

# Fura Da Nono Drink and Its Implications in the Treatment of Malnutrition in Bauchi Metropolis of Bauchi State

Musa Yusuf and Adjene Josiah Obaghwarhievwo\*

Department of Public and Community Health Sciences, College of Health Sciences, Novena University, Ogume, Delta State, Nigeria



\*Corresponding author: ADJENE Josiah, Department of Public and Community Health Sciences, College of Health Sciences, Novena University, Ogume, Delta State, Nigeria

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## ABSTRACT

The study aimed at investigating the public's awareness levels on the nutritional and medicinal implications of fura da nono drink in the treatment of Malnutrition in Bauchi metropolis of Bauchi State. A total of 220 respondents were recruited from the Bauchi metropolis using a cross-sectional survey design of a well-structured and validated questionnaire. The data obtained from their responses were carefully analysed and expressed using simple frequency and percentage. The results obtained showed that about 93.4% of the respondents consumed fura da nono with 89.2% of them taken it as food drinks while 6.6% of the respondents do not consume it at all. Moreover, most of the respondents (81.13%) agreed that fura da nono is beneficial like other foods. 74.5% of the respondents have good knowledge on the use of fura da nono in tackling malnutrition while 5.7% of them have little knowledge on it. Furthermore, 43.40% of the respondents strongly agree that fura da nono is a medicinal drink. However, 40.09% of the respondents strongly agree that they have taken fura da nono as medicinal for malnutrition purposes while only 5.66% of them said contrary to that statement. It could be concluded from this study that fura da nono drink has a nutritional and medicinal values to the respondents. We strongly recommend that the Agriculture and Health departments of the state should partners with the dairy processors in addressing challenges facing the nutritional value and health implications of fura da nono.

## Introduction

In many cultures, especially the western world, humans continue to consume milk beyond infancy, using the animal milk especially from cattle, goats and sheep as food products. For many decades, cow milk has been processed into dairy products such as condensed milk, skimmed milk, ice cream, butter, yoghurt and the more durable cheese products to fight malnutrition [1,2]. Malnutrition, in all its forms, includes under nutrition (wasting, stunting, underweight), inadequate vitamins or minerals, overweight, obesity, and resulting diet-related non-communicable diseases is a major health concern [3,4]. This has stimulated the science of nutritional biology to progress extensively over the last decade to develop food-based nutraceuticals as a form of highly

personalized medicine or therapeutic agent. The believe that Fura danono has nutritional abilities is well known but the medicinal values not been adequately studied. Fura da Nono is a food drink with potentially tremendous but under-explored source of nutraceutical properties as compared to other regularly consumed food drinks [5]. Millet is an important staple for food and nutritional security in semi-arid regions of the world [6]. It is an important staple in several semi-arid and tropical regions of the world with excellent nutraceutical properties as well as ensuring food security in these areas even during harsh environment [7].

Millet, the Fura in Fura da nono is known for several health benefits and some of the health benefits are attributed to its

polyphenol and dietary fibre contents [8,9]. When consumed according to appropriate national guidelines, milk and its derivatives contribute essential micro- and macronutrients to the diet, especially in infancy and childhood where bone mass growth is in a critical phase. Furthermore, preliminary evidence suggests potentially protective effects of milk against overweight, obesity, diabetes, and cardiovascular disease [10]. The incidence of malnutrition and diseases arising from it are increasing in an exponential manner globally and to combat them, a raise in demand for food containing rich food classes with higher levels of dietary fibre and health beneficial phytochemicals has to be done [11]. In recent years, progress in addressing all forms of malnutrition has seen a declining trend, alarmingly slow, with >150 million children still stunted (Global Nutrition Report, 2018), but the movement has increased awareness among people and hence increased health-conscious people demanding healthy food relatively more often. The growing public awareness of nutrition and health care research substantiates the benefits of millets and its phytochemicals potential such as polyphenols and dietary fibre on human health. Many phytochemicals with established or potential biological activity have been identified in plants. Plants, including many currently used as culinary spices and herbs, have been used as medicines, not certainly effectively, from ancient times. Polyphenols of many classes are widely spread in plants [12].

