DETERMINANTS OF FISH CONSUMPTION AMONG RESIDENTS OF MATAZU METROPOLIS, KATSINA STATE, NIGERIA

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ABSTRACT

This study investigates the determinants influencing fish consumption patterns among the residents of Matazu Metropolis in Katsina State, Nigeria. Fish is a vital source of protein and essential nutrients, playing a crucial role in the diet of many communities. Understanding the factors that drive fish consumption is imperative for sustainable resource management, food security, and public health. The research employs a mixed-methods approach, combining surveys and interviews to gather data on socio-economic factors, cultural preferences, accessibility, and awareness related to fish consumption. Statistical analysis will be applied to quantify the significance of various determinants, providing insights into the complex interplay between socio-cultural, economic, and environmental factors shaping fish consumption patterns. These research emphases on the factors contributing to fish consumption pattern in Matazu, Katsina. The data were gotten from 120 respondents who living in Matazu areas of Katsina 2022. The main goal of this research was to determine the factors that impact the type of fish preferred and the most favourite type of fish for customers. Their choice of fish was based on type of fish species Tilapia spp (10.00%), Bagrus spp (33.33%),Clarias spp (16.66%) Mormyrus rume (6.67%) and consuming all species(34.16%). Most of the respondents were Males 103 respondents, while 17 respondents were Females. Key reasons for your increase in buying fish include; preference 51 respondents, Affordability 36 respondents, Price of substitute 22 respondents. Additionally, 11 of the respondent's main reason was taste. The trend in fish consumption among respondents decrease 62, followed by 32 respondents increase and 26 respondents were constant. The reasons among the observed trend among respondents 42 respondents cost of the fish, 14 respondents fish storage facilities, 6 respondent's availability, 3 respondents inadequate supply while 55 respondents non-availability. There was a decreasing trend in fish consumption among households in the study area as reported by 51.67% of the respondents. The major reason for the observed trend was non-availability and cost of fish.The findings of this study aim to contribute to the development of targeted policies and interventions to enhance fish consumption, promote nutritional well-being, and ensure the sustainable utilization of aquatic resources in Matazu Metropolis and similar communities.

KEYWORDS

Fish Consumption, Pattern, Socio-economic, Factors and Matazu Residents

1. INTRODUCTION

Fish and its byproducts are a significant source of animal nutrients for balanced, healthy diet. Fish and fish products are a cost-effective and inexpensive source of animal protein for most nations' average populations. The demand for fish and its products is constantly increasing, owing to factors such as the ever-increasing human population, the high cost of other sources of animal protein, and the problems of disease, sickness, and infections associated with the consumption of other sources of animal protein (Sadauki *et al.*, 2022a). Fish is a good source of protein and also contains calcium, lipids, minerals, vitamins, and oils. Fish byproducts and derivatives can be used into livestock and poultry feed. Clarias gariepinus, a type of catfish, is

