Original Research Article

Influence of Food Consumption on Food Production in Ibadan Oyo State

ABSTRACT

The study determined the influence of food consumption on food production in Ibadan, Oyo State. It identified the predominant food produced; assessed the prevalent food consumption pattern; identified the underlying factors affecting food consumption, and determined the influence of food consumption patterns on food production in Ibadan, Oyo State. Using the multistage sampling technique, data for the study were collected from a sample of two hundred and four (204) respondents. The result revealed that the predominant food produced in Ibadan included cereals, roots and tubers, legumes and nuts, meat and dairy products, fruits and leafy vegetables. The result revealed that respondents' consumption pattern is spread across all the food groups. Factors determining the consumption of food were identified to include increased food prices (178%), seasonality of some crop (201%), cultural believes (202%), religious believes (194), personal traits (176%), ease of preparation (108%), affordability (172%), income (198%), taste (161%), and availability (181%). The joint effect of the explanatory variable in the model account for 75.9% of the variations in the factors affecting the quantity of food produced. Given that the F- statistics of 214.440 is significant at 1% level of significance, and the computed F- value higher than the F-tabulated value of (1.94) at 5% level of significance, therefore, the hypothesis that food consumption patterns have significant influence on food production was accepted. The study thus concludes that food consumption patterns influences food production significantly in the study

Keywords: [Food production, food consumption]

1. INTRODUCTION

Food production and consumption is of great interest to the Nigerian economy like any other economy worldwide, because of the huge amount of foreign exchange being spent on food and livestock importation, and the consequent depletion of scarce resources on which the level of economic activities are based [1]. There are a number of important issues in agricultural food production and consumption that have significant impact on food preference, environment and human health such as soil biodiversity, desertification, water use and water pollution, energy, climate change, chemicals, food safety and biotechnology [2].Both primary food production and food processing are critically dependent upon food choices and consumption pattern [3]. Sustainable food production is a critical component to meeting the demands and preferences of the population.

These functions performed by food indicate the usefulness of food consumption to every member of the family in any society. Food is the basic necessity of any living being, to survive and to sustain. It is imperative to create and enforce legal entitlements and obligations to ensure that every person is assured physical, economical and social access to adequate food with dignity as is necessary to lead an active and healthy life. Literature has it that as of 2010, a total of 925 million suffered from chronic hunger: 578 million people in the Asia Pacific region, 239 million in Sub-Saharan Africa, 53 million in Latin America, 37 million in North and North East Africa, and just a little over 19 million in the developed countries [4]. About 870 million people are estimated to have been undernourished (in terms of dietary energy supply) in the period 2010–12. This figure represents 12.5 percent of the global population, or one in eight people. The vast majority of these, 852 million, live in developing countries, where the prevalence of undernourishment is now estimated at 14.9 percent of the population [5].

Selection of foodstuffs (food preferences) depends on many factors, including familiarity, taste, palatability, conformity, prestige, security, love, deprivation, religion, income, price, and availability, as well as the availability of substitutes and complements. But theorizing about these factors does not appear to be as useful as knowing what foods people prefer under a given set of conditions, as well as the nutritive values of foods for which high preference is expressed, as opposed to those not highly preferred. The preferences so obtained can be useful in indicating what foodstuffs it is advisable to grow in a particular environment. Once people's food choices are known, establishing government policy that aims at increasing food production or utilization of locally available items becomes easier.

Food consumption is an act of taking food available in response to the physiological demands of the individuals. This implies that food consumption is the means of satisfying hunger needs. It is expected that food consumption will affect directly or indirectly the overall ability of agricultural systems to meet food demands (availability), the ability to acquire food during income or food price shocks (stability), the ability of individuals to have adequate resources to acquire food (access), and the ability of the entire food chain to deliver safe food (utilization): all can be affected at the same time by factors such as social norms, gender roles, formal and informal institutional arrangement, economic market and global to local agricultural policies [6].