Plants having phytoestrogens, a type of polyphenols, have been administered for decades for gynecological conditions, such as fertility, menopausal, and menstrual problems; Nicotine, an alkaloid, from tobacco directly binds to nicotinic acetylcholine receptors in the body, accounting for its pharmacological effects [13]. Cardiac glycosides, digitoxin and a host of other phytochemicals have been found in plant-based foods to be essential for human health [14]. Fura danono is a food drink with potentially tremendous but under-explored source of nutraceutical properties as compared to other regularly consumed food drinks [6]. Millet is an important staple for food and nutritional security in semi-arid regions of the world (Salej et al. 2019). It is an important staple in several semi-arid and tropical regions of the world with excellent nutraceutical properties as well as ensuring food security in these areas even during harsh environment [8]. Millet, the fura in Fura da nono is known for several health benefits and some of the health benefits are attributed to its polyphenol and dietary fibre contents [3,4].

## Aim of Study

The general objective of this study was to evaluate the Fura da Nono drink, and its health implications in the treatment of malnutrition. Specifically, the study.

- 1) Evaluated the knowledge of the nutritional and medicinal benefits of Fura da Nono consumption in Bauchi.

- 2) Assessed the public's awareness levels of the nutritional and medicinal benefits of Fura da Nono consumption.
- 3) Determined the impact of Fura da Nono drink in the Treatment of Malnutrition.

## Materials and Method

### Research Design

This research was a cross-sectional descriptive study, involving indigenes of Bauchi town and streets of Bauchi metropolis, in Bauchi Local Government Area of Bauchi State, Nigeria. A random sampling technique was used in selecting the volunteers for this study. A self-administered questionnaire was adopted in generating information on socio-demographic characteristics, knowledge, awareness and factors affecting perceived outcome of Fura da nono consumption. The research was conducted as face to face interview and administration of questionnaire to 220 volunteers. Questionnaires was pre-tested on volunteers from a community not selected for this study, a nearby community with same cultural heritage as the communities in this study. The questionnaire was structured into the following parts.

- 1) Demographic characteristics,
- 2) Knowledge of knowledge about the consumption of Fura danono
- 3) Awareness of the nutritional benefits of Fura da nono
- 4) Awareness of the medicinal benefits of Fura danono
- 5) Factors influencing the perception of the benefits of Fura da nono.

Respondents were allowed the freedom to participate on their own accord without any form of compulsion to do so after a comprehensive education on what the nature, benefits and procedure for the research.

### Study Area

This study was conducted in Bauchi metropolis, Bauchi State, Nigeria. Bauchi is the headquarters of Bauchi State in the Northeastern Nigeria. Bauchi has an important town and is the commercial nerve centre of the state. The area is predominantly semi-Sahel Savanna with large expanses of dry forests and has a land area of approximately 3,890 square kilometers. It is also home to two different ethnic groups namely, the Hausa and Fulani's. It has a population of 303,417 as at the 2006 census. It is home to Yankari Game Reserve in Nigeria. Agriculture is the main stay of the State's economy. The major crops cultivated in the State are millet, maize, guinea corn and rice and vegetables (pepper, tomato, onions, cabbage and leaf vegetables among others). Households in the study area are predominantly involved in farming and rearing of animals, petty trading and civil service.

### Study Population

The study population for this study was derived from the entire bauchi town, comprising mainly of those participating in nono processing and those who buy and consume Furada nono.

### Sampling Procedures and Sample Size

A sample of 220 consumers of Fura da nono drinks within the streets of Bauchi metropolis were selected at random to participate in the research.

### Data Collection

A structured questionnaire was used to collect primary data for the consumers of Fura da nono drinks. The Questionnaire was carefully structured and comprised of closed-ended questions for the opinions of respondents. Furthermore, an interview checklist for key informants (health extension workers) was also employed. This was because the questionnaire was an expensive way to gather data from a potentially large number of respondents. Often, they are the only feasible way to reach a number of respondents larger to allow good statistical analysis and outcome.

### Primary Data Collection

Primary data was collected by administering the questionnaire to respondents. Socioeconomic characteristics of the household head such as sex, age and educational status. The data were also collected in collaboration with well-trained enumerators who had received prior skill on the objective of the study, the contents of the interview and interviewing techniques. Proper training of enumerators and supervision during the data collection process boosted the reliability of the data.

### Limitations

Fura da Nono has a refreshing taste and can also be consumed as a weaning food for infants. The major limitation of this food drink was obtaining informed consent from volunteers that has to do with the effect of germs during the preparation of Fura da nono from the apparent unhygienic conditions under which it is prepared, its poor shelf-life stability, storage and processing systems.

