DOES THE WESTERNISATION OF DIET AFFECT FOOD SECURITY IN NIGERIA? EVIDENCE FROM FAST FOOD AND STREET FOOD CONSUMPTION IN THE DUTSE METROPOLIS, JIGAWA STATE

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ABSTRACT

The study examined the westernisation of diet vis-à-vis the consumption of fast food (FF) and street foods (SFs) and their implication on food security in Dutse Metropolis, Nigeria. Using a multistage sampling procedure, 118 patrons of FF and SFs were selected from eight quick service restaurants (QSRs) and data were collected using an interview schedule. Descriptive statistics and cost-of-calorie function were used as tools of data analysis. Results revealed that most respondents were male (66.1%), the majority were aged 21 - 40 years (81.4%), single (71.2%), and educated (96.6%). Evidence of the westernised dietary pattern was manifold in four facets: growing consumption of food products from supermarkets and food vendors (origin of food), the diet of animal-source, diet drinks, and sugar or artificial sweeteners (food ingredients), high consumption of fast food, soft drinks and processed foods (food processing) and consumption of takeaway, ready-prepared meals, fried foods and microwave foods (food preparation technique). Further analysis showed that the westernisation of diet is driven by the high prices of food (traditional foodstuffs), rapid urbanization growth and urban lifestyle, and technological advancement in food systems. The cost-of-calorie analysis reveals that the amount of calorie consumption is significantly influenced by income expenditure on food ($R^2 = 0.925$, $p < 0.000$). Food expenditure analysis showed that 58.5% of FF and SFs consumers were food insecure with an expenditure deficit of N1, 850/person/day to acquire the recommended calorie threshold of 2,200kcal/person/day. Findings attest that the Dutse metropolis is enmeshed in the web of dietary transition that if not checked, could erode the gains of the traditional food system. Thus, practices such as home-grown food culture are recommended as measures of the current trend of overt dependence on food markets.

Keywords: Consumption, Dietary transition, Dutse metropolis, Fast food, Street food, Westernisation

INTRODUCTION

Traditionally, food security at all levels is achieved when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life (FAO, 1996). The definition emphasized not just access to food, but also food safety and nutritional balance (including cultural acceptability) which if lacking, will result in food insecurity (Ghattas, 2014). However, the emerging phenomenon of dietary convergence and adaptability, according to Black (2016) is altering traditional diets to westernised systems. This phenomenal change in dietary pattern describes the evolution of nutritional transition which signifies a major shift from a traditional diet towards increased intake of highly processed foods, consumption of away-from-home meals, increased intake of

sweetened beverages, meat, foods high in saturated fats and low in fibre content, otherwise known as westernised or modernised diets (Oghotomo, 2017 and Mbogori and Mucherah, 2019). Overt manifestations of this modernity are the consumption of street foods (SFs) and fast food (FF), which hitherto, were the dietary pattern uniquely regarded as western diet style (Farzana *et al.,* 2011; Konwea, 2012; Alima, 2016; Atinkut *et al*., 2018). According to Liverpool-Tasie, *et al*. (2016), this novelty has transformed the eating habits in urban and even rural households in Nigeria with apparent movement beyond the consumption pattern that is based on self-sufficiency into heavy reliance on food markets, a phenomenon that is best described as commercialization of consumption.

Conceptually, modernization or westernisation of diets (Pingali, 2007), would have been greeted with fanfare due to the enormity of socioeconomic gains, but it introduces the paradox of the co-existence of undernutrition, overweight, and obesity amidst widespread hunger and food insecurity in Nigeria and other developing countries (Tanumihardjo *et al*., 2007; Mbogori and Mucherah, 2019; Kopp, 2019; Morgan and Fanzo, 2020; Mekonnen *et al*., 2021). Also, the strong link of this concept with growing health risks and increased occurrence of diseases, (the so-called diseases of civilization – hypertension, cardiovascular diseases, hypercholesterolemia, diabetes, obesity, colorectal cancer) have raised a critical point of concern (Ashakiran and Deepthi, 2012; Steyn and Mchiza, 2014; Kopp, 2019; Popkin *et al*., 2020).

