

Consumption Profile, Consumer Preference and Serving Occasions of Indigenous Non-Alcoholic Beverages from Nigerian Foodstuffs

Israel Olanrele Dada¹, Abel Oluwaseyi Awotunde²

¹Lecturer- Department of Human Nutrition and Dietetics, College of Medicine and Health Sciences, Afe Babalola University, Ado-Ekiti, Nigeria

²Assistant Catering Officer- Department of Human Nutrition, Faculty of Public Health, College of Medicine University of Ibadan, Nigeria

Corresponding Author: Israel Olanrele Dada

ABSTRACT

Background: To meet the nutritional needs and optimum health of individuals, a wide variety of foods should be eaten including non-alcoholic beverages from Nigerian foodstuffs.

Objectives: The study investigated the consumption profile and serving occasions of non-alcoholic beverages among people of different vocations in Oyo, Nigeria.

Methods: A pretested, interviewer-administered questionnaire was used to obtain information on the socio-demographic characteristics, consumption profile, serving occasion and preparation of beverage sat home from 473 consumers from different vocations in Oyo town. Data were analyzed using descriptive statistics and chi square at $P < 0.05$ was considered significant.

Results: Majority (62.4%) of the respondents was below 40 years of age, 52.0% were male and 70.0% had at least secondary education. More than 80.0% of the respondents were not ready to serve the beverages in an occasion. More than half (67.9%) of the respondents prepared the beverages at home and 80.0% preferred them to carbonated drinks. Fruit juice, soymilk, kunun-zaki and soborodo were consumed at least once in a week by 53.9%, 37.0%, 32.3% and 29.4% of the respondents respectively. Adolescents, female and people with formal education consumed non-alcoholic beverages more than other age groups, male and non-educated people respectively.

Conclusion: Non-alcoholic beverages were preferred to carbonated drinks by consumers but the frequency of consumption appeared to be low. Frequent consumption of these beverages could contribute to nutrient needs of individuals; hence nutrition education is suggested to enhance the frequent consumption and serving of these beverages in ceremonies.

Key words: Non-alcoholic beverages, consumption, serving occasion, consumers, preparation

INTRODUCTION AND REVIEW OF LITERATURE

The optimum health and nutrition of individuals is dependent upon a regular and balanced supply of food and water, and when diets are sub-optimal, an individual's capacity for work and achievements is greatly reduced. [1] A wide variety of foods are prepared through indigenous technology from many Nigerian foodstuffs. These

include non-alcoholic beverages such as soymilk, kunun-zaki, zobo, fruit juice, ginger drinks, coconut milk and many others. They are drinks obtained from processed Nigerian foodstuffs either by fermentation or extraction. Kunun-zaki, zaborodo and nono were more popular in Nigeria. [2] Various plant parts such as grains, fruits, rhizomes, roots, and stems are used in the preparation of these beverages.

Kunun-zaki is prepared from cereal grains, soymilk is obtained from soybeans, ginger drink is extracted from rhizome of ginger plant and 'soborodo' drink is an extract of calyces of the Roselle plant (*Hibiscus sabdariffa*). Fruit juices are obtained from various fruits such as orange, pineapple, apple, mango, etc and play a very important role in the dietary pattern of Nigerians and people from other developing countries. [3] They can contribute to nutrient needs of individuals and they have been recognized to contribute calories, vitamins, minerals and dietary fibre to diet of people. [4,5] Tiger-nut milk known as 'kununaya' in the Northern part of Nigeria has been found to contain 21.5% crude fat, 5.2% crude fibre, 2.7% crude protein and caloric value of 225 kcal/100g sample. [6] The nutritional analysis of baobab fruit drink revealed that it contained 130ppm of potassium, 29.8ppm of magnesium, 12.2ppm of calcium, 17ppm of copper, 13ppm of manganese, 2.2mg/g protein and 26mg/g of vitamin C. [7] Kunun-zaki is a cereal-based fermented non-alcoholic beverage. It is a low viscosity beverage with creamy appearance. [8] Studies have shown that it contained 82 to 85% carbohydrate, 3 to 4% fat and 2 to 3% protein. [8-10] it contained 60mg/100ml calcium, 485mg/100ml potassium, 132mg/100ml sodium. [11] Sobodrink is a red liquid drink which tastes like fruit punch and fairly rich in vitamin A, vitamin C, riboflavin, niacin and minerals such as calcium and iron. [12] It specifically contains 40-87mg/100ml calcium, 475mg/100ml potassium, 1mg/100ml magnesium, 1.5mg/100ml iron, 130mg/100ml sodium, 0.5mg/100ml zinc and 61-64mg/100ml vitamin C. [11,13] Other nutrients are also present which include protein(0.7%), carbohydrate (8%), fat (1.1%) and some fibre (1.4%). [14] Sobodrink has low glycemic index (33±3) which makes it safe for consumption by diabetic individuals. [15] 'Ogwo' is a cloudy brown and sharp sweet to a sour taste sorghum based non-alcoholic beverage common among Agatu people in Benue State, Nigeria. Its chemical analysis