### Statistical Approach

The results were calculated using mean and standard error of means (SEM) respectively. The data from the obtained cardio-pulmonary variables were analyzed using one way ANOVA test and for significant level of (p < 0.05) as taken below variables. All statistical analysis and data presentation were automated with the graph pad prism version 8.

### Results

Adding milk and dairy products to your diet may prevent bone diseases like osteoporosis. Studies have linked milk and dairy to a

lower risk of osteoporosis and fractures, especially in older adults. This finding shows that the consumers of fura da nono drink are fully aware of its nutritional value. 185(87.26%) of the respondent disagree that with the statement which said that fura da nono can help regulate body weight may be as a result of patty nature nono (cow milk) it increases body weight if consumes on regular basis. The respondents 124(58.49%) agree that fura da nono can help the child develop well in the womb while 12(5.66%) respondents strongly disagree with the statement. The respondents disagree that fura da nono relieves fatigue 76(35.85%) because lactose intolerance is a common digestive problem where the body is unable to digest lactose, a type of sugar mainly found in milk and dairy products and the respondents agree that fura da nono promoted sleep 102(48.11%). Majority of the consumers 77(36.32%) agree that fura da nono increasing immunity because Milk contains nutrients like probiotics, vitamin D and immunoglobulins that boost the immune system and in turn reduce the risk of allergies (Table 1).

**Table 1:** Summary of Socio-Demographic Information of respondents.

Gender	Frequency	Percentage
Male	123	58%
Female	89	43%
Marital Status		
Single	85	40.10%
Married	53	25.00%
Widowed	49	23.10%
Divorced	25	11.80%
Religion		
Islam	189	89.20%
Christianity	23	10.80%
Others	0	
Educational Qualification		
Literate	102	48.10%
Semi-literate	62	29.20%
Illiterate	48	22.60%

Note: Demographic characteristics of the respondents are presented in Table I. A total of 212 persons responded to the questionnaire. Consumers of fura da nono were those who buy fura and either takes as meal or food supplement. The respondents were comparable in most demographic characteristics. The table shows that 123(56%) of the respondents are male while only 89(42%) of the respondents are female. The result indicates that males consume fura da nono more than females in Bauchi metropolis. The table further shows that majority of the respondents 40.1% of them are married while 25% of them are single and only 35% of the respondents where widowed and divorced. Majority of the respondents are Muslims (89.2%) while 10.8% of the respondents are Christians. This is because the residents in Bauchi LGA are predominantly a Muslims. None of the respondents are having any other religion apart from Islam and Christianity. table shows that 48% of the respondents are literate while 29.2% are semi-literate and only 22.6% are illiterate.

## Discussion

The findings in Table 2 shows responses of the respondents on the knowledge about the Consumption of Fura de nunu, about 93.4% of the respondents said that they have consumed Fura de nunu while only 6.6% of the respondents said that they have never consumed Fura de nunu also this finding shows that majority of the people living in Bauchi LGA are Fura de nunu consumers.

Furthermore, the table indicates that majority of people in Bauchi LGA consume Fura de nunu regularly about 137(64.6%) while 106(50%) respondents consume Fura de nunu on average basis. Majority of the respondents said that the best time to consume Fura de nunu is afternoon which is the percentage occurrence. The information shows the reasons why respondents consumed Fura de nunu. The majority of the respondents indicated that the nutritional quality of Fura de nunu drinks.

**Table 2:** Knowledge on the Consumption of Fura Da Nono.

SN	Consumption of Fura da nono	Yes	No		
1	Have ever consumed Fura da nono	198(93.4%)	14(6.6%)		
2	Do you consume it regularly	137(64.6)	75(35.4)		
		Small	Average	Big	
3	What quantity of Fura da nono do you Consume	74(34.9%)	106(50%)	32(15.1%)	
		Morning	Afternoon	Evening	Anytime
4	When is the best time to consume Fura da nono	40(18.9%)	102(48.1)	53(25.0%)	17(8.0%)
		Food drink	Medicine		
5	Do you consume it as normal food drink or medicine	189(89.2)	23(10.8)		
6	Do you know about the classes of food and ingredients in Fura da nono	123(58.1%)	89(41.9%)		

Note: Table II above shows responses of the respondents on the knowledge about the Consumption of Fura Da Nono. 93.4% of the respondents said that they have consumed fura da nono while only 6.6% of the respondents said that they have never consumed fura da nono. This finding shows that majority of the people living in Bauchi LGA are fura da nono consumers. The table indicates that majority of people in Bauchi LGA consume fura da nono regularly about 137(64.6%) while 106(50%) respondents consume fura da nono on average basis. Majority of the respondents said that the best time to consume Fura da nono is afternoon which is the percentage occurrence. The respondents 189(89.2%) said that they consume the drink as food drink not as no normal food while only 23 of them said they consumed as a regular food. Also majority 123(58.1%) of them are aware of the classes of food and ingredients in fura da nono. The information shows the reasons why respondents consumed fura da nono. The majority of the respondents indicated that the nutritional quality of fura da nono drinks.