What constitutes fast food and street foods is subject to debate. According to Atinkut *et al*. (2018), there is homogeneity in food items and beverages for sale and many vendors sell the same items as fast food and street foods. However, street food describes all manner of ready-to-eat foods or beverages that are broadly sold out by the informal sector, from stands or corridors on the pavement of busy streets in urban and rural areas (Alima, 2016). The problem, however, is that how SFs are sometimes prepared renders such foods largely unhygienic (Trafialek *et al*., 2017) and the presence of pathogens in such foods has significant public health implications, particularly among HIV and AIDS patients (Morobe, 2009).

Fast food on the other hand are regarded as quickly prepared, reasonably priced, and readily available alternatives to home-cooked food (Farzana *et al*., 2011). In the opinions of Atinkut *et al.* (2018) and Konwea (2012), they include all categories of "foods that can be prepared and served very quickly to the customers in a packaged form for take-out or take away". Though, most fast-food meals are high in protein (meat and dairy products), the major concern according to (Ashakiran and Deepthi (2012) is that they are high in fat, sugar and sodium content. The difference between street foods (SF) and fast food according to Atinkut *et al*. (2018) are price, shopping area, packaging, labelling, brand, as well as whether they are cooked or uncooked.

The popularity of the consumption of FF and SFs is evident with the springing out of quick-service restaurants across all nooks and crannies of Nigeria. Statistics attest that over 80% of Nigerians across all divides are

caught in this web (Liverpool-Tasie *et al*., 2016; Oghotomo, 2017; Margan and Fanzo, 2020). Whereas most urban households depend on purchased food, a handful of the value of food consumed in Nigerian households is believed to have come from their own production (Ecker and Hatzenbuehler, 2021). The supply gap and the quest for modernity among the citizens are the likely platforms upon which the FF and SFs industries are leveraging. Unfortunately, people who depend on FF and SFs are often more interested in convenience than the questions of safety, quality, and hygiene (Trafialek *et al*., 2018).

Apparently, several factors are known to influence the dietary habits: urbanization, improvement in socioeconomic status, increased income, economic growth, increased access to supermarkets, increased in street food vending, and at times, the inability of the nation to meet her food needs through domestic production (Popkin, 2006; Mbogori and Mucherah, 2019). Given the array of these motivators, especially, the gradual transformation of the Dutse metropolis in recent years into a mega city, the rapidly growing population, and the economic hub of the State, it is certainly not out of place for the emergence of the changing dietary syndrome. In addition, such changes are known to affect the demographic and socioeconomic characteristics of the people as well as the general lifestyle, especially in townships that are characteristically in tandem with the modern dietary culture. Despite the overt health risks and nutritional imbalance of dietary transition, not many studies are in the public domain on the subject (FF and SFs) to provide the needed guideposts to unsuspecting consumers. Therefore, the assessment of dietary transition *vis-à-vis*

the consumption of fast food and street foods in the Dutse Metropolis is apt and expedient, considering the novel dietary pattern and the implication thereof on the sustainability of home-grown food production and food security objectives. Thus, the study is aimed at assessing the level of caloric intake from FF and SFs, the pattern of dietary changes, and the drivers of FF and SFs consumption in the Dutse metropolis and their concomitant effects on the food security status of the respondents.

MATERIALS AND METHODS

The study was conducted in the Dutse metropolitan centre, Jigawa State, Nigeria. Located on latitude 11.10^0N and 12.30^0N and longitude 8.40^0 and 12.12^0E of the Greenwich Meridian, the local government has an estimated population of 365,818 as of 2015 and a land mass of $1,099.6km^2$ (Goldewijk *et al*., 2017). The average household size of 15 persons per household is estimated across the State (NPC, 2016). The climate of the State is generally described as Sahelian; with an annual rainfall of 574 to 644 mm per annum and an average annual temperature of 18^oC around January to 37^oC in June (Jigawa State Agriculture Policy, 2016). The rainfall regime is therefore very short (within 4 to 5 months) leaving most of the year with dry spells with attendant environmental challenges such as drought and desertification. The rich agricultural endowment of the State supports the cultivation of diverse crops, the rearing of livestock, and fish production. Food production in the study area is dominated by the production and consumption of arable crops such as millet, sorghum, cowpea, groundnut, sesame, rice, maize and sweet potatoes (wet season), and in the dry season irrigation, tomato, pepper,

onion, wheat, sugarcane, carrot, cabbage and lettuce (Jigawa State Agriculture Policy, 2016).

