is a cause for concern, hence, it is important to emphasize that the use of additives should be most carefully controlled (Allan, 2011). Some food additives may cause more problems than others and very important to label them carefully, such as sulphites (200-228) preservatives found in many foods including wine, processed fruits and vegetables, dried fruits, bread and sausages can trigger asthma attacks and hyperactivity, Tartazine (102) and sunset yellow (110) .

The worse about food additives is that some illegal enterprises used it in order to pursue their economic interests, which have caused damage to consumers health, they misuse or overuse of food additives as well as use of fake and expired food additives. ( Zhong, Wu, Chan, Huang, and Hu. 2018).The effect of food additives may be immediate or may be harmful in the long run if one had constant exposure or accumulations. Immediate effects may include alterations in mental concentration, behaviour, or immune response, headaches, change in energy level. Long term effects may increase one's risk of cancer, cardiovascular disease, and other degenerative conditions (Pandey and Upadhyay, 2012). There are two main sources of dangerous additives, those that are used as part of the processing operation. These include the colourings, preservatives, flavours and flavour enhancers, sweeteners, texture agents and processing agents. The second source of additives to our food is from packaging, storing and handling of food and these information are not normally included on the label of the food. (Abdulummeen et al, 2017).

These are some of food additives commonly used and there side effect. Monosodium glutamate 621 is a flavor enhancer found in stock cubes, soup. Flavoured ships , sauces, and some snacks can cause, accelerated heart beat, headache, asthma hyperactivity. Chest- pain, numbness, and nausea. ( Bancroft,2015), Sodium nitrate is used as a preservative to prevent the growth of bacteria, adding a salty flavor and reddish pink colour,

it is frequently found in processed meats .When expose to high heat in the presence of amino acids, nitrites can turn into nitrosamine, a higher intake of nitrites and nitrosamine is associated with a high risk of stomach cancer, higher intake of processed meats may linked to a higher risk of colorectal breast and bladder cancer, nitrosamine exposure may also be linked to a higher incidence of type 1 diabetes ( Racheal,2018) . Turmeric is generally considered safe, but when taken in large quantity could create a problem such as headache, diarrhea and rash. ( William,2020). Excess intake of hot pepper can result to heart burn, indigestion, and rectal burning. Excess sodium intake has been linked to health problems such as kidney disease, high blood pressure, strokes, and osteoporosis. The American heart Association (AHA) 2011 explains that when there is too much sodium in the blood, it pull more water into the blood stream. As the volume of water increases, the heart has to work harder to pump it around the body. This can stretch the walls of the blood vessels, making them more susceptible to damage.

Butylated Hydroxytoluene (BHT) and Butylated Hydroxy anisole BHA are commonly used in many food formulations as food preservative. BHA and BHT have suspected of inducing health risks such as child hyperactivity, damage to the lungs, kidneys, lung, it can also result to cancer (Tran, 2013) Vinegar varied widely in content pH long term heavy vinegar ingestion can cause hypokalemia, hyperreninemia and osteoporosis (Hill et al, 2005) found in some infant formulas can cause irritability and muscle dysfunction (Halldiorson, 2010). It can cause diarrhoea, headaches and breathing difficulties .

Thyme is safe when little quantity is used , excess consumption of thyme may cause dizziness, upset stomach, cramps and headaches. Thyme oil can also be used, if thyme oil is used in excess it can result to hypotesion, an abnormal drop in blood pressure. Thyme has estrogen like effects, effect that influence menstruation and increase the risk of miscarriage. Allergy to thyme oil is also common , An allergy can manifest with nausea, vomiting and diarrhea. (Wong,2022) Many people used curry powder to cook their meals, increased amounts of the spice may cause illnesses like heart disease and breast cancer, curry also contain gluten, a protein in rye, that may prompt an allergic reaction like diarrhea or stomach cramping. (Allen, 2017). Colour improve physical appearance of food products. Artificial colouring becomes necessity as food tends to lose their natural shade during processing and storage. Tartrasine, also known as yellow 5 is associated with behavioural changes including irritability, depression, difficulty with sleeping and restlessness, the artificial food dyes do increase hyperactivity in some children . Red 40, yellow5 and yellow 6 may contain contaminats that are known cancer- causing substances. Benzedrine, 4 – aminobiphenyl and 4 – aminoazobenzene are potential carcinogens that have been found in food dyes . These contaminants are allowed in the dyes because they are present in low levels, which are presumed to be safe ( Subhashish Dey Bomm Hema Nagababu, 2022) the effect of food additives have been proven, the question is if undergratuates students is aware of the side effect of food additives to human health ,what is their perception on the side effect of food additives on human health.