Food consumption patterns are repeated arrangements observed in food consumption by a population group. They are embedded in types and quantities of foods and their combinations into different dishes or meals. Food consumption patterns depend on several factors such as personal preference, habit, availability, economy, convenience, social relations, ethnic heritage, religion, tradition, culture and nutritional requirements. Until recently, consumption patterns were strongly influenced by the local availability of commodities, resulting in large regional and inter-generational differences [7]. They are linked to types and quantities of foods and their combinations into different dishes or meals. In many developing countries such as Nigeria, average food consumption is lower than requirements on the subsistence level [8]. In these countries, rising incomes will increase food intakes and hence increase land requirements for food production. This change direction has been shown for Benin, Bhutan and Costa Rica [9]. If consumption patterns in developing countries shift toward the affluent menus in western countries, related land requirements might rise substantially. Food consumption patterns vary according to socio-economic level and household characteristics.

The gap between production and consumption is same as the gap between rural and urban societies. Consumers are no longer aware of how the food is produced, processed, packaged and transported. But the food consumption around the world has resulted in the change in direction of the food production. The actions that people take and choices they make, to consume certain products and services or to live in certain ways rather than others, all have direct and indirect impacts on the production of food in particular and the environment, as well as on personal (and collective) well-being [10]. We often find that consumers are locked into unsustainable behaviours in spite of their own best intentions. The conspicuous consumption of food has always been an important indicator of status. Lavish food entertainment is part of the ancient tradition of food hospitality used mainly to impress strangers (guests). Thus, it is pertinent to ask why do people consume the way they do and what effect do their consumption behavior have on production?

Production of major foods in Nigeria has not been sufficient to satisfy the demands of an increasing population. The result is a big gap between national supply and national demand for food. Progress in the agricultural sector has also remained unsatisfactory. The resultant effect of these problems being faced by these households is that most of them are not having enough to subsist on, the year round. They are therefore closely identified with poverty and food insufficiency. Some of the works that have been done in this area in Nigeria dwelt mainly on listing traditional food taboos and their implications for food and nutrition security, no study has been carried out on the influence of food consumption on food production in the study area. There is therefore need to investigate the predominant foods consumed by the population by studying their food consumption patterns in order to establish relationship between food production and consumption and to assist them improve the production of preferred food. The study identified the predominant foods produced, assessed the prevalent food consumption pattern, identified the underlying factors affecting food consumption, and determined the influence food consumption patterns on food production in Ibadan, Oyo State.

RESEARCH HYPOTHESIS

Food consumption patterns have significant effect on food production

2. MATERIAL AND METHODS

This study is a cross-sectional study which is a type of observation study that analyses data from a population, or a subset, at a specific time. It investigated the influence of food consumption patterns on food production in Ibadan, Oyo state, Nigeria. The study was conducted in Ibadan, Oyo State, located on Latitude 8 00' North and Longitude 4 00' East of Greenwich Meridian. Oyo State covers approximately an area of 28,454 square kilometers. The population of this study consisted of farmers and consumers in Ibadan, Oyo State, Nigeria. The State is divided into five agricultural zones by the Oyo State Agricultural Development Programme (OYSADEP).These zones are Zone 1 with headquarters at Ibadan, Zone 2 with headquarters at Oke-Ogun, Zone 3 with headquarters at Ogbomoso, Zone 4 with headquarters at Oyo and Zone 5 with headquarters at Ibarapa. Zone 1 is comprises if eleven (11) local government areas. Two hundred and four (204) households were randomly selected from five (5) local governments in zone 1.

For the purpose of this research, primary and secondary data were collected. Data for the study were analysed using both descriptive statistics and inferential statistics. All the Objectives of the study were achieved using descriptive statistics including frequency, percentages, and mean. Hypothesis was tested using multiple linear regression. The model for the regression is given below:

Multiple Linear regression model

$Y = ρ + β1x1 + β2x2 + β3x3 + β4x4 + β5x5 + U$

Where

Y= Food produced; X_1= Regular food type; X_2= Underlying factors; X_3= Preparation method; X_4= Sharing pattern; X_5= How affordable; ρ = constant; U = error term; β1 – β8 = regression coefficient.

3. RESULTS AND DISCUSSION

Predominant foods produced in Ibadan

Table 1 below reveals the predominant foods produced and the quantities at which they are produced in Ibadan Oyo state. Foods produced in Ibadan were grouped as cereals, roots and tubers, legumes and nuts, meat and dairy products, fruits and leafy vegetables. Quantities were estimated using kilograms (kg) and 50kg bags for cereals.