Sampling Techniques and Sample Size

A multistage sampling procedure was used to select a sample size of 121 respondents. Initially, four major streets with at least, two notable quick service restaurants (QSRs): stores, stands, kiosks, or other street food vending retail outlets were purposively selected. Thus, Hakimi, Ciroma, Maikono, and Sani Abacha streets were purposively selected for the study. Secondly, a census of QSRs with defined structures on each street was made and two QSRs were selected (8 QSRs), giving preference to adjunct businesses that take place around and within the vicinities of such QSRs. In this fashion, Stonecastle/Tea parlour and Joy restaurant on Hakimi Street, Hasinah and Iyabeji restaurants on Maikano Street, Hadiza Nassawa and Hadiza Ciroma restaurants on Ciroma Street, and Yahuza palace and Shemar's restaurant on Sani Abacha Street was selected and the management of the QSRs consulted for their permission for the study. Lastly, simple random sampling and 121 customers were made using Yamne's and Bowley's proportion allocation formulae at the service points of the identified QSRs. Ten days of staggered interaction and interview schedule was used for data collection. However, 118 questionnaires were successfully completed and the data collected was then analysed using descriptive statistics and cost-of-calorie function.

Methods of Data Analysis

Cost-of-calorie function: A food bundle construct that meets the dietary energy needs of individuals has been established in accordance with the standard norms (Foster *et al.*, 1984; Oladimeji *et al.*, 2018). These norms however, differ across individuals depending on age, gender, weight, and activity level. Using the COC function, Food Security Index (FSI) was generated to determine the cost of food consumption as;

$$C = \alpha + \beta ln(E) \qquad (1)$$

Where,

C = Actual calorie consumption (individual) (Kcal.); E = Food expenditure (per capita) (₦); α = Intercept; β = Coefficient of the calorie consumption.

Where $\beta > 0$,

$$\frac{\delta C}{\delta E} = \frac{\beta}{E} \ and \ \frac{\delta^2 \beta}{\delta E^2} = -\frac{\beta}{E^2} \qquad (2)$$

This implies that as food expenditure increases, calorie intake also increases but at a decreasing rate. In other words, the rate of increase in calorie intake slows as people become more affluent. Instead of consuming more calories, people consume more protein and fat as their food expenditure increases (Kakwani and Son, 2016). The recommended minimum calorie requirement of 2,200kcal/day/person was adopted as the food security line (FAO, 1996). Thus, the cost of minimum calorie requirement, Z was calculated from the COC function as;

$$Z = e^{\alpha + \beta L} \qquad (3)$$

Where:

Z = Cost of minimum recommended energy level; L = Recommended daily energy level – food security line, (2,200kcal.); α and β as defined above; e = A mathematical constant (2.71828).

Based on the calculated Z, persons whose average cost of daily calorie consumption is equal to or more than Z are considered food

secure ($\mathbb{Z} \geq 1$) while those whose average cost of daily calorie consumption is lower than Z are considered food insecure ($\mathbb{Z} < 1$). The Surplus or Shortfall Index (P) model was then computed based on *Z* to measure the extent to which an individual is above or below the food security line (food secure or insecure). Using the principle of Foster, Greer and Thorbecke (FGT) index (Foster *et al.*, 1984);

$$P_i = \frac{1}{N} \sum_{i=1}^{M} (GK_i)^{\alpha} \qquad (4)$$

Where P_i denotes the shortfall or surplus index for the ith respondent,

$$GK = \frac{X_{ki} - I}{I} \qquad (5)$$

which is the deficiency or surplus faced by i[th] respondent,

X_{ki} = average daily calorie available to the ith respondent.

