



SOCIO-ECONOMIC CHARACTERISTICS INFLUENCING SUGAR CONSUMPTION PATTERN IN BAUCHI STATE NIGERIA

¹Mohammed, R., ¹Murtala, N., ¹Danwanka, H. A. and ²Haruna, U.

¹Department of Agricultural Economics, Abubakar Tafawa Balewa University, Bauchi

²Department of Agricultural Economics and Extension, Federal University Dutse, Jigawa

Corresponding Author's E-mail: mragadaa@atbu.edu.ng **Tel.:** 07039602378

ABSTRACT

The study examined household sugar consumption pattern in Bauchi State, Nigeria. Cross – sectional data were collected from 412 households using multistage sampling technique. The data were analyzed using descriptive statistics, Linear regression model and budget share index. The socio-economic factors influencing sugar consumption in northern zone of Bauchi State were; age, household size ($P<0.01$), income ($P<0.05$), educational level and primary occupation ($P<0.1$), with R^2 value of 0.685. The significant variables that influenced household sugar consumption in central zone were monthly income ($P<0.05$), cost of sugar and household size ($P<0.01$) and average monthly total food expenditure ($P<0.05$); with R^2 value of 0.497. In the western zone sugar consumption was influenced by average monthly income and household size ($P<0.01$), cost of sugar ($P<0.05$), and primary occupation ($P<0.1$) with an R^2 value of 0.375 and the F-value of all the three zones were significant ($P<0.01$). The central zone had the highest sugar budget share of 8.70%, followed by western zone (6.59%), while Northern zone had 5.20%. The result showed that, in northern zone the respondents spent 60.91% of their household budget on food, while in central and western zones it was 59.27% and 55.06% respectively. Most of the respondents, 89.4% and 84.2% in central and western zones, respectively reported price as a major constraint to sugar consumption; likewise, 79.7% in northern zone. Income is the second constraint to sugar consumption in all the three zones with 73.4%, 84.6% and 77.6% in northern, central and western zones, respectively. Household size ranked third, the northern zone had 51.0%, central zone 47.1% and western zone 32.7%. A small percentage of the respondents reported health as a constraint to sugar consumption, northern zone 23.1%, central 25.0% and western zone 24.2%. The research concluded that socioeconomic factors have an influence on sugar consumption of the household. The study therefore, recommended Policies and programs toward sugar sector in Nigeria should be improve and implemented toward self-sufficiency in sugar production. Thus, filling the demand and supply gap of the product in the country.

Keywords: Socio-economic characteristics, Influencing, Sugar, Consumption, Pattern.

INTRODUCTION

Consumer behavior is defined as “the behavior that consumers display in searching for, purchasing, using, evaluating and disposing of products, services and ideas which they expect will satisfy their needs”. Due to the complexity of consumer behavior by its nature, it is almost impossible to predict with accuracy any consumer behavior in a given situation (Jisana, 2014). Consumer behavior can be affected by a variety of factors such as age, gender, education, marital status, and income. With regards to income, a study on the relationship between consumer income and locus of control on financial behavior found that consumers’ propensity to save, budget, and control spending depended partly on their income, along with their level



of perceived control over outcome and knowledge (Perry, 2005). Various socioeconomic factors affect a household's food choices simultaneously.

According to Lindblom (2017), the higher-educated groups consume the same share of sugary foodstuffs, independent of their income level, whereas for the lower-educated groups, income is a significant factor and the consumption share of sugar decreases as income increases. Age and gender also correspond to healthier eating or an emphasis on plant-based diets. Lallukka (2007) reported that older females with high education eat "healthier diets". Most of all, sugar consumption has long been an effect of age. This suggests a strong potential for an interaction effect with income, as young age is often very much associated with lower income level. Tierney *et al.* (2017) in their study on Consumer Knowledge and Understanding of Added Sugars Found out that majority (79%) of the participants were 18–54 years old. significantly higher numbers were female and two-thirds (65%) were educated to a degree level or above. Added Sugar Consumption among College-aged Students study by Murad (2017) revealed that there was a lack of knowledge about added sugar limit recommendations by American Heart Association (AHA), WHO, and the 2010-2020 Dietary Guidelines for Americans. Factors found to influence excess added sugar consumption were: taste, price and peer pressure. According to the findings from the National Health Interview Survey 2005, researchers concluded that added sugar intake was higher among males than females and was inversely associated with age, educational status, and family income (Thompson, 2009). Another study found that more women than men 14-30 years were having more than 25% of calories from added sugar (19.8% versus 17.1%), both were higher than any other life stage group. In addition to economic factors, food consumption is tightly embedded in culture. The ingredients used in cooking have generally been mostly domestic, and the traditional food culture reflect the agricultural and modest society (Purhonen and Gronow, 2014).