Table 1: Predominant food produced in Ibadan

			Quantity produced (kg)					
Food Groups	**Frequency**	**Percentage**	**1-500**	**501-1000**	**1001-1500**	**1501-2000**	**2001-2500**	**Above 2500**
Cereals								
Maize	201	99	112(56)	61(30)	17(9)	11(5)	-	-
Millet	177	87	142(80)	29(17)	6(3)	-	-	-
Sorghum	164	80	132(80)	32(20)		-	-	-
Rice	200	98	78(39)	94(47)	28(14)	-	-	-
Wheat	131	64	43(33)	75(57)	13(10)	-	-	-
Roots , tubers and products								
Yam	186	91	87(47)	53(29)	21(11)	25(13)	-	-
Cassava	195	96	29(15)	49(25)	63(32)	27(14)	16(8)	11(6)
Irish potato	127	62	111(87)	16(13)	-	-	-	-
Sweet potato	193	95	56(29)	98(51)	39(20)			
Cocoyam	179	88	162(91)	17(9)	-	-	-	-
Legumes and Nuts								
Cowpea	122	60	43(35)	74(61)	5(4)	-	-	-
Soybean	125	61	117(94)	7(6)	-	-	-	-
Groundnut	153	75	45(29)	33(22)	30(20)	20(13)	16(10)	9(6)
Walnut	190	93	89(47)	55(29)	36(19)	10(5)	-	-
Cashew nut	181	89	66(36)	58(32)	34(19)	18(10)	5(3)	-
Melon	146	72	70(48)	36(25)	32(22)	4(3)	4(2)	
Meat and dairy products								
Fish and sea products	116	57	50(43)	32(28)	23(20)	9(8)	2(1)	-

Snail	183	90	66(36)	39(21)	30(16)	28(15)	15(9)	5(3)
Pork	32	16	16(50)	11(34)	5(16)	-	-	-
Beef products	-	-	-	-	-	-	-	-
Poultry products	187	92	70(37)	52(28)	38(20)	22(12)	3(2)	2(1)
Fruits								
Tomatoes	162	79	51(31)	41(25)	32(20)	23(14)	11(7)	4(2)
Garden egg	147	72	65(44)	39(27)	25(17)	13(9)	5(3)	
Banana	159	78	53(33)	43(27)	31(19)	20(13)	12(8)	-
All citrus	123	60	44(36)	29(24)	18(15)	14(11)	11(9)	7(5)
Cucumber	98	48	40(41)	24(25)	17(17)	11(11)	6(6)	-
Pineapple	124	61	71(57)	34(27)	14(11)	5(4)	-	-
Pepper	189	93	80(42)	58(31)	42(22)	6(3)	3(2)	
Leafy vegetables								
Spinach	200	98	80(40)	71(35)	39(20)	10(5)	-	-
Okra	202	99	81(40)	69(34)	41(20)	9(4)	2(1)	-
Cabbage	136	67	97(71)	35(26)	4(3)	-	-	-
Amaranthus	142	70	70(49)	42(30)	27(19)	3(2)	-	-
Green peas	110	54	93(85)	11(10)	6(5)	-	-	-
Bitter leaves	201	99	83(41)	68(34)	40(20)	6(3)	4(2)	
Lettuce	102	50	47(46)	32(31)	17(17)	6(6)		-
Fluted pumpkin	159	78	75(47)	49(31)	35(22)	-	-	-

Source: Field survey 2018

The implication of the result in Table 1below is that farmers in the study area practice mixed cropping system which is expected to support varieties of food products and different feeding habits in the study area. This supports the assertions of [11] that the practice of mixed cropping in the study area could have a positive influence on food security by providing security for farmers against pests, disease and unexpected climatic conditions. It may help small-scale farmers obtain higher yields, provides farming communities with a range of products with multiple uses and values as well as varieties of crops for immediate consumption and for long-term storage. This also implies that the farmers produce wide verities of food products and is an indication that they are likely to have different consumption pattern and different choices of food since they produce most of the food products consumed in the area.