M = the number of individuals that are food secure (surplus index) or food insecure (short fall index), I = the food security line (2,200 kcal/capita/day). N = total sample size, α = a reflection of the concern attached to the proportionate shortfall from food security line. If $\alpha = 0$, the index corresponds to the head count ratio (H), the incidence of food insecurity,

The Head Count ratio (H) is given as;

$$H = \frac{M}{N} \qquad (6)$$

RESULTS AND DISCUSSION
Socioeconomic Characteristics of the Respondents
Results of socioeconomic characteristics in Table 1 showed that most respondents were males (66.1%). The dominance of male could be attributed to the socio-cultural settings of the study area where there is unequal social freedom between the female and male folks, including access and opportunities to quick services restaurants (Matemilola and Elegbede, 2017). Another probable reason could be that, females have more time to prepare own-foods, since it is culturally expected of them to cook at home rather than going out to eateries. Further, majority of the respondents (81.4%) were aged 21 - 40 years, implying that youths are the prime patrons of QSRs and are more inclined to adapting western diets and lifestyle as a means of socialization and civilization (Akarolo-Anthony *et al.*, 2013). Given that majority (71.2%) of the consumers are also single, it is not surprising the high indulgence in FF and SFs to meet daily dietary needs. This is corroborated by the findings of Akarolo-Anthony *et al.* (2013) that single individuals, especially men, are more likely to eat out than prepare their own meals at home. The implication is that when people mostly buy meals from QSRs, they are more likely to endanger their health with consumption of highly processed foods, sugar and foods that are low in fibre content, rather than the traditional meals.

Result of educational attainment revealed that 48.3% and 43.2% of the respondents had secondary and tertiary education, respectively. The high percentage of respondents with formal education attests to the felt-impact of the emerging educational institutions and facilities due to urbanization and social development. This result is supported by the finding of Mokennen *et al.* (2021) who affirmed similar proportion of respondents with post-primary education in urban centres in

Nigeria. Also, most (66.9%) of the respondents in the study area were in paid employment or in one business of the other where income is generated on monthly basis. This is an indication that they have the means and the resources to depend on food markets. This result is contrary to the submission of Mensah *et al.* (2002) that the consumption of SFs strived well among the unemployed and low-income earners.

Table 1: Distribution of the Socioeconomic Characteristics of the Respondents (n = 118)

Variables	Category	Frequency	Percentage (%)
Gender	Male	78	66.1
	Female	40	33.9
Age (years)	≤20	13	11.0
	21 – 40	96	81.4
	≥40	9	7.6
Marital Status	Single	84	71.2
	Married	31	26.3
	Divorced	2	1.7
	Widower	1	0.8
Education	None	2	1.7
	Qur'anic	2	1.7
	Primary	6	5.1
	Secondary	57	48.3
	Tertiary	51	43.2
Household Size	≤5	17	14.4
	6-10	56	47.5
	11-15	34	28.8
	16-20	7	5.9
	≥21	4	3.4
Source of Income	Paid employment	17	14.4
	Business	62	52.5
	Farming	27	22.9
	Artisans	2	1.7
	Others	10	8.5
Monthly Income (₦)	≤100000	75	63.6
	100001-200000	22	18.6
	200001-300000	8	6.8
	400001-500000	7	5.9
	≥500001	6	5.1

Source: Field Survey, 2021

The pattern of Dietary Transition in the Dutse Metropolis

Results of the trend in dietary intake are presented in Table 2. Using different facets of food consumption (the food origin; ingredients; processing level and preparation techniques), analysis of the origin of foods consumed (foods that are imported from other places and are available at all times, supermarket/convenience store foods) shows that, consumers had high inclinations to the consumption of food products from supermarkets ($\bar{X} = 1.57$), meals comprising only purchased

foodstuffs ($\bar{X} = 2.09$) and eating food always from vendors ($\bar{X} = 2.12$).