Also, it has been observed that a moderated consumption of Fura de nono is advocated such that the general public would take advantage of its antimicrobial effect in addition to its acclaimed physiological roles-lactation in nursing mothers, purgative effect and cure for flatulence as well as nutrient composition [15]. The peculiar sweet-tainted sour taste of Fura de nunu is noteworthy. The results obtained showed that Fura de nunu has antimicrobial properties and further supports the claim that the drink is medicinal. Again, the result of the findings was shown in Table 3 it clearly indicated that majority 80(37.74%) Agree that drinking Fura de nunu drink as food is good practice and majority

153 (72.17%) of them disagree statement that Fura de nunu is just like any food drink in normal conditions and strongly agree 172 (81.13%) that Fura de nunu is beneficial as other foods. Furthermore, the respondents 154 (72.64%) strongly agree that Fura de nunu can help an individual to obtain energy and grow well while 142(66.98%) of the respondents agree that Fura de nunu can help prevent diseases. This result was in line with the findings of Zhu K., Prince R.L. (2012) they observed adding milk and dairy products to your diet may prevent bone diseases like osteoporosis [16,17].

**Table 3:** Level of Awareness on the Nutritional Benefits of Fura Da Nono.

Awareness of the nutritional benefits of fura da nono	SA	A	D	SD	U
Fura da nono eaten as food is good practice	112(52.83%)	80(37.74%)	7(3.30%)	5(2.36%)	8(3.77%)
Fura da nono is just like any food drink in normal conditions	12(5.66%)	7(3.30%)	153(72.17%)	40(18.87%)	-
Do you agree that fura da nono is beneficial as other foods	172(81.13%)	10(4.72%)	12(5.66%)	8(3.77%)	10(4.72%)
Do you agree that fura da nono can help an individual obtain energy and grow well	154(72.64%)	33(15.57%)	20(9.43%)	5(2.36%)	-
Do you agree that fura da nono can help prevent diseases	142(66.98%)	10(4.72%)	16(7.55%)	38(17.92%)	6(2.83%)



Do you agree that fura da nono can help the child develop well in the womb	124(58.49%)	64(30.19%)	3(1.42%)	12(5.66%)	9(4.25%)
Do you agree that fura da nono can help regulate body weight?	12(5.66%)	5 (2.36%)	185(87.26)	10 (4.72%)	-
Do you agree that fura da nono relieves fatigue	76(35.85%)	7 (3.30%)	124(58.49)	5(2.36%)	-
Do you agree that fura da nonopromotes sleep	102(48.11%)	71(33.49%)	18(8.49%)	21(9.91%)	-
Do you agree that fura da nonoincrease immunity	77(36.32%)	43(20.28%)	37(17.45%)	52(24.53%)	3(1.41%)

**Note:** Table III shows the Awareness of the Nutritional Benefits of Fura Da Nono, it also clearly indicated that majority 80(37.74%) Agree that eaten Fura Da Nono as food is good practice and majority 153(72.17%) of them disagree statement that Fura Da Nono is just like any food drink in normal conditions and strongly agree 172(81.13%) that fura da nono is beneficial as other foods. Furthermore, the respondents 154(72.64%) strongly agree that fura da nono can help an individual to obtain energy and grow well while 142(66.98%) of the respondents agree that fura da nono can help prevent diseases.