shows that it contained 43.43mg/g of potassium, 9.37mg/g of calcium, 8.16mg/g of magnesium, 0.98mg/g of phosphorous, 3.60ppm of iron, 0.14ppm of zinc, and 0.45ppm of manganese. [16] Other non-alcoholic beverages from Nigerian foodstuffs include nono (fermented milk). It is often drunk with Fura, Kindrimo (a thick yoghurt). [17] These drinks are used as refreshment, for entertaining visitors and served at social gathering or as appetizers before the main dish is served. [9,12]

The study in Sokoto revealed that 71% of the respondents consumed carbonated soda whereas 59% consumed fruit juice. [5] This shows that carbonated soda was preferred among the respondents to fruit juice. They also observed that female-headed households consumed more of fruit juice than the male-headed households. In another study in Sokoto, it was observed that 63% of the respondents consumed bottled soda and 58% consumed it at least once a week. [18] In Ibadan, 74.6% of University of Ibadan students took energy drinks and 42.4% of them took at least one can in a week. [19] Energy drinks are non-alcoholic carbonated beverages. These imply that people preferred carbonated drinks to non-alcoholic beverages from Nigerian foodstuffs. Carbonated beverages are high in sugar, calories and caffeine, and harm general and oral health of teenagers because they lack essential nutrients. [20] Studies have shown that increased consumption of carbonated beverages is a risk factor for increased prevalence of overweight and obesity. [21,22]

In a study in Northern Nigeria, only 68.2% of the participants consumed kunun-zaki daily and 31.8% consumed it occasionally. Kunun-zaki was prepared at home by 25.8% participants daily, 48.4% weekly and 25.8% monthly. [23] This shows that a reasonable proportion of people in this part of the country did not consume kunun-zaki or prepare it at home. In Ogun State, Nigeria a similar trend in the consumption of non-alcoholic beverages was observed. [15] The study revealed that

71% of Babcock University students consumed sobo drink whereas 29% did not. Furthermore, 52.1% consumed sobo drink once a week; 18.39%, 14.1%, 4.2% and 9.9% consumed it two times per week, three times per week, more than three times per weekend seven times per week respectively. More than a quarter (28.57%) of the students was not aware of the functional and nutritional value of sobo drink. In Kwara State, 22.6% respondents consumed non-alcoholic beverages daily, 37.7% consumed them 2-3 times per week, 17.6% consumed them once in a week and 22% consumed them once in a month. [2] It was discovered that 84% of the participants in the study drank kunun, 77% consumed soborodo while 62% drank nono.

In Nigeria where the weather is hot, consumption of non-alcoholic beverages will be of benefit to cool down the body temperature and compensate the body loss of minerals and vitamins. [18] In spite of the rich nutrient constituents of these beverages, many Nigerians are not drinking them. There is need to assess consumption pattern of these beverages among people in Oyo, Nigeria. This is done with a view to examine the level of consumption of these drinks by consumers, their preference over carbonated drinks and serving occasions. This study will contribute to knowledge on consumption of these drinks and aids in the development of nutrition education for the people to see these drinks as part of cheap sources of valuable nutrients and economic means of entertaining visitors at home and during special occasions.

MATERIALS AND METHODS

This study is a cross-sectional survey of consumption of non-alcoholic beverages from Nigerian foodstuffs among people of different vocations in Oyo.

Description of study area

The study was carried out in Oyo town in Oyo State. It is one of the major towns in the State and it is a Yoruba dominated community with the presence of other Nigeria ethnic groups which include

Igbo, Hausa, Fulani, Tapa, Agatu and Efik. The people residing in the town are of different vocations including farmers, traders, civil servants, medical practitioners, teachers, artisans, students, etc. Commercial activities in the town are very high. The town enjoys the presence of four higher institutions. There are three LGA secretariats located within the town.