Sugar consumption is increasing due to the evolution of the Nigerian diet. The traditional Nigerian diet is essentially sugar-less, however preference of both the elite and middle class, and the growing young population, are changing from traditional little or no sugar-based diet to western diet, which contains high quantities of sugar (USDA, 2012). The World Health Organization (WHO) called for decreasing added sugar consumption to less than 10% of daily caloric intake, mentioning that further reduction to less than 5% of daily caloric intake would provide additional health benefits. The health benefits include decreasing the prevalence of overweight, obesity and tooth decay (Murad, 2017). Furthermore, the American Heart Association (AHA) recommends a 5% daily caloric intake sugar limit. Specifically, women and men should limit their added sugar consumption to no more than 100 calories (25g or approximately six teaspoons) and 150 calories (37.5g or approximately nine teaspoons), respectively.

Decisions about the consumption of goods and services are taken at the household level (the lowest level of societal organization); a reason why it is said that all national economies strive to satisfy the wants and needs of their households. Households create demand in economies according to their tastes and preferences. Because of this, they determine the production lines of countries and are recognized as the basic unit of analysis in microeconomics. This study focused on analyzing socio-economics characteristic influencing household sugar consumption pattern in Bauchi State, Nigeria. The specific objectives were to:

- i. Determine the influence of socio-economic characteristics of consumers on sugar consumption in the three agricultural zones of Bauchi State;
- ii. Determine sugar budget share from household food expenditure; and
- iii. Identify constraints associated with sugar consumption.

MATERIALS AND METHODS

The Study Area

The study was conducted in Bauchi State, North East, Nigeria (Figure 1). The State, located between Latitudes $9^{\circ} 3'$ and $12^{\circ} 3'$ north of the equator and Longitudes 85° and 11° east, covers an area of 49,119 km² 65% of which is cultivable. As at 2022, the population of the State which grows at a rate of 3.5% was estimated at 8308,800 million, making it the most populous State in the north east of Nigeria where the average household size range between 4 to 9 persons (UNDP, 2018). It has twenty Local Government Areas (LGAs), namely: Bauchi, Tafawa Balewa, Bogoro, Katagum, Alkaleri, Dambam, Giade, Ganjuwa, Darazo, Dass, Ningi, Shira, Gamawa, Itas/Gadua, Jama'are, Kirfi, Toro, Warji, Zaki, and Misau. The State spans two distinctive vegetation zones, the Sudan savannah and the Sahel savannah. The Sudan savannah covers the southern part while the Sahel savannah (also known as a semi-desert vegetation) manifest from the middle of the State as one moves to the north, comprising mainly of isolated stands of thorny shrubs. The southwestern part of the State is mountainous as a result of the continuation of the Jos Plateau, while the northern part is generally sandy (www.bauchistate.gov.ng).

Bauchi State records annual rainfall of between 1300mm in the Sudan savannah zone and 700mm in the Sahel savannah. Temperatures are generally high in the State; mean daily maximum temperatures range from 29.2°C in July and August to 37.6°C in March and April. Humidity ranges from about 12% in February to about 68% in August (www.grossarchive.com).

The economy of the State mainly rests on agricultural output. Cash crops (groundnuts, cotton, soybeans and cowpeas) and food crops (maize, guinea corn, millet, rice, cassava) are produced in large quantities. Livestock (cattle, goats and sheep) are also produced. In 2019, the poverty rate (those with annual income of less than \$361) of the population was estimated at 61.53% (Varella, 2020).