one of the most frequent fish found in Nigerian waters (Dauda *et al.,* 2018). They are mostly found in still water environments, such as lakes and pools, but they can also be found in fast-moving water, such as rivers, creeks, and streams. Natural water (such as creeks, streams, and oceans) and aquaculture (fish farming) are used to obtain the fish. Reservoirs, lakes, streams, rivers, and imports were the principal sources of fish in Nigeria until recently (Sadauki *et al.,* 2022b). Nourishment is a biological process that plays an important part in delivering the energy required for the body's continual metabolic operations (Uzundumlu, 2017). Fish and fish products are among the most essential sources of nutrition for humans. It is required for the continuation/maintenance of human life at all stages, from birth to death (Uzundumlu, 2017).The involvements of food-based techniques that encourage the manufacture/production and consumption of locally available nourishing diets have used fish as an alternative to supplement dissemination as a viable method of dealing with micronutrient deficiencies/lacks (Idris*et al.,* 2018). Fish consumption has increased globally, from an average of 10.1 kg per capita per year in 1965 to 16.4 kg in 2005, reflecting an overall increase in fish consumption in most of the world's regions, with the exception of Latin America and the Caribbean, and Sub-Sahara Africa, where consumption has remained stagnant over the last four decades (Idris *et al.,* 2018). Fish and its byproducts eating in sub-Sahara African countries is presently the smallest in the globe. On the other hand, fish and its byproducts is still nourishment important in numerous African countries as well as in Asia and Oceania Nations where fish and its byproducts contributes more than 1/3 of the total animal protein source, estimatedfrom the FAO nourishment balance sheets (Idris *et al.,* 2018). Purchasers' favourite finding lets businesses to modify the source in the direction of the preference of customers as a result that marketplace could be enhanced for their turn-over as well as incomes. Nowadays Nigeria is a prominent African catfish supplier in the Sub Saharan Africa. African catfish supplying in Nigeria represents more than half of the total producing capacity with an approximation of 13.3 kg yearly per capita fish eating in 2013 (FAO, 2017; Jimoh *et al.,* 2019). In order to evade waste and financial loss, fresh African catfish is hot smoked to preserve its excellence at a high level (Ayeloja *et al.,* 2017; Jimoh *et al.,* 2019). By way of growing requirement for fishes as per capita profits, as well as above average costs of substitute sources of animal protein, there has been a change to the ingesting of fishes. These are habitually in smoked as well as fresh types. In line for to the growth in fish farming supplying in addition to Nigeria's inhabitants, there is a necessity to investigation the consumers' favourite and eating plan therefore that venture capitalist can decide the item for consumption that are favourite; by this means observing sustained fish request. In all-purpose, consumers' purchasing of any item for consumption mainly be influenced by upon their awareness about the item for consumption. Jimoh *et al,* (2019)indicated that purchaser favourites for products be differentreliant on the type of an item for consumption in addition to the communal as well as financial position of the customer. Buyers buying choices are influenced by traditional, societal, and individual in addition to psychosomatic influences. Jimoh *et al.* (2019) preached that a purchaser's job, wages level as well as buying power effects their buying decisions in addition topurchasing behaviour. Investigation into purchasers' favourite in addition to manners is needed for the expansion of the purchasers' foodstuffs to secure constant customer request besides to make the most of revenue. Numerousapproaches are used in gatheringevidence on end usermannersas well as preference on an item for consumption in order to observer constant buyer needs of the goods. Evidence that touches purchasers' favourite and behaviours for a specificitem for consumption, such as demographic, socio-traditional, socioeconomic evidence, are gathered by the food industry to continue their produces competition in the marketplaces or to improve food stuffs that could please the favourite of the shoppers. Socio-cultural influences which comprise cultural structure, education, as well asstandard of living have been stated to affect customers' preference besides purchasing pattern. Religious composition similarly plays important role in customers' favourite (Jimoh *et al.,* 2019). Domestic size, oldness as well as sex distribution were similarly stated to have effect on the need for a specificitem for consumption. The appraisal of purchasers' preference for smoked freshas well as smoked-dried fishesgoodscould be used to formulate

supplying scheduling as well as delivery of fish from corner to corner the nation (Jimoh *et al.,* 2019).A number of a fore mentioned study have highlighted the well being as well as nutritive uses associated with fish consumption such as increased brain power as well as reasoning growth in teenagers, reduced dangers of cardiovascular diseases, decreased risks of high blood pressure as well as lessened threats of several forms of cancers (Can *et al.,* 2015). Similarly, different findings have consistently recorded that high price, suitability, cookery capabilities, ingesting habits, availability, accessibility, healthfulworries, sensual attributes such as smell as well as taste, purchasers' information in addition to socio-demographic individualities as the key influences changing fish consumption (Wenaty *et al.,* 2018).Specifically, the main purposes of this paper is to determine the socio-economic determinates factors contributing to fish consumption pattern among residents of Matazu metropolis and association between customers 'revenue and their spending on fish meal in relation to the consumption behaviour of fish among houses in Matazu metropolis. This is with a view to scrutinising the numerous factors of social and financial importance affecting the level of consumption of fish and additional protein meals in Matazu metropolis.The study may have a small sample size, which may limit the generalizability of the findings to the entire population of Matazu Metropolis. The findingsmay have used a non-random sampling method, which could introduce bias and affect the representativeness of the sample. The investigationmay have relied on self-reported data, which can be subject to recall bias or social desirability bias. Participants may over or underreport their fish consumption, lead to inaccurate results. The survey may not have included a control group for comparison, making it difficult to determine the factors that specifically influence fish consumption among the residents of Matazu Metropolis. The research may have focused only on the residents of Matazu Metropolis, which may limit the generalizability of the findings to other regions or states in Nigeria. The study may have collected data at a single point in time, which limits the ability to establish causal relationships or track changes in fish consumption patterns over time. The investigation may not have assessed the overall dietary patterns of the participants, which could provide a more comprehensive understanding of fish consumption in relation to other food groups.