Study population

The study participants cut across different vocations which include the teachers, civil servants, students, artisans and medical practitioners. The study focused on these people because they stay long hours outside the home as a result of their vocation.

Sample size and sampling technique

A total of 600 participants which include teachers, civil servants, students, artisans and medical practitioners were involved in the study. From each vocation, one hundred and twenty respondents were sampled. Forty teachers were selected from two public primary schools, forty teachers were drawn from two public secondary schools and forty teachers were sampled from one College of Education within the metropolis giving a total of one hundred and twenty teachers. Thirty civil servants each were drawn from the three Local Government secretariats and thirty civil servants were sampled from non-teaching staff of the selected College of Education. Twenty-four student participants were drawn from each of the five schools in the College of Education. Medical practitioners were drawn from hospitals, health centres, pharmacy stores and laboratories within the metropolis. Finally, six locations of high commercial activities were selected in the metropolis and twenty artisans were drawn in each location to participate in the study.

Data collection

A structured questionnaire was designed based on the objectives of the study and pretested on 20 professionals in neighbouring community that had homogeneous characteristics with the study location. The professionals were requested

to comment on the clarity of the questions and to make suggestions. Time required to complete the questions was also noted. Necessary adjustment was made on the questionnaire based on their comments. This pre-tested structured questionnaire was used to collect data from the participants with the help of three trained research assistants. The information collected includes socio-demographic characteristics such as age, gender, level of education, ethnicity and religion. Other data that were collected include consumption of non-alcoholic beverages, frequency of consumption, types of beverages consumed, serving occasions and preparation of beverages at home.

Ethical consideration

Heads of Schools, College, Local Government Secretariats and Health facilities granted permission to administer questionnaire. Individual participants gave their consent to be involved in the study.

Data analysis

Among the 600 questionnaires administered only 473 were complete and were analyzed. Data were coded and entered into Statistical Package for Social Sciences (SPSS) version 15 software. The data were analyzed using descriptive statistics. Cross-tabulation between the socio-demographic characteristics and consumption of non-alcoholic beverages was also done. Chi-square test was used to established level of significant at 5% confidence interval.

RESULTS

The distribution of the respondents based on vocation is shown in Table 1. The socio-demographic characteristics of the respondents are shown in Table 2 with 8.7% adolescents and majorities (62.4%) were young adults below 40 years of age. A little above half (52.0%) were male and 24.1% and 45.9% of the respondents had post-secondary and tertiary education respectively. Majority (64.3%) were Christians.

Consumption profile of non-alcoholic beverages of the respondents is presented in Table 3. A large proportion

(82.9%) of the respondents drank non-alcoholic beverages in occasions. More than half (67.9%) of the respondents prepared these beverages at home and 80.8% preferred them to carbonated soft drinks in terms of health benefits. A good proportion (87.5%) of the respondents claimed not to have experienced any negative body reaction when they took these beverages.

Table 1. Distribution of respondents based on vocation

	Frequency(N=473)	Percent
Vocation		
Teachers	74	15.7
Civil servants	166	24.7
Students	99	20.9
Medical practitioners	84	17.8
Artisans	100	21.1

Table 2. Socio-demographic characteristics of respondents

Characteristics	Frequency(N=473)	Percent
Age (years)		
<20	418.7	
418.7	171	36.2
20-29	124	26.2
30-39	13729.02	
Gender		
Male	246	
Female	22748.0	52.0
Level of education		
None	45	9.5
Primary	25	5.3
Secondary	72	15.2
Post-secondary	114	24.1
Tertiary	217	45.9
Ethnicity		
Yoruba	441	93.2
Hausa	8	1.7
Igbo	16	3.4
Others	8	1.7
Religion		
Christianity	304	64.3
Islamic	163	34.5
Traditional	40.8	
Others	2	0.4

Table 3. Consumption profile of non-alcoholic beverages of the respondents

	Frequency(N=473)	Percent
Drinking beverage in occasions		
Yes	392	82.9
No	81	17.1
Preparing drinks at home		
Yes	321	67.9
No	152	32.1
Negative experience with beverages		
Yes	59	12.5
No	414	87.5
Consumer choice of beverages		
Indigenous drinks	382	80.8
Carbonated drinks	91	19.2