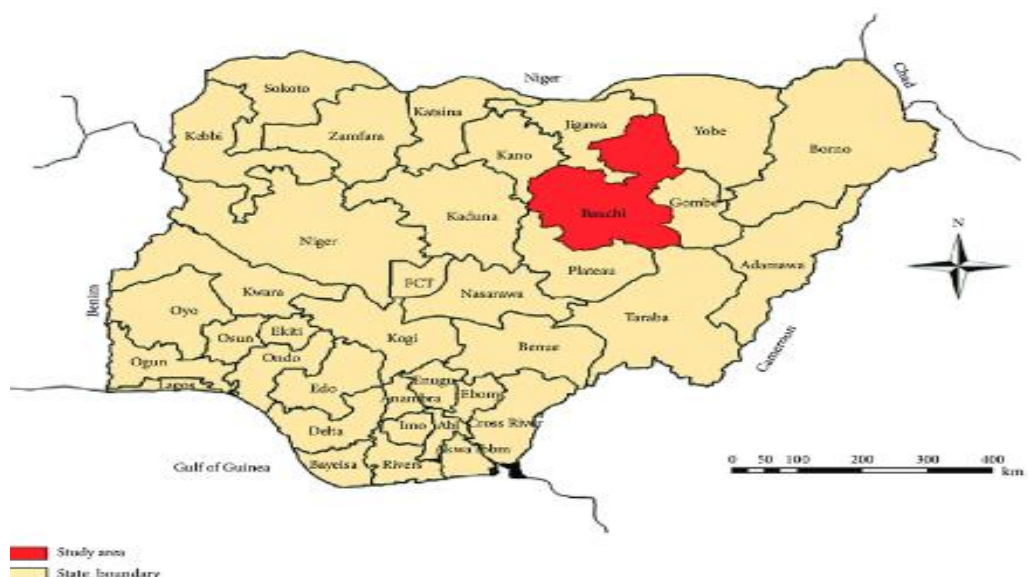


Figure 1: *Map of Nigeria showing Bauchi State*

Sampling Techniques

A multistage sampling procedure was used for the selection of the households. In the first stage; Bauchi State was divided into three agricultural zones according to the Bauchi State agricultural development programme (BSADP) classification for administrative convenience, which are western zone, central zone and northern zone which was considered as strata. In the second stage from each stratum (Agricultural zones), two LGAs were randomly sampled through balloting, making a total of six LGAs for the study. In the third stage from each of the LGAs selected an urban ward and rural ward was randomly sampled making a total of twelve wards. The selected LGAs and wards are shown in Figure 2. In the fourth stage from each of the wards, two communities were randomly sampled, making a total of four communities per local government. Hence the total communities for the study were twenty-four. In the fifth stage, from each of the selected communities, five percent of the households were randomly sampled through assigning numbers to the households in the communities and followed by random sampling of the numbers. The numbers served as the households for the study. The total households were four hundred and fifty for the study. Four hundred and twelve questionnaires were retrieved for the study.