The dietary shift toward modernized food on the basis of food ingredients (deviation from traditional to modern food ingredients) shows that consumers exhibited a high affinity to the consumption of animal-source foods ($\bar{X} = 2.14$), diet drinks/foods ($\bar{X} = 1.81$), and sugar or caloric and artificial sweeteners ($\bar{X} = 1.75$). This result agrees with the positions of Steyn and Mchiza (2014) and Morgan and Fanzo (2020) who attributed the consumption of these food ingredients to modern eating habit. The strong positive relationship between the consumption of fast food and soft drinks in this study is also validated by the findings of Bowman *et al*. (2004) and Otemuyiwa and Adewusi (2012) who affirmed that the majority of fast-food consumers ingested carbonated or sweetened soft drinks which are high in sugar.

Furthermore, the extent at which food is processed is an indication of westernisation (Pingali, 2007; Popkin *et al*., 2012; Oghotomo, 2017 and Mbogori and Mucherah, 2019) evidence suggests that 80% of the Nigerian population consumes processed food (Liverpool-Tasie *et al.,* 2016). Consequently, the results in this study indicate evidently, high consumption of fast food (($\bar{X} = 2.09$) and soft drinks ($\bar{X} = 2.07$), convenience foods ($\bar{X} = 1.57$) and processed foods ($\bar{X} = 1.53$). This trend is corroborated by the submissions of Otemuyiwa and Adewusi (2012) who

opined that the convenience and ready availability of FF and SFs provide alternative to youth and the white-collar workers who, because of the demands of their jobs, are often in a hurry.

Based on the method of food preparation (who, where and how food is prepared) and preference facet, results show that customers trended more to the consumption of take-away or delivered meals ($\bar{X} = 2.15$), ready-prepared meals ($\bar{X} = 1.96$), fried foods ($\bar{X} = 1.92$), as well as barbecue and ($\bar{X} = 1.77$) microwave foods ($\bar{X} = 1.61$). Such practices conformed wholly to the changing trends in food consumption patterns from the traditional food culture to a modernized food system that is greeted with emerging health and food security challenges (Dutta *et al*., 2014). For instance, the consumption of fried and processed foods is known to contain high amounts of trans-fats, saturated fats and oxycholesterol (Ashakiran and Deepthi, 2012; Dhaka *et al*., 2008). Likewise, the consumption of snacks and away-from-home foods have their drawbacks.

Drivers of Fast food and Soft food Consumption

The results in Table 3 shows the distribution of respondents according to the drivers of FF and SF consumption in Dutse metropolis. Detail analysis depicted that, high price of healthy traditional foodstuffs, as compared to western diets, was ranked paramount (64.41%) as the prime driver of FF and SF consumption.