In Table 4, consumption frequency per week of non-alcoholic beverages is presented. Overall, the most frequently consumed beverage was fruit juice with 53.9% respondents drinking it at least once in a week and 46.1% drinking it less than once in a week. This was followed by soy milk, kunun-zaki and soborodo with 37.0%, 32.3% and 29.4% of the respondents consuming them at least once in a week respectively. Other beverages including

coconut, ginger, carrot and is amya drinks were less frequently consumed with 10.9% 15.2%, 16.3% and 6.6% of the respondents consuming them at least once in a week respectively. Respondents that consumed these beverages at least once in a week were described as regular consumers while those that consumed them less than once in a week were described as occasional consumers.

Table 4. Consumption frequency per week of non-alcoholic beverages

	Drink								
	Kunun milk	Soy zaki	Zobo drink	Coconut milk	Ginger drink	Fruit juice	Carrot drink	Isamya drink	Other drink
	%	%	%	%	%	%	%	%	%
Frequency									
Regular									
Daily	5.9	7.6	5.1	0.8	2.5	15.6	4.2	1.1	0.6
4-5 times	7.6	9.7	7.6	4.0	4.2	14.0	4.9	2.5	2.5
1-3 times	18.8	19.7	16.7	6.1	8.5	24.3	7.2	3.0	1.7
Occasional									
< 1 time	67.7	63.0	70.6	89.0	84.8	46.1	83.7	93.4	95.1

Regular consumption: ≥ 1 time per week. Occasional consumption: < 1 time per week.

Figure 1 gives the picture of the respondents in serving non-alcoholic beverages in an occasion. More than 80.0% of the respondents were not ready to serve any of these beverages in an occasion or to entertain visitor at home. Among those who were ready to serve them in occasions, burial ceremony commanded the largest (24.1%) respondents. This was followed by wedding (19.7%) and naming (15.0%). Less than 10% of the respondents were ready to serve them during birthday ceremony or to entertain visitors.

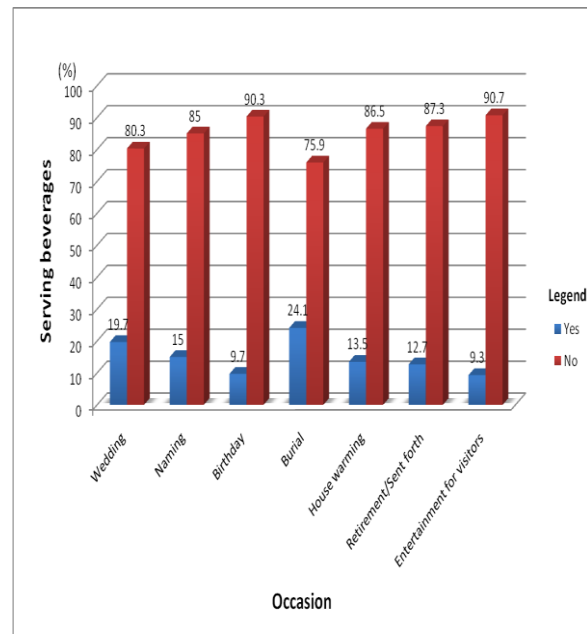


Figure 1: Distribution of respondents according to serving of beverages in an occasion

DISCUSSION

Non-alcoholic beverages from Nigerian foodstuffs contain valuable nutrients including minerals and vitamins, deficiency of which may lead to poor growth and development of non-communicable diseases such as cancer, cardiovascular diseases, etc. This study

reveals that the respondents consumed non-alcoholic beverages from Nigerian foodstuffs. The proportion of regular consumers is slightly lower than in the past studies in Nigeria which was between 59% and 84%. [2,5,15,23] This might be due to variation in the study participants and the locations of the studies.