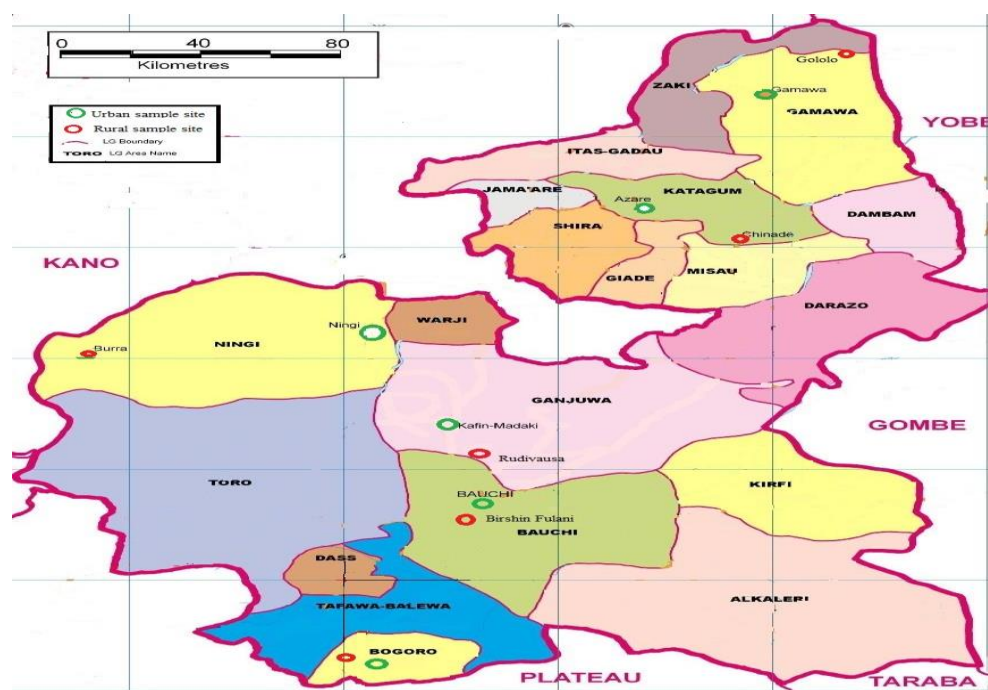


Figure 2: Map of Bauchi State showing sample towns

Analytical Techniques

The data were analyzed using Descriptive Statistics, Budget Share Index and Linear Regression Analysis which were relevant to the research.

Descriptive Statistics

This was used to analyses objective iii. It is a mathematical technique that involves the use of means, frequency and percentages. The most important is the arithmetic mean usually denoted by \bar{X} and is calculated using

$$\bar{X} = \frac{\sum fx}{\sum f} \quad \dots (1)$$



where;

f = number of values in an interval

X= is the midpoint of the class interval.

Σ= Summation

The frequency was used to group or arrange the raw data into a manageable form. It shows the variable's values and the number of occurrences of each value. The percentage was used to determine the population of respondents to a particular response and expressed mathematically as percentage (%) = $x/n \times 100$... (2)

where;

% = percentage

X = Individual observation.

The linear regression model was used to achieve objective ii of the study Deaton and Muellbauer (1980) proposed the linear model; it has been widely applied in many empirical studies of consumer behaviour using both cross-sectional and time series data. Hence, part of the reason for the popularity of this demand system is due to the considerable contentment with which it can be estimated and used for testing the predictions of consumer demand theory.

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + \dots b_{12}X_{12} + e \quad \dots (3)$$

where;

Y = Total Monthly sugar expenditure (₦)

X₁ = Monthly income of household head (₦)

X₂ = Cost of kilogram of sugar (₦/kg)

X₃ = Household size (Number)

X₄ = Age of the household head (years)

X₅ = level of education of the household head (Dummy variable)

X₆ = Marital Status (Dummy variable)

X₇ = Tribe (Dummy variable)

X₈ = Sex (Dummy variable)

X₉ = Primary occupation of the house hold head (Dummy variable)

X₁₀ = Community of respondents (Dummy variable)

X₁₁ = Monthly food expenditure (₦)

X₁₂ = Average monthly total household expenditure

b_i (i = 1...12) are regression coefficients and direct measures of elasticity.

b₀ = Constant term of intercept

e = Error term.

Budget Share Index Model

$$W_s = \sum_{i=1}^n \frac{X_{si}}{X_i} \quad \dots \dots \dots 4$$

Where W_s = Budget share on sugar by ith household

X_s = Expenditure on sugar by ith household (Naira per month)

X_i = Expenditure on food items consumed by ith household (Naira per month)

i = 1,2,3,4,.....n (n=412)



RESULTS AND DISCUSSION

Influence of Socio-economic Characteristics on Sugar Consumption in Northern Agricultural Zone of Bauchi State

The result of multiple regression analysis with linear functional form as a lead equation showed the monthly sugar expenditure was influenced by age, household size income, educational level and primary occupation as shown in Table 1. The R^2 value of the model was 0.685 implying that over 68.5% of the variation in monthly sugar expenditure can be explained by changes in the levels of the explanatory variables included in the model. The F-value was 23.510 and significant at 1% level, implying that the independent variables as a group were important determinants of monthly sugar expenditure in the study area.

The coefficient of age variable (36.798) was significant ($p < 0.001$) and positively related to monthly sugar expenditure. This means that the higher the age of the household head, the higher the monthly sugar expenditure, as a result of large family size, leading to high consumption of food variety that require sugar addition.

Average monthly income coefficient (321.963) was significant at 5% level of probability and positively related to monthly sugar expenditure. This means that there was direct relationship between income of the household head and the monthly sugar expenditure. In other word, the higher the income of the respondents, the higher the monthly sugar expenditure. This is in contrast to the findings of Lindblom (2017) that indicated that, the higher-educated group consume the same share of sugary foodstuffs, independent of their income level, whereas for the lower-educated group, income is a significant factor and the consumption share of sugar decreases as income increases. Kontinen *et al.* (2013) have found similar effects, far more energy-dense foods were consumed by people in the low-income or lower-education group, and high income and high education related to greater vegetable and fruit consumption. They also found evidence that those individuals with a low income or education places more importance on price and less importance on health in their food selection compared with the more educated or affluent counterparts.