Table 2: Distribution of Respondents according to the Dietary Transition

Dimension	Nature of Diet	Never	Rarely	Often	Always	$\bar{X}$ score
Origin	Consumption of foods recently produced or introduced in a locality	11(9.3)	64(54.2)	30(25.4)	13(11.0)	1.38
	Consumption of foods from other countries' cuisines	30(25.4)	62(52.5)	24(20.3)	2(1.7)	0.98
	Eating of pizza and its allies	21(17.8)	47(39.8)	42(35.6)	8(6.8)	1.31
	Consuming genetically modified foods	23(19.5)	44(37.3)	48(40.7)	3(2.5)	1.26
	Consumption of food products from supermarkets	5(4.2)	51(43.2)	49(41.5)	13(11.0)	1.57
	Meals comprising of only purchased foodstuffs	11(9.3)	13(11.0)	48(40.7)	46(39.0)	2.09
	Eating always foods from vendors	10(8.5)	14(11.9)	46(39.0)	48(40.7)	2.12
Ingredients	Consumption of diet drinks or foods	4(3.4)	41(34.7)	47(39.8)	26(22.0)	1.81
	High consumption of refined foods	8(6.8)	41(34.7)	55(46.6)	14(11.9)	1.64
	Consumption of animal-source foods	3(2.5)	20(16.9)	52(44.1)	43(36.4)	2.14
	Consumption of sugar/caloric sweeteners	2(1.7)	45(38.1)	51(43.2)	20(16.9)	1.75
	Consuming artificial sweeteners (diet drinks, sweeten coffee/tea)	6(5.1)	40(33.9)	49(41.5)	23(19.5)	1.75
	High consumption of oils and fats	4(3.4)	41(34.7)	43(36.4)	28(23.7)	1.79
	High consumption of salt	12(10.2)	72(61.0)	28(23.7)	6(5.1)	1.24
Processing	Consumption of industrially ultra-processed foods	8(6.8)	46(39.0)	55(46.6)	8(6.8)	1.53
	Consumption of convenience products	6(5.1)	49(41.5)	50(42.4)	12(10.2)	1.57
	Consumption of frozen meals	14(11.9)	43(36.4)	49(41.5)	11(9.3)	1.47
	Consumption of fast food	3(2.5)	30(25.4)	38(32.2)	47(39.8)	2.09
	Consumption of soft drinks	4(3.4)	24(20.3)	50(42.4)	40(33.9)	2.07
Preparation	Consumption of microwave foods	11(9.3)	42(35.6)	47(39.8)	18(15.3)	1.61
	Consumption of fried foods	2(1.7)	35(29.7)	52(44.1)	29(24.6)	1.92
	Consumption of grilled foods/barbecue	4(3.4)	43(36.4)	47(39.4)	24(20.3)	1.77
	Consumption of ready-prepared foods	6(5.1)	31(26.3)	43(36.4)	38(32.2)	1.96
	Eating take-away or delivered meals	1(0.8)	31(26.3)	35(29.7)	51(43.2)	2.15

Source: Field Survey (2021). *figures in parenthesis indicate percentages. Mean cut-off point = 1.50

This result agrees with the assertions of Morgan and Fanzo (2020) and Farzana *et al.* (2011) that food price is the core determinant of the choice of food consumption. Likewise, the urbanization process and urban lifestyles (40.7%) were accorded a second place among the key drivers of FF and SF consumption. The recognition of this factor could be attributed to the rapid urban transformation of the area on account of the proliferation of educational institutions and other governmental and non-government establishments in the State. The implication is that feeling of urbanization alone is a manifold manifestation of the drift to the westernisation of diets (Zhai *et al.*, 2014). This is further corroborated by the proportion (34.7%) of respondents that viewed westernisation, civilization and globalization processes as promoters of dietary transition. This finding is supported by the submissions of Steyn and Mchiza (2014) and Hawkes *et al.* (2017) that globalization and urbanization processes lead to dietary shifts. To such, the consumption of FF and SFs is regarded as a mark of civilization or a display of affluent lifestyle, the *nouveau riche syndrome*.

Other drivers of FF and SFs consumption were the fallout of technological advancement such as the introduction of genetically modified crops, GMOs (39.8%), lack of time to prepare traditional meals (30.5%), increased physical and economic access to processed foods (28%), travel and tourism (20.3%) as well as the shift in agricultural practices (14.4%). These factors, according to Popkin *et al.* (2012) are partly responsible for the changes in dietary intake in developing countries.

Table 3: Drivers of FF and SFs Consumption

Driving factor	Frequency*	Percentage	Rank
High prices of healthy traditional foodstuffs	76	64.4	1
Urbanization and urban lifestyle	48	40.7	2
Technological advancement e.g GMO	47	39.8	3
Westernisation, civilization or globalization	41	34.7	4
Lack of time to prepare traditional diet	36	30.5	5
Increased physical and economic access to processed food	33	27.97	6
Travel and tourism	24	20.34	7
Major shift in agricultural activities/production	17	14.41	8
Total	322		

Source: Field Survey (2021) ***Multiple responses.**

Food Security implications of FF and SFs Consumption

Results of food security status of the patrons of FF and SFs in Dutse Metropolis (Table 4) indicate that the Cost-of-Calorie model was ideal for the analysis with a good fit of 90.4. Using the minimum calorie intake per person per day or 2,200 kcal as a benchmark, the result affirmed that 58.5% of the respondents were food insecure while 41.5% were food secure. This result agrees with the finding of Nnadozie and Nnamerenwa (2014 who applied a similar methodology in different regions. This implies that the consumption of FF and SFs tends to increase the chances of food

insecurity. Thus, the food secure category was 1,442.848kcal (56.6%) above the food security line while the food insecure category lagged behind the threshold by 47.8%, requiring 1,051.008kcal/capita/day to climb to the food security margin of 2,200kcal.