### **Statement of the Problem**

The use of food additives has increased greatly in recent years. The change in dietary habits in recent decades has caught the attention of regulators and the scientific community, since the substitution of in natural by industrialized foods has contributed significantly to lowering the quality of people’s diet, a situation observe due to the indiscriminate use of chemical additives processed foods (Polonio and Peres, 2019) food additives are added to food to its keeping qualities, to sweeten and to preserve the food but it has a lot of adverse effect to humans health Eating natural foods enhances ones ability to cope with the reality of everyday life. This improves the probability of living happier, and healthier life. Excessive intake of processing foods is harmful to the body instead of useful and healthy. (Michalczyk, 2011), Therefore this study want to investigate the perspective of undergraduate students on the effect of food additives to human health.

### **Purpose of the Study**

The main purpose of this study is to investigate the perspectives of undergraduates students on the effect of food additives to human health, specifically the study sought to:

- (i) examine the knowledge of undergraduate students on the side effect of food additives on human health.
- (ii) determine the extent of use of food additives by undergraduate students.

### **Research Questions**

- (i) Does undergraduate students have the knowledge on the effect of food additives on human health ?
- (ii) What is the extent use of food additives by undergraduates students ?

### **Methodology**

This study adopted the descriptive survey design, Adeyemo (2006) cited in Olowe (2011) describe descriptive survey research design as a design that critically examines opinions, attitudes, subjects or ideas with aim of

providing accurate information about the phenomenon being studied. The population of this study consists of all students in tertiary institutions in Edo state, the sample for this study comprised one hundred students using random sampling techniques. Questionnaire was used to collect data for this study, the questionnaire is made up of two parts, section A, contains demographic information of the respondents and section B contains research investigation area. The instrument was design on the four points Liker scale, and validated by experts in Home Economics Education, department of vocational and technical Education, split half method was used to obtain reliability co-efficient of 0.76. The researcher personally administered copies of the questionnaire to the respondents. The questionnaires were collected immediately to avoid loss of data. The number of questionnaire used for this study is one hundred (100). The questionnaire was analyzed using simple percentage.

## Results

**Research Question 1:** Does undergraduate students have the knowledge on the effect of food additives on human health?

**Table 1:** Simple percentage of the knowledge of undergraduate student on the effect of food additives on human health.

S/N	ITEMS	SA	A	D	SD
1.	Maggi can result to chest pain.	9 (10.2%)	16 (19.5%)	52 (63.4%)	5 (6.1%)
2.	Vinegar can result to weakness of bones .	9 (10.2%)	5 (6.1%)	52 (63.4%)	16 (19.5%)
3.	Nitrite and nitrates can result to brain tumours.	8 (9.8%)	4 (4.9%)	60 (73.2%)	10 (12.2%)
4.	Saccharine can cause breathing difficulties .	4 (4.9%)	10 (12.2%)	56 (68.3%)	12 (14.6%)
5.	Turmeric can result to stomach upset.	8 (9.8%)	10 (12.2%)	60 (73.2%)	4 (4.9%)
6.	Excess use of salt can result to hypertension	4 (4.9%)	56 (68.3%)	12 (14.6%)	10 (12.2%)
7.	Thyme can result to breathing difficulty .	6 (7.3%)	27 (32.9%)	30 (36.6%)	19 (23.2%)
8.	Curry can result to indigestion.	12 (14.6%)	15 (18.3%)	40 (48.9%)	15 (18.3%)
9.	Color can cause asthma .	10 (12.2%)	4 (4.9%)	60 (73.2%)	8 (9.8%)
10.	Hot pepper can cause heart burn.	10 (12.2%)	60 (73.2%)	8 (9.8%)	4 (4.9%)

