



MEAT ATTACHMENT AND THE WILLINGNESS TO ADOPT A PLANT BASED DIET IN NIGERIA

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ABSTRACT: There has been a global increase in the consumption of meat, this has increased attachment to meat and has resulted to both environmental issues like increase in Green House Gas (GHG) and a rise in the occurrence of Colorectal Cancer, obesity and other health related problems. Only a transition to a more plant-based diet can help improve public health and remove environmental hazard due to increased GHG. Several researches had revealed that a large segment of consumers is not willing to embrace a more plant based diet. This research evaluated Meat attachment and willingness to adopt a more plant based diet among staff and students of Akanu Ibiam Federal Polytechnic, South-East, Nigeria. A questionnaire survey was administered and Independent sample t-test and correlation was done on the participants ($N=150$) to examine their attachment to meat and willingness to follow a plant based diet. Correlation was conducted between variables of the sample; meat attachment, willingness to reduce red and white meat, willingness to follow a plant based diet. The research also evaluated the relationship between meat attachment and gender, environmental factors. The result showed that meat attachment is not influenced by gender, although the meat attachment of female in the sample was slightly higher, same with environmental factors (urban and rural dwellers). The research also revealed that the participants were neither ready to reduce their consumption of red or white meat nor follow a more plant based diet. The research recommends a larger target audience in the future and that the relationship between meat attachments, body mass index (BMI) and disease (health).

Keywords: Meat attachment, Human supremacy, Plant-based diet, meat consumption, urban and rural dwellers, Colorectal Cancer, GHG

INTRODUCTION

Patterns of food consumption are known to have a significant effect on the human health and the environment (Tilman and Clark, 2014). Present arguments on the sustainability of food production and consumption have placed increased emphasis on the roles of animal products to produce environmental hazards, particularly in terms of climate change (Cawthorn *et al*, 2013). However, it has been estimated that if plants proteins were used as the only substitute for meat, then it will help in extremely reducing the cost related to the climate change mitigation (Tilman and Clark, 2014) and would

also decrease the risk of cancer which is often linked with eating red meat and processed meat (Tilman and Clark, 2014).

Numerous hypotheses have been made for explaining the relationship between the consumption of meat and the risk of cancer. The reason behind this association is that meat is devoid of fibre and many other nutrients that might have a risk or protective effect. Meat consists of saturated fat, animal protein and in few cases also contains carcinogenic compounds for example polycyclic aromatic hydrocarbons (PAH) and heterocyclic amines (HCA) which are formed during cooking or processing of meat. The formation of HCAs as meat is usually cooked at very high temperatures, and PAHs, which is formed by the burning of organic substances, is presumed to have increased risk of cancer (Kim *et al*, 2013). Additionally, the high fat content of meat and many other products of animals could increase the production of hormone, therefore increasing the risk of cancer which is usually associated with increased hormonal production, for example, prostate cancer and breast cancer.

Background to the Study

The major concern for conducting this study is due to the global and massive shift towards a higher consumption of meat and other animal-based products and a decreased consumption of plant-based food and grains (Graça *et al*, 2015). Major issues that were found to play a key role in triggering this shift are urbanization, economic growth and the wide range of changes in the food industry (Graça *et al*, 2015). However, in the Sub-Saharan Africa (SSA), it has been found that overall there have been very less increase in the consumption of dairy products and meat for over two decades. As a whole the figures for consuming meat are lower as compared to the rest of the world (Herrero *et al*, 2014).

Problem Statement

There is an expected increase in the production of various meat products by the end of 2020 because of the worldwide increase in per person meat consumption and the growth in the population. This would lead to an environment problem or degradations mostly in water and agricultural land, contributing to the production of GHG and is often unsustainable (Leip *et al*, 2015). However, in Europe particularly, the consumption of food contributes to about 30-35 % release of the overall GHG. Due to these reasons, high-income



countries require enacting different policies that will help in placing sustainable patterns of consumption with the increased use of diet (Leip et al., 2015). It is usually based on plants and fish from an appropriate source with the moderate consumption of processed and animal food.