Studies have linked milk and dairy to a lower risk of osteoporosis and fractures, especially in older adults. This finding shows that the consumers of Fura de nunu drink are fully aware of its nutritional value. Most of the consumers are fully aware of the nutritional value of the fura da nono drinks because millet from which fura is made can help reduce the effects of migraines and heart attacks due to the presence of magnesium. Although oats have been widely publicized for their heart-protective properties, millet is a grain that should also be included on your list of heart-healthy choices because of its status as a good source of magnesium. Magnesium has been shown in studies to reduce the severity of asthma and to reduce the frequency of migraine attacks. Magnesium has also been shown to lower high blood pressure and reduce the risk of heart attack, especially in people with atherosclerosis or diabetic heart disease. From Table 4. Majority of the respondents (74.5%) have good knowledge on the use of fura da nono in tackling malnutrition. While (5.7%) of them have little knowledge. Research indicates that Cow’s milk protein is a key ingredient in products used for treatment of severe acute malnutrition (SAM), such as F-100 and ready-to-use therapeutic foods (RUTFs). Also, the respondents 3.3% of them have no knowledge on nutritional value of Fura de nunu. Also, Table 5 indicates that majority of the respondents (81.1%) use to mixed Fura de nunu with herbs to cure malnutrition.

**Table 4:** Percentage Awareness Levels of Fura da nono as a cure for malnutrition.

Responses	Frequency	Percentage
Good Knowledge	183	74.50%
Fair Knowledge	10	4.10%
little knowledge	12	5.70%
No Knowledge	7	3.30%
Total	212	100

A research confirmed that cow milk alternately with sugar-maize-soybean vegetable oil preparation is an acceptable alternative in case of stock-outs in conventional therapeutic milk. Fura da nono” (fermented milk-cereal mix) is a highly nutritious beverage which is a two-in-one product, consisting of a cereal, ‘Fura’, made from millet and ‘nono’ a fermented milk product similar to yoghurt. Fura da nono is sold from calabash converted with mat using scopes made from calabash. In the market, Fura is mixed with nono in a bowl for customers. Usually, one bowl is used in mixing for all the customers, without cleaning. Depending on the consistency, the product is used as food, refreshing drink and a weaning food for infants. More so, in table VI shows the opinions and the perceptions of the respondents. Majority 142(66.98%) strongly agree that Fura de nunu decreases your dependence on medication. Also, the table further shows that 112(52.83%) respondents strongly agree that Fura de nunu is medicinal. In Table 4&6 it has been observed that majority (58.1%) of the respondents are not taken Fura de nunu as medicine for malnutrition and for other reasons and also majority (52.83%) of the respondents strongly agree that they take Fura de nunu for malnutrition, they achieved the purpose. This shows that consumers of Fura de nunu drink are knowledgeable of the food they take. This finding is similar with the research of WHO (2019) that cow milk mixture with millet is loaded with numerous essential nutrients and is widely considered as a healing food it is rich in fats, calcium, phosphorus, potassium which help in regulating and maintaining elevated blood pressure. Furthermore, the respondent’s majority 153(72.17%) strongly disagree that Fura da nono is a specially recommended in malnutrition.

**Table 5:** Practice of Fura mixture with other herbs for malnutrition.

Responses	Yes	No
YES	172	81.10%
NO	40	18.90%
TOTAL	212	100%

**Table 6:** Practice of Fura mixture with other herbs for malnutrition.

Responses	SA	A	D	SD	U
Do you agree that fura da nono decreases your dependence on medication	142(66.98%)	10(4.72%)	16(7.55%)	38(17.92%)	-
Do you agree that fura da nono is a medicinal drink	112(52.83%)	80(37.74%)	7(3.30%)	5(2.36%)	8(3.77%)
Do you agree that fura da nono is a specially recommended in malnutrition	12(5.66%)	7(3.30%)	153(72.17%)	40(18.87%)	-

**Note:** Table VI shows the opinions and the perceptions of the respondents. 142(66.98%) strongly agree that fura da nono decreases your dependence on medication while 38(17.92%) respondents strongly disagree with the statement. Also, the table further shows that 112(52.83%) strongly agree that fura da nono is a medicinal drink while 5(2.36%) strongly disagree that fura da nono is a medicinal drink. Furthermore, the respondents' majority 153(72.17%) strongly disagree that fura da nono is a specially recommended in malnutrition. This shows that respondents are very attached to fura da nono not only for medicinal, hunger but also for pleasure.

## Conclusion

Results from this study found out that Nono drink, which is basically a milk drink is a good source of protein while the calcium in milk helps in building strong bones. It also helps your breast and uterine tissue to grow during pregnancy, and it plays a role in your increasing blood supply. If you do not consume enough calcium to sustain the needs of your developing baby, your body will take calcium from your bones, decreasing your bone mass and putting you at risk for osteoporosis.

## Conflict of Interest

None.

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Adjene Josiah Obaghwarhievwo. Biomed J Sci & Tech Res



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