The household size coefficient was (73.290) and significant ($p < 0.01$) and thus, directly related to monthly sugar expenditure. It implies that as the household size increases, households sugar expenditure will also increase. This agrees with a priori expectation, the higher the household size the higher the sugar expenditure. The coefficient of educational level (-110.818) was significant at 10% and negatively related to monthly sugar expenditure. This implies that as the educational level of the household head increases sugar expenditure will reduce. This could be possible by increasing beverages consumption, Consumption of sugar will decrease. Thus, monthly sugar expenditure will equally reduce. It also means sugar consumption is independent of educational level. Respondents with lower educational level may consume more sugar than those with higher educational level. High level of education enhances ability of analyzing healthy consumption pattern thus leading more consumption of other type of sugar.

Primary occupation coefficient was (149.647) and positively related to monthly sugar expenditure is also significant at 10% probability level. This finding is in line with Adisa (2016) who opined that there are significant income differences among the occupational classifications. As one would expect, elderly household heads in professional and agricultural occupations have higher levels of household income compared to the other groups. Those in technical occupations have the lowest household income. These differences are statistically significant ($p < 0.001$) and are in line with findings in the literature on the effects of occupations on economic welfare.



Table 1: Socio-economic Factors Influencing Sugar Consumption in Northern Bauchi State

Variables	Coefficient	Std. Error	t-values
(Constant)	-2152.506	3089.386	-.697
Average monthly income	321.963**	142.574	2.258
Cost of a kilogram of sugar	-2.264	5.926	-.382
Household size	73.290***	22.540	3.252
Age	36.798***	11.102	3.314
Education level	-110.818*	66.226	-1.673
Marital Status	181.612	209.886	.865
Tribe	29.619	67.169	.441
Sex	144.326	468.419	.308
Primary occupation	149.647*	82.180	1.821
Community	-8.547	48.404	-.177
Average monthly total food expenditure	255.548	155.276	1.646
Average monthly total household expenditure	120.556	157.013	.768
R-squared	0.685		
Adjust R-squared	0.655		
F-value	23.510		
Prob >F	0.000		

Ns *p<1; **p< 05; *** p<01

Source: Field survey, 2020

Influence of Socio-economic Characteristics on Sugar Consumption in Central Bauchi State

The result of linear regression analysis of the factors influencing monthly sugar expenditure in central agricultural zone is presented in Table 2. The R^2 value was 0.497 and the F-value was significant at 1.0% alpha level. The monthly sugar expenditure was influenced by average monthly income, cost of a kilogram of sugar, household size and average monthly total food expenditure. The coefficient of average monthly income was 379.642 significant ($p<0.01$) and positively related to the monthly sugar expenditure. This implies that the higher the income of the household head the greater the proportion of sugar expenditure. The coefficient of cost of a kilogram of sugar (4.570) was significant ($p<0.01$) and positively related to monthly sugar expenditure. This agrees with a prior expectation that high cost of sugar will result in higher monthly sugar expenditure. The coefficient of household size (97.539) was significant at 1 % ($p<0.01$) and positive. This means that as household size increase monthly sugar expenditure will also increase. The result also showed that the coefficient of average monthly total food expenditure (446.335) was positive and significant at 5% indicating that as household food expenditure increases, monthly sugar expenditure will increase, because sugar is a component of food commodities.

Table 2: Socio-economic Factors Influencing Sugar Consumption in Central Bauchi State

Variables	Coefficient	Std. Error	t-values
(Constant)	-2677.665	5348.581	-.501
Average monthly income	379.642**	119.039	3.189
Cost of a kilogram of sugar	4.570***	1.258	3.634
Household size	97.539***	26.128	3.733
Age	-8.749	12.270	-.713
Education level	-40.776	72.773	-.560
Marital Status	328.700	1107.079	.297
Tribe	-45.030	56.919	-.791
Gender	911.076	2072.379	.440
Primary occupation	-4.763	98.908	-.048
Community	-81.057	52.189	-1.553
Average monthly total food expenditure	446.335**	217.980	2.048
Average monthly total household expenditure	-196.470	180.917	-1.086
R-squared	0.497		
Adjust R-squared	0.430		
F-value	7.488		
Prob >F	0.000		