Significance of the Study

This study is chosen to analyse the consumers' meat attachment and their willingness to adopt a more plant-based diet. Particularly, red meat such as beef, veal, pork, etc. has been found in having an extremely adverse impact on the health and wellbeing of consumers (Toro-Mujica *et al*, 2015). The economic social factors, availability and price have been found significant to identify consumer preference. However, this study has strong evidence for the management of livestock and stock selection, pasture management, breeding, and housing. Therefore, it might empower practitioners and other policy makers for designing, delivering and evaluating the particular initiatives and interventions that could facilitate a shift towards more plant-based diet.

Global Meat Consumption/ Environmental Issues

With the passage of time, the consumption of meat will undoubtedly increase across the globe due to two basic factors. Firstly, the continuously increasing need for food due to constant increase in population growth (Food and Agricultural Organization [FAO], 2011); the demand for meat and its products has increased in the developing countries due to the population growth. On the other hand, Westernisation has influenced the aboriginal dietary patterns of some nations such as India and China, which leads to greater consumption of meat (Hoffmann and Baumung, 2013). It has been projected that there will be increase in meat production by the year 2020 because of an escalation in per capita consumption of meat worldwide, along with increase in population (Hoffmann and Baumung, 2013; FAOSTAT, 2015).

Meat Consumption in Nigeria

Statistics showed that the per person meat consumption in Nigeria was around 8.8 kilograms in the year 2009 (FAO, 2013). Besides, OECD (2017) suggested that the meat consumption in Nigeria will be around 1.8 kilograms per capita by 2025, which was estimated to be 1.2 kilogram per capita in the year 2012. According to Ewumi (2012), there is a growing trend in the rate of consumption of meat primarily due to increase in population. This optimal increase in the demand for meat has associations with the production in terms

of quality and quantity of the livestock and meat products attained from them. Agboola and Balcilar (2012) proposed that Nigeria has a small and slow-growing livestock industry in relation to the population which relies on this industry for meat and its associated products.

Okunlola (2012) studied the meat consumption pattern of South-Western Nigeria and identified that the meat preference of Nigerians is poultry, beef, and fish. Moreover, the pattern of meat consumption depending on the accessibility, income and season was fish (15.62%), poultry (20.09%), and beef (25%). It was identified that most of the people preferred fish (70%) and meat (65%) as their source of animal protein. Likewise, Bobola *et al* (2015) identified that around 71% of meat intake in Nigeria is covered by beef. Given the knowledge related to unhealthy food, particularly about cholesterol, only 18% of the participants had knowledge about the effects of cholesterol on the health of a human (Okunlola, 2012). In a similar study, Alimi (2013) examined the consumption pattern and meat preferences of the Nigerians, and investigated the impact of socio-economic factors such as household size, and household income on the expenditure on meat. This study suggested that meat was a preferable choice (60 %) by the Nigerians, trailed by chicken (30%) and turkey (27%) (Alimi, 2013). Furthermore, household income's percentage of meat expenditure was low, around 9%, for middle or high-income households, while high for low-income households (18%). The factors that are significantly considered by the people while purchasing meat were habits and taste, followed by consideration of prices and nutritional value (Okunlola, 2012; Alimi, 2013). Other factors that were considered include tenderness, freshness, and religious inclinations.

FACTORS AFFECTING MEAT CONSUMPTION

Religion

The consumption of food items related to the animal origin and particularly meat and its associated products are rigorously observed in situations where religious contemplations exist. Tan *et al* (2014) proposed that religious beliefs and customs which are followed by people have a contribution in making food choices or practices, as people consume food in accordance to their religion.

Culture

None of the religions are holding exactly the same ideology related to diet, spiritual wellness, health (Meyer, 2016). However, most of them do consist of



similar practices. Moreover, meat made up a large portion and occupied a special place in the British diet. As it is intensely associated with a proper meal and signifies as a symbol of celebration, eating well, prosperity, and power.