**Sources:** Field survey 2022

**Note:** SA – Strongly agree, A-Agree, D-Disagree, SD-Srongree disagree, D—Disagree.

Analysis in table One reveals that majority of undergraduates students do not have the knowledge of the effect of food additives on human health, the table shows that the respondents have difference perception about the effects of food additive to food.

**Research Question two:** What is the extent use of food additive by undergraduate students?

**Table 2:** Simple percentage of the use of food additives by undergraduate students.

S/N	ITEMS	VH	H	L	VL
1.	What is the extent use of maggi	17 (20.7%)	65 (79.3%)	-	-
2.	What is your extent of use of vinegar?	-	20 (24.4%)	62 (75.6%)	-
3.	What is your extent use of nitrites	-	4 (4.3%)	11 (13.4%)	67 (81.2%)
4.	Saccharine can cause breathing difficulties	8 (9.8%)	4 4.9%	10 (12.2%)	60 (73.2%)
5.	What is your extent use of turmeric	4 (4.9%)	12 (14.6%)	56 (68.3%)	10 (12.2%)
6.	What is extent use of salt?	-	38 (31.2%)	44 (68.8%)	-
7.	What is your extent use of thyme?	19 23.2%	27 32.9%	30 36.6%	6 7.3%
8.	What is your extent you of curry?	22 26.8%	60 73.2%	-	-
9.	What is your extent use of hot pepper?	22 (26.8%)	60 (73.2%)	-	-
10.	What is your extent use of colour	9 (10.2%)	16 19.5%	52 (63.4%)	5 (6.1%)

NOTE ; VH—Very High; H—High; L---Low ; Very Low.

Table two above shows the responses of respondents as regard their extent of use of food additives. The table revealed that most of the respondents make use of maggi, salt, curry, hot pepper constantly and very high quantity, while most of the respondents seldomly use vinegar, nitrite and nitrate, saccharine, turmeric and food colour which are mostly use in food industries to make it attractive, enhance the favour and make it attractive.

**Discussion of Findings**

Table 1 revealed that the awareness of the effect of food additives to human health is low. Though they are aware of some of the food additives are dangerous to health. This study is in line with Muluken and Getasew (2016) who reported that almost all the food additives, currently in use have been found to cause health problems in consumers. This has raised health concerns to government and consumers despite the increasing incidence and range of health problems of additives in packaged foodstuffs, awareness of consumers is not as such significant. The findings of this study agreed with Yakubu and Ezeonu (2018) who stated that food additives like nitrites and Nitrates, vinegar, and artificial sweetener have adverse effects on human health which include incidence of cancer in adults, brain tumors, leukemia and nasopharyngeal (nose and throat) tumors in children.

Table two revealed that the respondents use maggi, curry, hot pepper, thyme salt constantly and seldomly, including the use of other food additive used in food industries. This findings is in line with Ezeonu (2015) who explained that food additives maintain the high quality of foods, hence, its constant use. The finding is also in consonant with the study of Abdulmumeen et al (2012) who stated that there are two main sources of dangerous additives, the first is those that are put in as part of the processing operation, which include colourings, preservative, flavours, sweeteners, flavour enhancers, texture agents, and processing agents. While second source of food additives are food from packaging, and handling. Many foods available in the market contain different types of preservatives. These chemicals can give rise to certain health problems.