Prevalent food Consumption Patterns in Ibadan

The result of the prevalent food consumption patterns is presented in Tables 2 Prevalent food consumption patterns were measured or ascertained by the following indices; the food respondents consume and the frequency of consumption, the preparation methods, and the sharing pattern common to the respondents in the area**.**

Table 2: Food consumed and Frequency of Consumption

Food Groups	Never F (%)	Sometimes F (%)	Regularly F (%)	N

Cereals				
Maize	-	57 (28)	147 (72)	204
Millet	42 (21)	64 (31)	98 (48)	204
Sorghum	51 (25)	72 (35)	78 (38)	204
Rice	-	13 (6)	191 (94)	204
Wheat	16 (8)	32 (16)	156 (76)	204
Roots , tubers and products				
Yam	-	21 (10)	183 (90)	204
Cassava	-	37 (18)	167 (82)	204
Irish potato	72 (35)	86 (42)	46 (23)	204
Sweet potato	17 (8)	54 (26)	133 (65)	204
Cocoyam	19 (9)	84 (41)	103 (50)	204
Legumes and Nuts				
Cowpea	3 (1)	22 (11)	179 (88)	204
Soybean	-	76 (37)	128 (63)	204
Groundnut	-	113 (55)	91 (45)	204
Walnut	13 (6)	56 (27)	135 (66)	204
Cashew nut	-	74 (36)	130 (64)	204
Melon	9 (4)	86 (42)	109 (53)	204
Meat and dairy products				
Fish and sea products	-	27 (13)	177 (87)	204
Snail	19 (9)	116 (57)	69 (34)	204
Pork	69 (34)	132 (65)	3 (1)	204
Beef products	-	14 (6)	190 (93)	204
Poultry products	-	4 (2)	200 (98)	204
Fruits				
Tomatoes	-	10 (5)	194 (95)	204
Garden egg	3 (1)	37 (18)	164 (80)	204
Banana	-	92 (45)	112 (55)	204
All citrus	-	21 (10)	183 (88)	204
Cucumber	7 (3)	117 (57)	80 (39)	204
Pineapple	4 (2)	60 (29)	137 (67)	204
Pepper	-	38 (19)	166 (81)	204
Leafy vegetables				
Spinach	2 (1)	3 (1)	199 (98)	204
Okra	-	2 (1)	202 (99)	204
Cabbage	5 (2)	12 (6)	187 (92)	204
Amaranthus	9 (4)	33 (16)	162 (79)	204
Green peas	1 (0.5)	91 (45)	112 (55)	204
Bitter leaves	-	9 (4)	195 (96)	204
Lettuce	3 (1)	112 (55)	89 (44)	204
Fluted pumpkin	1 (0.5)	110 (54)	93 (46)	204

Figures in parenthesis are percentages.

The result below implies that respondents' consumption pattern is spread across all the food groups. The number of different foods or food groups consumed in a household provides a measure of the quality of the diet by reflecting dietary diversity, thus serving as an important complement to the eating occasion indicators. Indigenous cereals, grain, legumes can contribute considerable amounts of

micronutrients to the diet [12.] Daily intake of fruits and leafy vegetables help reduce the risk of coronary heart disease, stroke and hypertension. Fruits and leafy vegetables aid digestion and absorption of other food, however when not eaten in good quantity, deficiency result in one disease or the other. These leafy vegetables are rich sources of vitamins and minerals; an example is the sweet potato leaves which are rich source of vitamin A that enhance good eye sight. According to [13], it is essential to determine the people's preferences before embarking on large-scale production of crops. Findings may indicate if consumers will really choose those food crops that are nutritious but cheap, those that are nutritious and expensive, those that are not nutritious but expensive, or those that are neither nutritious nor expensive.

The result in Table 3 also revealed the preparation methods used by the respondents in preparing their favourite food.

Table 3: Food Preperation Patterns in Ibadan

Variables	Frequency	Percentage (%)	Rank
Preparation methods			
Cooking	204	100	1st
Boiling/steaming	135	66.1	4th
Stirring/turning	96	96.0	2nd
Roasting/smoking	94	46.0	5th
Pounding	54	27.0	6th
Drying/grinding	142	70.0	3rd
Food sharing pattern			
Individually	24	12.0	-
Collectively	122	60.0	-
Both	58	28.0	-
Total	**204**	**100.0**	-

Field survey: 2018.