2. MATERIALS AND METHODS

2.1. Study Area

Matazu Local Government Area is situated in Katsina State, North-West Nigeria and has its headquarters in the municipality of Matazu. Matazu LGA is made up of numerous settlement and rural community such as Sayaya, Gwarjo, Raddawa, Kogari, Karaduwa, and Mazoji. Matazu LGA be positioned between latitude 12^0 10 and 15 N and longitude 7^0 32 and 54 E and has an average temperature of 34^0 C. The mean annual rainfalls in Matazu LGA are 900-1100m. Rainfall lasts from April to October while an averaged wind speed is estimated at 10km/h. Matazu LGA has a total area of about $503km^0$, and with an estimated human populace of 115,325 inhabitants. The leading ethnic group in Matazu Local Government Area is the Hausa and Fulani tribe while the commonly spoken languages in the area Hausa and Fulani languages. Islam is the commonly practiced in the area. Farming is the main sources of revenue in Matazu LGA with crops such as rice, groundnut, cowpea and sugarcane grown in large quantities within Matazu LGA. Rearing and sales of farm animals such as fish, sheep's, goats and cows is popular in the area (NPC, 2006).

2.2. Sampling Method:

A two stage sampling technique was used to select respondents for the study. The first stage was the random selection of four wards from the metropolitan area. This was followed by the choice

of 30 households from each ward to give a total of 120 respondents for the study.There are different types of fish in the study area. Fish selection is done based on the most commonly fish available as well as consuming in research area.

2.3. Data and Data Analysis:

Primary data was utilized for the study and was collected with the aid of structured questionnaire that was administered to household heads by trained enumerators. Data was collected on socioeconomic characteristics and fish consumption related matters. The data was analysed using descriptive statistics. Entirely the analysis wasdone using SPSS version 17 (SPSS, 2008).

3. RESULTS

Approximately 63.34% of the consumers were males while 36.67% were females (Table 1). The socio-economic status of the respondents in the settlements of Matazu is presented below (Table 1). The age distribution of the respondents shows that respondents (41.67%) were in the age bracket of 26-35 years on the other hand (25.00%), (19.17%) and (14.17%) were in 16-25, 36-45 and above 46 years age respectively. Table 1 also displays that 56.34% of the respondents were married while 35.84% were single, 33.33% were widow and 2.50% divorced. Nearly half of the respondents (37.50%) had tertiary level of education (Table 1). Table 1 Occupation shows a vital a role in fish consumption, the results shows that (41.67%) were Civil servant followed by Farmers (37.50%) while (20.83%) are Traders. As shows in table 1 household sizes (number in person) shows that respondents 1-5 people has the high per cent of household sizes (30.00%), followed by 5-10 people 34 (28.33%), followed by 11-55 people 31 (25.83%), followed by 21-above 13 (10.84%) and 16-20 were 6(5.00%). Nearly half of the respondents (45.33%) had monthly income more than 61000 (Table 1). Nearly half of the respondents (42.50%) had monthly expenditure on fish 6000- 10000 (Table 1).