In some parts of Nigeria, there are some cultural beliefs or myths that are associated with consumption of meat, forbidding them to eat meat products. To be specific, in mid-western states, egg and meat are not frequently given to children due to the cultural belief that that could promote stealing among children. On the other hand, Meyer-Rochow (2009) instigated that consumption of Gizzards of birds for children and women is considered as a taboo because they are held in reserve for older people. In 2016, another survey was conducted by Ekwochi et al. (2016) in the South-Eastern Nigeria, which identified some of the reasons behind avoidance of specific food by pregnant women. Another survey carried out in South-Eastern Nigeria revealed some of the reasons why some pregnant women avoided certain foods especially meat based on cultural taboos and myth. From the results, it was identified that some people believed that eating snails during pregnancy might make their baby inactive in life. Some believed that consumption of bush meat such as Grass-cutter would introduce difficulties or prolonged the duration of delivery (Ekwochi et al., 2016).

Health

Beef and Colorectal Cancer

The consumption of red meat and its processed products has been associated with the initiation of colon cancer in an enormous group of people (Zur Hausen, 2012; International Agency for Research on Cancer [IARC], 2015; Kassier, 2016). World Cancer Research Fund [WCRF] (2007) accentuated that consumption of meat in excess amount or for prolonged period exhibits an increase of estimated 20-30% in developing the risk of having colon cancer. Moreover, prolonged intake of meat is also related to an upsurge in the mortality rate of colorectal cancer. Ruiz and Hernández (2014) affirmed that consumption of 50 grams of processed meat per day increases the risk of colorectal cancer by 18%.

Income and Price of Meat

It has been identified that global upsurge in the income of people has led to higher intake of meat (Sabaté and Soret, 2014), which has also been related to

an increase in the diets' nutritional value (Tilman and Clark, 2014). This explains the increase in meat consumption in the newly developed countries such as Brazil and China. Additionally, reduction in the prices of meat in North America and Europe in the last century has made the accessibility of meat easier in developing countries.

Geographical Area/ Location

Geographical location also affects the meat consuming pattern of people, as they have other resources to meet their protein needs. Easy access to open water has a great impact on the consumption of meat, as people tend to depend on fish meat that is generally present in inland and coastal areas. Fish serve as the primary source of protein rather than meat in most coastal areas. Globally, Iceland, Japan, and other island states recorded the highest consumption of fish. FAO (2012) and WHO (2013) stated that Japan, Ireland and other island states mark the maximum fish consumption, as they have access to open water easily. This identifies that geographical location affects the presence of other meat resources which in turn influence the meat consumption behaviour.

Plant-Based Diet

For improvement in public health, sustainability, and reduction of animal suffering, the shift towards a plant-based-diet and reduced consumption of meat is promoted. Conversely, it seems that consumers are not willing to adopt such eating behaviour (Graça *et al*, 2015). It may require a societal change to attain considerable improvement in this regard. However, limited attempts have been made to comprehend the psychosocial processes which may facilitate or hinder this shift (Dagevos and Voordouw, 2013). It is a well-established fact that changing the eating pattern and preferences of people needs more than simple interventions (Godinho *et al*, 2014.). The findings of the study conducted by Graça *et al*, (2015), identified two main factors; first is the attachments of consumers to meat affect their perception about the impact of meat and their willingness to change eating behaviours. Secondly, consumers hold different rationales when considering the consequences of meat intake patterns.

Willingness to Eat Plant-Based Diets and Meat Substitutes

To the most of our knowledge, only a number of studies conducted in USA and Portugal have particularly addressed consumer willingness for consuming



only diets based on plants and grains (Graça *et al*, 2015). While observing that few consumers are having various benefits in such kind of diets, it could be concluded that the wide-ranging population was not ready for moving away from various meat products. The recognized significant barriers include the lack of dietary information, lack of desire for changing benefits, lack of eating out options, and other health concerns.

Research Setting

The research design used for this study is single cultural social survey and research setting that is used for this research is Akanu Ibiam Federal Polytechnic, Unwana, Ebonyi State (South-Eastern region) of Nigeria. The Polytechnic is situated in the south- Eastern region of Nigeria in Ebonyi State, established in the year 1980 and the first Federal polytechnic in the south east. It has over 500 staff with 1500 being academic (faculty) staff and over 20,000 students in both full-time and part-time. It offers courses in Engineering, Science and Technology, Business, Agriculture, Computer and Environmental sciences and awards National Diploma (ND) and Higher National Diploma (HND). Being a federal institution, its catchment area is the whole country.