Table5. Consumption of non-alcoholic beverages by socio-demographic characteristics

Consumption of non-alcoholic beverages			
	Yes (N=432)	No (N=41)	Total (N=473)
n(%)	n(%)		
Characteristics			
Age (years)			
<20	39 (95.1)	2 (4.9)	41
20-39	266 (90.2)	29 (9.8)	295
≥40	127 (92.7)	10 (7.3)	137
Chi square = 3.360, p = 0.339			
Gender			
Male	220 (89.4)	26 (10.6)	246
Female	212 (93.4)	15 (6.6)	227
Chi square = 2.340, p = 0.085			
Level of education			
None	33(73.3)	12(26.7)	45
Primary	21(84.0)	4(16.0)	25
Secondary	68(94.4)	4(5.6)	72
Post-secondary	105(92.1)	9(7.9)	114
Tertiary	205(94.5)	12(5.5)	217
Chi square = 23.958, p = 0.000			

There was a disparity between consumption and serving of non-alcoholic beverages in occasions. A good proportion of the respondents consumed these beverages in occasions but was not ready to serve them in occasions or to entertain visitors at home. This might be due to class problem. Some people may feel that it may not express their social status. The fear of guests not willing to take them due to safety concern may be a constraint in this regard.

The proportion of those who prepared non-alcoholic beverages at home was higher than in the study in Northern Nigeria. [23] The likely reason for this is that eight beverages were involved in the current study unlike the previous study which involved only kunun-zaki. Contrary to the previous studies in Nigeria, a larger number

of consumers of non-alcoholic beverages in the current study preferred them to carbonated drinks which were taken by 71% of consumers in Sokoto [5] and 74.6% of consumers in Ibadan. [19] This could imply that some of the consumers understood the nutritional value of these non-alcoholic beverages but this ought to be reflected in the level of consumption. In addition, preference for non-alcoholic beverages might be encouraged by their cost which was cheaper than that of carbonated drinks.

Consumption of fruit juice more frequently than other beverages implies that fruit juice was preferred by consumers compared to other non-alcoholic beverages such as soy milk, kunun-zaki and soborodo. This may be explained by the fact that it takes lesser efforts to prepare fruit juice than other beverages. It was also observed that fruit juice, soy milk, kunun-zaki and soborodo were more frequently consumed than coconut, ginger, carrot and is amya drinks. This may suggest that less frequently consumed beverages were not as popular as others. In addition, the level of awareness of the existence of these drinks may be low. Availability of these beverages has been observed to stimulate frequency of consumption. [2]

Consumption of non-alcoholic beverages from Nigerian foodstuffs cut across all ages and gender. There was no significant difference between the age categories and gender in this respect. There was slightly higher proportion of female consumers than male consumers. This agrees with the findings in Sokoto where female headed households consumed more juice than the male headed households. [5] Respondents with formal education consumed non-alcoholic beverages more than those without formal education. Those with formal education are more likely to work outside the home and spend longer hours outside. This may compel them to eat outside the home and thereby consumed non-alcoholic beverages. Consumption of these beverages has tremendous health benefits and may contribute to the

prevention of several health challenges. [11] These beverages are ready alternatives to carbonated drinks and have immense social and medicinal importance. [8,11]

CONCLUSION

Non-alcoholic beverages from Nigerian food stuffs were consumed by the respondents but the frequency of consumption was low. They were preferred to carbonated drinks. A good proportion of the consumers were not ready to serve them in a ceremony. People with higher education consumed them more.

Policy Recommendations

There is need to create awareness on the nutritional and health benefits of non-alcoholic beverages from Nigeria foodstuffs if consumed appropriately. This can be done through nutrition education at all levels. More importantly, households may be educated to prepare these drinks themselves and store in the refrigerator as part of their daily diet.