Table 1: Socio economic profile of the respondents

Parameter	**Respondents**	**Percentage** (%)
Age		
16-25	30	25.00
26-35	23	19.17
36-45	50	41.67
46 and above	17	14.17
Sex		
Male	76	63.34
Female	44	36.67
Marital Status		
Married	70	58.34
Single	43	35.84
Divorced	3	2.50
Widow	4	33.33
Educational Level		
Quran school	35	29.17
Primary school	15	12.50
Secondary school	25	20.83
Tertiary Institution	45	37.50
Occupation		
Civil servants	50	41.67

Traders	25	20.83
Farmers	45	37.50
House size (number in person)		
1-5	36	30.00
5-10	34	28.33
11-15	31	25.83
16-20	6	5.00
21- above	13	10.84
Monthly income		
5,000-20,000	22	18.33
21000-40000	22	18.33
41000-60000	21	17.50
61000-Above	55	45.83
Monthly expenditure on fish		
1,000-5,000	41	34.17
6,000-10,000	51	42.50
11,000-15,000	22	18.33
16,000-above	06	5.00

Sources field survey, 2022

More than half (80.83%) of the respondents had consumed fish with a small number of respondents did not consumed fish (19.17%) according to Table 2 below. (25.00%) consumed fish daily, followed by (20.84%) twice weekly, followed by (16.66%) weekly, followed by monthly (10.00%) with few respondents (8.33%) consume Fort nightly Table 2 below. Table (2) under displays sources of fish in the study area 70 were marketers while 40 respondents were fishermen. Type of fish substitutes in the study area, (55.00%) of the respondents consumed goat meat, followed by (18.33%) of the respondents sheep meat, (15.00%) of the respondents chicken and (11.67%) of the respondents beef meat.

Table 2: Rate of fish consumption in the study area

Parameter	Respondents	Percentage (%)
Do you consume fish?		
Yes	97	80.83
No	23	19.17
How frequency do you Consume fish		
Daily	30	25.00
Twice weekly	20	20.84
Weekly	12	16.66
Fort nightly	10	8.33
Monthly	25	10.00
Source of fish in the area?		
Fishermen's	50	41.67
Marketers	70	58.33
Type of fish substitute in study area		
Beef	14	11.67
Chicken	18	15.00
Goat	66	55.00
Sheep	22	18.33

Sources field survey, 2022

On the species of fish consumed in the survey area, Table (3) under shows 41 respondents consuming all the species, followed by *Clarias gariepinus* 20 respondents, followed by *Bagrus bayad* 16 respondents, followed by *Tilapia* 12 respondents and 8 respondents consumed *Mormyrus rume*. On the type of fish consumed in the survey area, Table (3) under shows 54 respondents consumed fresh fish, followed by frozen 53 respondents, followed by fried 10 respondents and 3 respondents consumed smoked fish. Fresh fish consumption is also more popular compared with frozen or smoked fish.

Table 3: Type of fish consumed in the study area

Parameter	Respondent	Percentage (%)
Species of fish consumed in the study area		
Tilapia	12	10.00
Bagrusbayad	16	13.33
Clarias gariepinus	20	16.66
Mormyrusrume	8	6.67
Consuming all the species	41	34.16
Typeof fish consumed in the study area		
Fresh fish	54	45.00
Smoked fish	3	2.5
Fried fish	10	8.33
Frozen fish	53	44.17

Sources field survey, 2022

Finally from Table 4, key reasons for your increase in buying fish include; health benefit 65 respondents, Preference 20 respondents, Affordability 27 respondents, Availability 8 respondents. The major constraint for fish consumption in study area include, High cost of fish 55 of the respondent's, Distance to fish market 22 of the respondent's, Allergy to fish 15 of the respondent's, and Inadequate supply of fish 5 of the respondent's. The major determinants the quantity of fish consumed by your household includes; Diet 45 of the respondent's, Taste 44 of the respondent's, House hold income 14 of the respondent's, Price of the substitutes 6 of the respondent's, Health reason 6 of the respondent's and culture 5 of the respondent's. The trend in fish consumption among respondents decrease 62, followed by 32 respondents increase and 26 respondents were constant. The reasons among the observed trend among respondents 42 respondents cost of the fish, 14 respondents fish storage facilities, 6 respondent's availability, 3 respondents inadequate supply while 55 respondents non-availability. Finally, Table 4 shows that preference, affordability and taste were the major factors that influence fish consumption. There was a decreasing trend in fish consumption among households in the study area as reported by 51.67% of the respondents. The major reason for the observed trend was non-availability and cost of fish.