Sampling Population and Sampling Size

The sample population for this research study were students and staff members of Akanu Ibiam Federal Polytechnic, Nigeria. This approach was based on recruitment of staff and students from South- Eastern Nigeria with the help of advertisement of research in the University Library, University canteen, Student Union body, Academic Staff Union.

Sample Size

Using inclusion and exclusion criteria, a sample size of 150 participants was used.

Data Analysis

Data analysis for this research has been carried out by using the Statistical Package for Social Sciences (SPSS 24). The data has been summarised using the descriptive statistics. Pearson's correlation for predicting the willingness of research participants towards the reduction of meat consumption and also to determine the relationship between total meat attachment (TMA) and Mean Human supremacy; Gender and TMA and Mean human supremacy.

Ethical Considerations

The research study had ethical approval from the Sheffield Business School (SBS) ethics committee. The researcher in the paper and pen questionnaire indicated the purpose and importance of the study. All respondents were guaranteed the confidentiality and security of all the data provided to the researcher. Respondents' anonymity was adhered to as part of the ethical consideration of this study, where their names were not disclosed in the process of data collection. To further secure the data, the gathered data was stored in a secured place.

Table 1 Gender differences in Meat Attachment

| GENDER | N | M | SD | P |
|--------|----|---------|--------|-------|
| Male | 33 | 51.3030 | 6.5883 | 0.875 |
| Female | 72 | 51.7917 | 6.3975 | |

NB: M = Mean, SD = Standard deviation.

An independent sample t- test was conducted to compare the Meat attachment score for males and females. There was no significant difference in scores for males (M=51.3030, SD=6.5883) and females (M=51.7917, SD=6.3975) with P=0.875.

Table 2: Environmental differences in Meat Attachment

| ENVIRONMENT | N | M | SD | P |
|-------------|----|---------|--------|-------|
| Urban | 72 | 52.0833 | 6.2927 | 0.714 |
| Rural | 33 | 50.9697 | 6.5359 | |

An independent sample t- test was conducted to compare Meat Attachment and Environmental differences (Urban areas are defined as built up area with a population of at least 10,000 residents & Rural areas are defined as towns and non-built up areas with a population of less than 10,000 residents). There was no significant difference in scores for Urban (M=52.0833, SD=6.2927) and Rural (M=50.9697, SD=6.5359) with P=0.714.

Data Discussion

According to Leung (2015), the generalizability and usefulness of any research can be developed by involving various perspectives while generating the related findings. The authors have also stated that there are certain numbers of sample units that are able to represent the perception of the whole targeted population. Therefore, in this presented research, the targeted population



included the students as well as the staff members of Akanu Ibiam Federal Polytechnic, Unwana, Ebonyi State Nigeria. It can be further specified that 150 respondents' sample unit was selected from the targeted population. For century, humans have been depending on meat as a channel to supply their source of protein (Leroy & Praet, 2015). This trend has led to an increase in the global meat consumption while on the other hand leading to a decrease in the consumption of plant based food (Popkin, 2001, Chopra *et al*, 2002). This has led to the term Meat attachment, which is referred to as a positive bond towards meat consumption. (Graca *et al*, 2015).

A correlation conducted on the staff and students of AIFPU showed a low negative relationship between meat attachment and willingness to reduce red meat or white meat ($r = -0.177$, $P = 0.083$ & $r = -0.006$, $P = 0.952$ respectively). This is an indication that the respondents were tightly bonded to meat consumption and were not likely to reduce the consumption of red meat or white meat. This is true bearing that the consumption of meat in Nigeria has increased over the decade (from 1.59kg/capita in 2000 to 1.66kg/capita in 2015) (OECD, 2017) thus making reduction in its consumption very challenging because of the special place that meat holds in people's diet (Abrahamse *et al*, 2007). The work conducted by Graca *et al*, 2015, discovered that there is a negative relationship between meat attachment and the willingness to reduce meat consumption and to follow a more plant based diet. This research work also affirmed it. In Nigeria, a meatless meal is synonymous to deprivation and poverty, because of the vital position that meats play in every meal (Okunlola, 2012). This was also reflected in the correlation between meat attachment and the willingness to follow a plant based diet, which showed a low negative relationship ($r = -0.173$, $P = 0.090$) which is an indication that there existed a non-significant relationship, the more the respondents were attached to meat, the less likely they were willing to follow a plant based diet.