Ns *p<1; **p< 05; *** p<01

Source: Field survey, 2020

Influence of Socio-Economic Characteristics on Sugar Consumption in Western Agricultural Zone of Bauchi State

There are many factors influencing monthly sugar expenditure in the study area. This was identified by running linear functional model of multiple regression analysis. The result from Table 3 indicated that R^2 value was 0.375 and the F- value was significant at ($p<0.01$) probability level. The monthly sugar expenditure was influenced by average monthly income, cost of a kilogram of sugar, household size and primary occupation. The result revealed that the coefficient of average monthly income (384.075) and house hold size (72.147) was significant at 1% and positive. This implies that as income increases, monthly sugar expenditure will increase due to affordability and consumption of different variety of food by the households. Also, as the household size increases household sugar expenditure will increase. The coefficient of cost of a kilogram of sugar was -10.832 and significant at 5% but negatively related to monthly sugar expenditure. This implies that as price of sugar increase, monthly sugar expenditure will decrease. This agrees with the theory of demand that says as price increase the quantity demanded will decrease. The result also showed that the coefficient of primary occupation (-112.140) was significant at 10% but negatively related to monthly sugar expenditure. This implies an inverse relationship monthly sugar expenditure will increase, when there is lower participation in only primary occupation by the respondents. Also, more occupation led to higher income, thus more household's expenditure including sugar. The respondents with only primary occupation will have lower monthly sugar expenditure, because of the uncertainty of income from a source.

Table 3: Socio-economic Factors Influencing Sugar Consumption in Western Bauchi State

Variables	Coefficient	Std. Error	t-values
(Constant)	6095.451	1972.026	3.091
Average monthly income	384.075***	93.665	4.101
Cost of a kilogram of sugar	-10.832**	3.544	-3.056
Household size	72.147***	18.030	4.001
Age	.335	7.977	.042
Education level	3.608	56.023	.064
Marital Status	-34.645	178.279	-.194
Tribe	10.156	32.637	.311
Gender	-202.318	332.209	-.609
Primary occupation	-112.140*	68.604	-1.635
Community	3.491	12.421	.281
Average monthly total food expenditure	110.429	181.128	.610
Average monthly total household expenditure	-29.635	160.209	-.185
R-squared	0.375		
Adjust R-squared	0.325		
F-value	7.594		
Prob > F	0.000		

Ns *p<1; **p< 05; *** p<01

Source: Field survey, 2020

Households Budget Share of Sugar and Food

Sugar budget share refers to the proportion of household budget spent on sugar. The budget share of household may not be unconnected with the socio-economic factors of the households. Table 4 reveal that the central zone of study area had the highest sugar budget share of 8.70%, this was followed by western zone with 6.59%. The Northern zone had 5.20% as monthly budget share of sugar. The implication here is that budget share may differ from time to time depending on the characteristics features of the households. This was in contrast to the finding of Fade *et al.* (2015) in their study of household demand for sweeteners in Ogun state where the maximum budget share of sugar was 0.71, while minimum was 0.01 and mean 0.23. further analysis of variance (ANOVA) with F-value of 1.576 and probability value of 0.208 showed that there was no significant difference in sugar budget share among the zones. Thus, the hypothesis that household sugar budget share did not differ across the different zones was accepted.

Food budget share refers to the proportion of household budget spent on food. Table 4 shows that, in northern zone the respondents spent 60.91% of their household budget on food. While in central and western zone it was 59.27% and 55.06% respectively. This is in agreement with Engel's law which says that fraction of the budget devoted to food is larger for poorer families. It also says the proportion of income spent on food diminishes as income increases. From the result, 55%-60% of the budget share of household was spent on food. Surprisingly, residents of United State of America spent the lowest amount (<8%) of disposable income on home food, followed by Canada and the United Kingdom. The result is similar to the finding of Robert (2010) who reported that in a typical Ghanaian urban center, household food budget formed about 51% of the total household budget.