Table 4: Reason and constraint for fish consumption

Parameter	Respondent	Percentage (%)
Health benefit	65	54.16
Availability	8	6.67
Preference	20	16.66
Affordability	27	22.50
Constraint for fish consumption		
Allergy to fish	15	12.50
Distance to fish market	22	18.34

High cost of fish		55		45.84
Inadequate supply of fish		5		4.16
What determines the quantity of fish consumed by your household?				
House hold income		14		16.67
Taste		44		36.67
Diet		45		35.50
Culture		5		4.16
Price of the substitutes	6		5.00	
Health reason		6		5.00
What is the trend of fish consumed by your household?				
Increase		32		26.67
Decrease		62		51.67
Constant		26		21.66
What is the reason for the observed trend above?				
Cost of the fish	42		35.00	
Fish storage facilities		14		11.67
Inadequate supply		3		2.5
Nonavailability	55		45.83	
Availability		6		5.00

Sources field survey, 2022

4. DISCUSSION

Socio– traditional issues have been stated to have influence on fish eating favourite (Jimoh *et al.*, 2019). Jimoh *et al.* (2019) similarly indicated that ethnic, community, traditional as well as psychosomatic elements were certain of the most important factors that inspired the purchasing behaviours of customers. Ethnic group, values, subdivision as well as common class had reflective impacts on societies' behaviours for the reason that they were influential drivers in the formation of beliefs, attitudes in addition to morals, this enlightened why particular eating behaviour was hard to substitute once established (Jimoh *et al.,* 2019). In agreement with aforementioned findings, fish consumption fluctuates according to several socio-demographic individualities. Fish ingestion rate is higher amongst females, higher incomes customers as well as those residing in shoreline areas (Verbeke and Vackier, 2005). Investigation demonstrates that traditional factors, economic and ecological factors are effective in fish consumption (Uzundumlu, 2017). Correspondingly, the economic, socialsituation, changes in the household income, occupation as well as the level of education can cause changes in consumption regions. Eating of fish and fishery products was additionally confidently directly associated with education (Uzundumlu, 2017). Higher education status were found leading to higher buying nonetheless did not translate into higher fish consumption (Uzundumlu, 2017). Education, changes taste over time as well ashabitually affect consumption pattern, favourite/preference for fish species as well as diet of a family this is because purchasers become aware of the nourishing value of protein rich food stuffs like beef, eggs and fish as well as consequently increase their ingestion (Jimoh *et al.*,2013). The issues influencing consumers‟ favourite are many ranging from production to consumption. The major problems comprise revenue, accessibility of the product, cheapness associated to close substitute, nutritious value etc. Availability of dissimilar species of fish in the marketplace can affect the rate at which they are consumed. If the fish is accessible in the marketplace definitely they will be consumed. Fish are vastly diversified, there are numerous species of edible fish and each species vary knowingly in relations of flavour, price, manufacture volume and place (Nababa *et al.,* 2022). To get somebody involved in aquaculture (fish farming), an investigation of customersfavourites for every oneclasses of fishes is significant for fruitfulaquaculture (fish farming) (Musa and Ala, 2011). In agreement with