REFERENCES

1. Marshall E, Mejia D. Traditional fermented food beverages for improved livelihoods. *FAO Diversification Booklet*.2011; 21: 1-81.
2. Animashaun JO, Akangbe JA, Fakayode SB. An analysis of determinants of consumption of fermented traditional drinks in kwara State, Nigeria. *Agriculture and Forestry*. 2013; 59 (3): 137-146.
3. Osuntogun B, Aboaba OO. Microbiology and physico-chemical evaluation of some non-alcoholic beverages. *Pakistan Journal of Nutrition*. 2004; 3(3): 188-192.
4. Phillip BB, Shittu AM, Ashaolu OF. Demand for non-alcoholic beverages among urban households in Southwest, Nigeria. *African Journal of Food, Agriculture, Nutrition and Development*. 2013; 13(3): 7853-7869.
5. Abdullahi MK, Yakubu AA. Determinants of non-alcoholic beverages consumption in North-western Nigeria: A study of Sokoto Metropolis. *Nigerian Journal of Basic and Applied Science*. 2013; 21(4): 273-281.
6. Musa AA, Hamza A. Comparative analysis of locally prepared 'Kununaya' (Tiger-nut milk) consumed by students of Kaduna State University, Kaduna. *Science World Journal*. 2013; 8 (2); 13-18.
7. Adedayo MR, Olayemi FF, Bamishaiye EI. Proximate and mineral composition of a local drink made from Baobab fruit (*Adansonia digitata*) pulp. *Advances in Bioresearch*. 2011; 2(2): 82-85.
8. Warty JR, Whong CMZ, Abdullahi, IO, et al. Trends in total aflatoxin and nutritional impact of *Triticum*spp during fermentation of kunun-zaki: a Nigerian Sorghum bicolor based non-alcoholic beverage. *International Journal of Life Science and Pharma Research*. 2015; 5(3): L-26-L-33.
9. Amusa NA, Odunbaku OA. Microbiological and nutritional quality of hawked kunun (a sorghum based non-alcoholic beverage) widely consumed in Nigeria. *Pakistan Journal of Nutrition*.2009; 8: 20-25.
10. Amusa NA, Ashaye OA. Effect of processing on nutritional, microbiological and sensory properties of kunun-zaki (a sorghum based non-alcoholic beverage) widely consumed in Nigeria. *Pakistan Journal of Nutrition*. 2009; 8(3): 288-292.
11. Dosumu OO, Oluwaniyi OO, Awolola GV, Okunola MO. Stability studies and mineral concentration of some Nigerian packed fruit juices, concentrate and local beverages. *African Journal of Food Science*. 2009; 3(3): 82-85.
12. Raimi OR. Bacteriology quality of zobo drinks consumed in some parts of Osun State, Nigeria. *J. Appl. Sci. Environ. Manage*. 2013; 17(1): 113-117.
13. Amusa NA, Ashaye OA, Aiyegbayo AA, et al. Microbiological and nutritional quality of hawked sorrel drinks (soborodo) (the Nigerian locally brewed soft drinks) widely consumed and notable drinks in Nigeria. *Journal of Food, Agriculture and Environment*. 2005; 3(3 and 4): 47-50.
14. Kowal EL, Hassan MN. The use and chemical content of some indigenous Nigerian plants. *Nigeria Food Journal*.1988; 14: 78-84.
15. Adeoye BK, Agbato SO, Ngozi EO, Ayelaagbe MB. Factors influencing consumption of zobo drink among Nigerian Private University undergraduates. *Acta SATECH*. 2014; 5(1): 26-32.

16. Adegbehingbe KT. Effect of starter culture on the anti-nutrient contents, mineral and viscosity of Ogwo, fermented sorghum-irish potato gruel. *International Food Research Journal*. 2015; 22 (3): 1247-1252.
17. Badmos AHA, Kayode RMO, Amali HE, et al. Fermentation and West African food culture. *Global Journal of Bio-science and Biotechnology*. 2014; 3(2): 128-132.
18. Abdullahi MK, Abdullahi YA. Pattern of fruit and non-alcoholic beverage consumption in Sokoto metropolis, Nigeria. *International Journal of Agricultural Policy and Research*. 2014; 2 (4): 154-165.
19. Adepoju OT, Ojo OO. Consumption pattern of energy drinks by University of Ibadan students and associated health risk factors. *Food and Nutrition Science*. 2014; 5: 2209-2216.
20. Damle SG, Bector A, Saini S. The effect of consumption of carbonated beverages on the oral health of children: a study in real life situation. *Pesquisa Brasileira em Odontopediatria e Clínica Integrada, João Pessoa*. 2011; 11(1):35-40.
21. Berkey CS, Rocket HR, Field AE, et al. Sugar- added beverages and adolescent weight change. *Obesity Research*. 2004; 12: 778-788.
22. Nielsen SJ, Popkin BM. Changes in beverage intake between 1977 and 2001. *American Journal of Preventive Medicine*. 2004; 27: 205-210.
23. Akoma O, Agarry OO, Nkama I. A study on the production and consumption pattern of kunun-zaki A cereal based ethnic fermented beverage of Northern Nigeria. *British Journal of Applied Science and Technology*. 2013; 3(4): 1220-1227.

How to cite this article: Dada IO, Awotunde AO. Consumption profile, consumer preference and serving occasions of indigenous non-alcoholic beverages from Nigerian foodstuffs. *Int J Health Sci Res*. 2017; 7(12):168-175.