Another variable that was analysed in this research work was the relationship between meat attachment and gender. The discussion of Leung (2015) has helped in analysing that gender has high influence over the perception and preference of an individual. Moreover, the involvement of both genders in a research also helps in reducing the biasness from the conduct of the research. Therefore, the presented research has involved the perspectives of both genders. It can be further elaborated that 69% of the participants of the research were female while other 30% were male. When compared with the

result of this research, it was discovered that there was no significant difference between meat attachment and gender ($P=0.875$). In the research findings, it was discovered that female have a slightly higher attachment to meat ($M=51.7917$) than men ($M=51.3030$), the reason for this could be that since the research emphasized on mostly students of AIFPU, and female students in Nigeria seem to be more financially buoyant than their male counterparts, this is supported by Anyiro et al (2014) in their article on 'Meat Consumption Pattern among different income groups in Imo State, Nigeria discovered that economic buoyancy influences the consumption of meat, that people who are financially more stable tend to consume more meat. Meat consumption, especially red meat is associated with masculine gender, meaning that men have a stronger attachment to meat (Ruby, 2011 & Rothgerber, 2014), while women are generally expected to consume lighter meat, fish and vegetables, these foods were considered to be too "feminine" for men (Buerkle, 2009). A survey conducted in Germany discovered that male Germans consume more meat than female which is in relation to the finding that consumption of meat in Western culture has a strong connection to strength and power which are generally linked with the role of the male gender (Buning- Fesel & Ruckert- John, 2016).

Habitat or the environment that a person grew up plays a vital correlation with meat attachment. It is recognised that within a country there may be dichotomy between urban and rural areas, with urban dwellers espousing a westernized diet high in animal protein and meat (Vorster *et al*, 2011). The independent sample t-test conducted to compare the relationship between meat attachment and environmental differences showed no significant difference ($P=0.714$) though the mean score for urban was slightly higher ($M=52.08$) than the rural ($M=50.97$). So, the research revealed that environmental difference does not significantly affect attachment to meat consumption among staff and students of AIFPU. According to USDA (2005) consumers in the rural area consuming more beef (34.02kg) than the urban and suburban consumers who consumed 29.94kg and 28.58kg respectively. A survey carried out in three Nigerian cities revealed that the demand for meat is higher in the urban areas and continues to increase as income improves; this is an indication that consumption of meat or meat attachment is higher among urban dwellers than in rural dwellers (Ezedinma *et al*, 2006).



There have been several health campaigns on the rising trend of Colorectal Cancer (CRC) in Nigeria especially by the Cancer Registry of the University College Hospital, Ibadan. This disease was linked to different factors, among which is high meat consumption, hereditary, environmental. It was discovered that the cases are higher in the big cities (urban area), thus supporting the theory that meat attachment and meat consumption can be linked to environmental and economic factors (Ilorin, 2014). The result of this research showed the factors that affect meat consumption especially among students in the university in Nigeria and will be a vital tool to know how student react to meat consumption and their willingness to follow a more plant based diet.

CONCLUSION

The research discovered that men and women have equal attachments to meat though women have a slightly higher attachment, however majority of the population sampled are not willing to relinquish meat for an alternative not even a plant based diet.

Recommendations for Future Studies

The conduct of the presented research has helped in analysing various potential areas that have not been discovered by past researchers and can be fulfilled by future researchers. Therefore, the identified scope for the future researches has been discussed as follows:

- Future research work should be expanded to cover a larger target audience, not just staff and students of a university.
- Future research work should be carried out to correlate the relationship between meat attachment, body mass index (BMI) and disease (health).

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