This is a major determinant of the respondents' food consumption in the areas. The range of traditional domestic foodstuff has been considerably reduced partly due to increased cost of production and processing, and long and laborious domestic preparation methods. The finding also agrees with other studies [14] which revealed that inequalities in food sharing within families in many countries have favoured children over adults, among other variables. The finding of this study indicates that giving priority to adult males in household food distribution increases the probability of household food security. However, this could threaten the nutritional wellbeing of the vulnerable members of the family.

Underlying Factors of Food Consumption in Ibadan

The factors that determine respondents' food consumption pattern is presented Table 4.

Table 4: factors that determine food consumption in Ibadan (N204)

Underlying Factors	Frequency	Percentage (%)
Increased food price	176	86

Seasonality of some crops	201	99
Cultural believes	202	99
Religious believes	194	95
Personal traits	176	86
Easy to prepare	108	52.9
Affordability	172	84.3
Income	198	97.0
Taste	161	79.0
Availability	181	89

Source: Field survey 2018; Multiple responses

Culture and religion have long been recognized as major determinants affecting general food consumption. Culture is a shared set of characteristics, attitudes, behaviours, and values that helps groups of people decide what to do and how to go about it. Culture 'guides' the behaviour of a particular group in all affairs of life and designates the socially standardized activities of people, including the human 'foodways'. Culture further determines which foods and food qualities are acceptable in terms of their sensory properties. Religious background is also considered as crucial determinants affecting food choice and consumption. Religious beliefs have an impact on food consumption when certain foods are prohibited, particular preparation methods are mandated or fasting or feasting practices are observed. Personal traits (Socio-demographic factors) commonly include indicators such as age, gender, marital status, education level, occupation, and household income to reflect the socio-economic and demographic status of an individual.

Consumption patterns were strongly influenced by the local availability of commodities, resulting in large regional and inter-generational differences. Low-income groups have a greater tendency to consume unbalanced diets and in particular have low intakes of fruit and vegetables [15]. However, access to more income does not automatically equate to a better quality diet but the range of foods from which one can choose should increase. Affordability of food is a major determinant of what is eaten regularly which means that relative prices of agricultural and food prices can also influence the diet composition by favouring food items that are unhealthy from a nutritional point of view.

According to the result, taste and familiarity influence behaviour towards food. A liking for sweetness and a dislike for bitterness are considered innate human traits, present from birth. Taste preferences and food aversions develop through experiences and are influenced by our attitudes, beliefs and expectations [16]. Thus it implies that food consumption pattern depends on many factors, including familiarity, taste, palatability, conformity, prestige, security, love, deprivation, religion, income, price, and availability, as well as the availability of substitutes and complements

Test of Hypothesis

Hypothesis of the study stated that food consumption patterns have significant influence on food production. The result of the regression analysis of the hypothesis is presented in Table 5.

Table 5 Multiple Linear Regression of the Influence of Food Consumption on Food Production

Model	B	Std. error	T	Sig.
(Constant)	-278.745	115.547	-2.412	.017
Food consumption	113.823	68.678	1.657	.100
Underlying factors	-52.355	48.358	-2.117	.036
Preparation methods	.001	.001	1.298	.197
Sharing pattern	.000	.000	2.853	.005
R	**.779**			
R2	**.759**			
Adj. R2	**.755**			
F-statistic	**214.440**			**0.005**

Dependent Variable: Quantity of food produced

The precision of the model that evaluate the influence of food consumption on food production was presented in Table 4.7. The joint effect of the explanatory variable in the model account for 75.9% of the variations in the factors affecting the quantity of food produced. Two out of the four coefficients of the variables included in the model are significant. One out of the two that are significant is inversely related while one is positively related. The F-statistics of 214.440 which shows the marginal contribution of the coefficients was significant at 0.005 level of significance.