Uneke and Uneke (2021), the influence of fish and its by-product's to human being nutritionas well as its effect on well-being have been examined from dissimilar portions in both urbanized as well as developing countries and in developed countries, investigators in addition to purchasers have been interested in the health assistances of poly-unsaturated fatty acids (PUFAs), which lesser blood pressure, reduction the threat of heart sickness, and may be sustenance new-born development and intelligent development (Uneke and Uneke, 2021). Corresponding to Uneke and Uneke (2021), availability of most important nourishments is one of the determining factors of fish consumption plans of the lowly as well as when households lack foodstuff, fish produced by aquaculture or supplied by common-pool resources are used for cash, comparatively than as nourishment for home consumption which is in line with this findings. In accordance with Uneke and Uneke (2021), also showed fewer effort on the part of the government to boost small scale fish production. The best significant influences responsible for low regularity in eating and support are availability, accessibility and affordability of fish for consumption. The distribution of households by means of sex, age, marital status, and educational level is displayed in table1 which indicated that the number of male headed households is greater than that of the female and the total percentage for male headed homes was 85.84% while that of the female is 14.16%. This study indicated that the rate of fish consumption among is higher male respondents compared to females' respondents. Jimoh *et al*. (2019) detected comparable trend in their findings (i.e. Consumers preference and behaviour's pattern towards fresh and smoked catfish). If the fish consumption rate is higher in males, they may experience greater health benefits associated with fish consumption. Fish is a good source of omega-3 fatty acids, which have been linked to various health benefits, including improved heart health, brain function, and reduced inflammation.If fish consumption rate is high in males compared to females may indicate a gender disparity in access to or preference for fish. This could be due to cultural or societal factors that limit female's access to fish or discourage their consumption. A higher fish consumption rate in males may be influenced by cultural or social factors that limit their dietary choices or preferences. This could be due to traditional gender roles, societal expectations, or cultural norms that associate fish cconsumptions more strongly with males.If the higher fish consumption rate in females is specific to a particular region or population, the findings may not be generalizable to other contexts. It is important to consider the specific cultural, social, and environmental factors that contribute to this gender disparity in fish consumption.While fish is generally considered a healthy food, certain types of fish may contain high levels of mercury or other environmental contaminants. If females are consuming more fish, they may be at a higher risk of exposure to these contaminants, which can have adverse health effects, especially during pregnancy.If females are consuming a disproportionately high amount of fish, it may lead to an imbalance in their overall diet. Over-reliance on fish as a protein source may result in inadequate intake of other important food groups, such as fruits, vegetables, whole grains, and legumes, which provide essential nutrients and dietary fiber.This indicated that women headed families were fewer involved in the buying and consumption of fish in the research area than their male counterparts. This outcome is similar to the result documented by (Idris *et al.*, 2018). The outcome of this findings likewise showed that age category similarly had an important influence on determinates of fish consumption preferred and rate of recurrence of eating of their favourite fish. The age distribution of the respondents shows that respondents (31.67%) were in the age bracket of 26-35 years on the other hand (26.67%), (21.67%) and (21.67%) were in 15-25, 36-45 and above 46 years age. Jimoh *et al*. (2019) noticed similar trend in their results i.e. Consumers preference and behaviours' pattern towards fresh and smoked catfish. The more educated an individual is, the more he will have a preference to go for very much nutritive food bearing in mind its importance to the body. Such individuals may not decide on for low quality nourishment except when confronted with economic constraints or lack of obtainability of such quality. This agrees with the findings documented by (Idris, *et al.*, 2018). This also study indicated that health benefits could influence consumer preferences. Kumar *et al.* (2008); Jimoh *et al*. (2019) stated that apparent excellence of fish such as palate, health benefits, diet, price as well as obtainability

are elements that could affect customers' favorite. This study shown that, 97.50 of the fish consumers interviewed showed the importance of fish addition in everyday foods in providing wellbeing to consumers. The respondents agreed that they usually eat fish because they are advantageous to their wellbeing. The findings are similar to a previous study in Turkey that showed 84.47% of consumers ate fish and other seafood because of their advantageous effects to human healthiness (Erdogan *et al.*,2011). Price, customer perceptions regarding nourishment, taste, protection/safety, and appearance might influence the consumption of any fish (Zhang, 2004). Nonetheless the most important factor for purchasing fish is nourishment (Adeli *et al.*, 2011).

5. CONCLUSION

The socio-demographic features of the respondents make available the data that age, sex, marital status, education level and occupation plays key role in the fish consumption. This research therefore recommends that there is requirement for economic funding as well as sensitization programs on better, safer and well-organized storage equipment and a

6. RECOMMENDATIONS

Based on the findings the study recommended that fish price should be stabilized, adequate cold storage facilities should be purchased by fish mongers. Contamination of fish should be strictly controlled in the markets.

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