Similarly, the cost of acquiring the recommended minimum calories (2,200kcal) required for healthy living was estimated at ₦1, 850/person. This result is at variance with the findings of Amaza (2006) and Nnadozie and Nnamerenwa (2014) who postulated the costs of

obtaining 2,260 and 2,300kcal largely from own production at ₦63.71 and ₦148.21, respectively. Thus, the cost of obtaining the required calories from FF and SFs when compared with home grown/consumed food tends to be relatively higher. The average costs of daily calorie intake of ₦1,749, ₦12,248 and ₦52,491 per day, week and month were recorded, respectively. This implies that the food secure were 43.6% (N807) above the food security line (₦1, 850) while the food insecure category requires additional ₦831 (44.9%) to attain the minimum food security threshold.

Table 4: Food Security Indices of Respondents

Parameters	Pooled	Food secure	Food insecure
$C = \alpha + \beta ln(E)$			
Intercept (α)	9.723***	10.835***	10.298***
Coefficient (β)	-7.17e-04***	-0.001***	-0.001***
R^2	0.925	0.904	0.989
Recommended Minimum Calorie Requirement (L)/person (kcal)	2,200		
Available average daily calorie intake per person (C) (kcal)	2,085.591	3,442.848	1,148.912
Cost of buying (L) per person per day (Food Security Line) (₦)	1,850.109		
Cost of average daily calorie per person (₦)	1,749.691		
Weekly	12,247.837		
Monthly	52,490.730		
Head count, $H = \frac{M}{N}$		0.415	0.585
Shortfall/Surplus index based on (C)		0.565	0.478
Shortfall/Surplus index based on (E)		0.436	0.449
Aggregate income gap (₦)		+807	-831

Source: Field Survey (2021)

CONCLUSION AND RECOMMENDATIONS

Diet transitional process has huge socioeconomic benefits to all stakeholders. However, the emergence of quick service restaurants, typified by fast food and street-foods have raised serious concerns, including the safety and wellbeing and food security status of the consumers. The

assessment of westernisation of diet *vis-à-vis* the consumption of fast food and street-foods in Dutse Metropolis, Jigawa State, Nigeria and its attendant consequences on food security showed that the area is enmeshed in the web of diet transition that is largely driven by food prices, urbanization and technological advancement.

Evidence showed that tremendous changes have occurred in food consumption on the premises of the following facets: the food origin, ingredients, processing level and techniques of food preparation. These changes are evident in the growing consumption of food products from supermarkets and vendors (origin of food), the diet of animal-source, diet drinks/foods, and sugar or artificial sweeteners (food ingredients), high consumption of fast food, soft drinks and processed foods (food processing) to the consumption of takeaway, ready-prepared meals, fried foods and microwave foods (food preparation technique). The cumulative effect of these changes translates into growing food insecurity (58.5%) occasioned by the high cost of calories to attain the required dietary threshold.

Based on the findings, the study recommended that homegrown and prepared foods culture should be encouraged (in rural and urban sectors) as a measure to avert the eroding culture of the traditional food system to total dependence on the food markets, which are usually expensive, for calorie acquisition. This could be achieved through concerted efforts by all stakeholders (farmers, government, non-governmental organisations) in the agricultural value chain in promoting and creating awareness of the availability, accessibility and consumption of foods that have the potential of reducing the incidence of food insecurity.

CONFLICT OF INTEREST

The authors declared no conflicts of interest with respect to the research, authorship and publication of this article.

ETHICAL COMPLIANCE

The authors have followed the ethical standards in conducting the research and preparing the manuscript.

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