Table 4: Budget Share of Sugar and Food

Budget Share of Sugar			Mean monthly exp on sugar (₦)	Mean monthly exp on food (₦)	Mean budget share (%)
Northern			2,221.50	42,751.75	5.20
Central			2,492.07	28,649.04	8.70
Western			1,824.33	27,687.88	6.59
ANOVA	Sum of Sq.	Df	Mean Sq.	F-value	p-value
Between groups	60.490	2	30.245	1.576	0.208NS
Within groups	7,846.958	409	19.186		
Budget Share of Food			Mean monthly exp on food (₦)	Mean monthly household exp (₦)	Mean budget share (%)
Northern			42,751.75	70,185.31	60.91
Central			28,649.04	48,336.54	59.27
Western			27,687.88	50,287.88	55.06
ANOVA	Sum of Sq.	Df	Mean Sq.	F-value	p-value
Between groups	15,205.294	2	7,602.647	1.831	0.162NS
Within groups	1,697,979.166	409	4,151.538		

Source: Field survey, 2020.

From economic theory it has been established that low-income households spend a higher proportion of total household budget on food than high income households (Chern *et al.*, 2003; Bopape, 2006). Asumugah *et al.* (2008) also noted that food budget shares for Nigerian households' range between 36% and 63% for high- and low-income earners, respectively. Similarly, Nguyen Van Phuong *et al.* (2014) reported that nationally, average Vietnamese families spend 54.85% of their income on food. further analysis of variance (ANOVA) with F-value of 1.831 and probability value of 0.162 showed that there was no significant difference in food budget share among the zones Thus the hypothesis that household food budget share did not differ across the different zones was accepted.

Constraints to Sugar Consumption

Table 5 reveal that most of the respondents, 89.4% and 84.2% in central and western zones, respectively reported price as a major problem to sugar consumption; likewise, 79.7% in northern zone. As the law of demand says, the higher the price of a commodity the lower the quantity demanded. Income is the second constraint to sugar consumption in all the three zones with 73.4%, 84.6% and 77.6% in northern, central and western zones, respectively. Price and income are related in affecting consumption, when income of the respondents is low, and price is high, they will complain, because it may affect their purchasing power, especially during inflation. Family size ranked third, the larger the family size, the higher the quantity of sugar that will be consumed and consequently the higher the sugar expenditure. Northern zone had 51.0%, central zone 47.1% and western zone 32.7%. A small proportion of the respondents considered health as a constraint to sugar consumption, northern zone 23.1%, central 25.0% and western zone 24.2%. Only 10.5% in northern zone considered culture as a problem to sugar consumption, with 14.4% in central zone and 9.1% in western zone. Supply is a minimal constraint to sugar consumption due to it availability, only 2.8% reported in northern zone that



supply is a constraint to sugar consumption; none in central zone and 3.0% in western zone. The implication here is that most of the sugar consumed in Nigeria is imported; therefore, control over its price will be difficult and marketers will strive to derive maximum advantage (price) from the consumers. Most of the respondents were not aware of cutting down sugar consumption is healthier as they know about salt consumption. Therefore, more enlightenment is needed in the study area.

Table 5: Distribution of Respondents According to Constraints to Sugar Consumptions

Constraints of sugar consumption	Northern zone		Central zone		Western zone		Total	
	Freq	%	Freq	%	Freq	%	Freq	%t
Price	114	79.7	93	89.4	139	84.2	346	83.98
Income	105	73.4	88	84.6	128	77.6	321	77.91
Health	33	23.1	26	25.0	40	24.2	99	24.02
Culture	15	10.5	15	14.4	15	9.1	45	10.92
Supply	04	2.8	0	0.00	5	3.0	9	2.18
Family size	73	51.0	49	47.1	54	32.7	176	42.72

Source: Field survey, 2020

CONCLUSION AND RECOMMENDATIONS

Based on the results of the study it was concluded that household size, age and income of the household head, community of the respondents, monthly food expenditure and cost of sugar, influenced sugar consumption pattern in the study area.

1. The per capita income of household heads should be improved, through introducing job opportunities by government and wealthy individuals. This will increase the households purchasing power and thereby help meet the sugar requirement of the households.
2. Policies should be formulated toward stabilizing the market price of sugar because it is a necessity, since price increase affect the household budget.
3. The National sugar development council (NSDC) mandate of involving private sector participation to set up small sugar plants for communities and individuals should be revisited.
4. There is need for more research on budget share index of each food items by households. This will help the government beware of the living standard of the citizens.

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