**Conclusion**

Based on the findings, of the study, it has been proven that food additive have side effects on human health. Undergraduate students do not have adequate knowledge on the effect of food additives to human health. The study also revealed that undergraduates students consume in large quantity some of the food additives that are harmful to human health. Food additives have their advantages for improving quality, increase attractiveness, increase appetite, makes the palatable and increase shelf life of the products, but also have side effect to human health.

**Recommendations**

Based on the conclusion, the researcher recommends.

- (i) General public should have adequate knowledge on side effect of food additives to human health.
- (ii) General public should avoid excessive use of food additives.
- (iii) An individual should avoid consumption of food additive to minimize the risk of developing health problem.
- (iv) There is need for Government to create awareness of side effect of food additives by using social media.

## References

- Abdulummeen, H.A., Risikat, A.N., Sururah, A.R. (2012) Foods: its preservative additives and applications, *international Journal of Chemical and biochemical Sciences* 6, 36 – 47.
- Afolayan, O.A. (2017). the effect of boric acid on sister chromatid exchange and chromosome aberrations in cultured human lymphocytes. *cytotechnology*, 56: 91 – 96.
- Allan, C. (2011). Chlorination by products and nitrate in drinking water and risk for congenital cardiac defects. *Environ. Res* 89(2): 124 – 130.
- Allen, (N 2017). Side Effect of Curry Powder [healthfully.com/side-effects-curry-powder-638777.html](http://healthfully.com/side-effects-curry-powder-638777.html)
- American Heart Association (AHA) (2011) principles for the safety assessment of food additives and contaminants in food. IPCS in cooperation with TECFA, Eneella: Switzerland: 1987.
- Carocho, M., Morales, P., Ferreira, K. (2015). Natural food additives: Quo vadis? Trends in food SubhashishDeyBommuHemaNagababu, (2022) Effects of food colour on the human health. [Sciencedirect.com/science/article/pii/S2772753X2200003X](https://www.sciencedirect.com/science/article/pii/S2772753X2200003X)
- Bancroft, C. (2015) The implication of food additives on our health. <https://northsydneyyoga.com.au/the-implication-of-food-additives-on-our-health>
- Halldorson, T.I., Strom, M., Petersen, S. B. and Olsen, S.F. (2010) intake of artificially sweetened soft drinks and risk of preterm delivery: a prospective cohort study in 59, 334 Danish Megnant women *Am J. Clin. Nutri*, 92(3): 626-33.
- Hill, L., Woodruff, L., Foote J. and Barretoalcoba, M. (2005) Esophageal injury by applying cider vinegar and subsequent evaluation of products. *Journal of American Dietetic Association* 105 (7): 1141 – 1144.
- Pandey, R.M. and Upadhyay, S.K. (2012). Food additive e.d. El-samragy, Y. Reijeka, Croatia: Intech web. org. pp 1- 17.
- Pandey, R .M.,and Upadhyay, S .K . (2012) Food Additive Division of Genetics, Plant breeding and Agrotechnology, National Botanical Research Institute, Lucknow, India <https://www.researchgate.net/publication/221925228>
- Rachael, MS, RD. (2018) 12 Common Food Additives-Should You Avoid Them? [https://www.healthline.com/nutrition/common-food-additives`](https://www.healthline.com/nutrition/common-food-additives)
- SubhashishDeyBommuHemaNagababu, (2022) Effects of food colour on the human health. [Sciencedirect.com/science/article/pii/S2772753X2200003X](https://www.sciencedirect.com/science/article/pii/S2772753X2200003X)
- William, J (2020). Monosodium glutamate and asthma. Review J. Nriti. 1999, 130:1067 – 73.
- Wong,C. ( 2021)Possible Side Effects of Thyme, Arno Kroner,DAOM, Lac. Verywellhealth. Com/the-benefits-of-thymes-vulgaris-088803----toc-possible-side-effects
- Zhong, Y., Wu, L., Chen, X., Huang, Z., and Hu, W. (2018) Effects of Food-Additives-Information on Consumers' Willingness to Accept Food with Additives. *Int J Environ Res Public Health*; 10.3390/ijerph15112394