Taking a cursory look at all the variables entered in the model, food consumption has positive and significant influence on quantity of produced. Suggesting that a unit increase in the food consumed regularly will lead to increase in quantity of food production by 113.823kg per year by one person. The factors that determine food consumption has significant influence and its inversely related indicating that as the factors that determine food consumption increases, food production will decrease by 52.355kg and vice versa. Coefficient of preparation methods and sharing patterns has no influence on the quantity of food being produced in the area. Given that the F- statistics of 214.440 is significant at 1% level of significance, it implies that the computed F- value was higher than the F-tabulated value of (1.94) at 5% level of

significance. Therefore, the hypothesis that food consumption patterns have significant influence on food production was accepted.

Conclusion

The predominant food produced by farmers in the area included cereals, roots and tubers, legumes and nuts, meats and dairy products, fruits and leafy vegetables. The study thus concludes that farmers in Ibadan practice mixed cropping system and produce moderately large quantities of food crop. Culture, religion, seasonality of some foods and income are the major determinants of food consumption pattern in Ibadan. the study concluded that food consumption leads to increased rate of food production, increase in sales of food items, increase in income of farmers and reduced post-harvest losses which implies an improvement in general wellbeing of respondents. The study thus concludes that food consumption patterns influences food production significantly in the study area

REFERENCES

1. Adeyeye, A.J., Avesero, E.P., Ariyo. O. J., and Adeyeye, S.A., Consumer Preference for Rice Consumption in Nigeria. *International Journal of Agricultural Sciences, Environmental and Technology.* Vol. 5 (1). (2010).
2. David P., Marcia P., and Marianne M.K., Energy use in Agriculture: An overview, USA. (1998).
3. Food and Agriculture Organization of the United Nations Agricultural Biological Diversity, UNEP/CBD/SBSTTA/7/INF/11. (2001).
4. Schuh, G. EThe household: The neglected link in research and programs for poverty alleviation. Food Policy, 25, 233–241. . (2000).
5. Food and Agriculture Organization. United Nations Food and Agriculture Organization. Monitoring Progress towards Hunger Reduction Targets of the World Food Summit (WFS) and the Nigeria Millennium Development Goals (MDGs). Global Statistics Service-Food Security Indicators. FAO, Rome. (2011).
6. Lobell, D. B., Burke, M. B., Tebaldi, C., Mastrandrea, M. D., Falcon, W. P. and Naylor, R. L. Prioritizing Climate Change Adaptation Needs for Food Security in 2030. Science,3(19),607-610. (2008).
7. Jobse-Van Putten, J. Eenvoudig maar voedzaam. Nijmegen/Amsterdam: SUN/P.J & Meertens-Instituut. (1995)
8. Azoulay, G., Enjeux de la se´curite´ alimentairemondiale. Cahiers Agriculture, 7, 433–439. (1998).
9. Van Vuuren, D.P, &Smeets, E. M. W. Ecological footprints of Benin, Bhutan, Costa Rica and the Netherlands. *Ecological Economics*, 34(234), 115–130. (2000).
10. Gerbens-Leeenes, P.W., Nonhebel, S., and Irens, W.P.M.F. A method to determine land requirements relating to food consumption patterns.Agriculture, Ecosystems & Environment, 17 (55), 1–12. (2001).
11. Boon E.K., Food Security in Africa: Challenges and Prospects. Regional Sustainable Review-Africa. UNESCO-EOLSS Sample Paper, Dakar (2002).
12. Smith, I.F, Eyzaguirre, P.B, Matig, O.E. and Johns, T.. Managing biodiversity for food and nutrition security in West Africa: building on indigenous knowledge for more sustainable livelihoods. *Standing Committee on Nutrition* 33. (2006)

13. Oke O.L., and Ojofeitimi E.O. Cocoyam: A neglected tuber: World review, Nutrition and Dietics, 34:33. (1980).

14. Behrman J.R., Intra-household Distribution and the Family. Unpublished draft. University of Pennsylvania. (1992).
15. De Irala-Estevez J., A systematic Review of Socio-economic Differences in Food Habits in Europe: Consumption of Fruit and Vegetables. *European Journal of Clinical Nutrition* 54:706-714. (2000).
16. Clarke J.E., Taste and Flavour: Their Importance in Food Choice and Acceptance. Proceedings of the Nutrition Society 57:639-643 (1998).