

# ANALYZING CASSAVA MEAL (EBA) AS AN EFFECTIVE MEAL IN TACKLING UNDERWEIGHT PROBLEMS IN AFRICA

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**Abstract:** This study is an analysis on Cassava meal as one that can help reduce underweight issues which could be from underfeeding, stress, eating disorder to mention a few.

Eba is garri (from Cassava) made with hot water and not just eaten in isolation but with soup having vegetable which can be local soups like Ewedu, Ogbono, Eforiro, Egusi (melon soup) and many more, all soups are available in Nigeria. Other African countries could have similar soups or other soups to swallow this cassava meal.

With the rising cost of drugs and low wages for several, it is not a bad idea to improvise for drugs that could help people gain weight naturally without side effects. This research work intends to analyze the potential of this hitherto, overlooked meal as a leverage to saving such a situation of being underweight. It is a Carbohydrate under nutritional classification and thus energy giving. A means of improvising medicines which could have adverse effects with natural, earth grown energy source food. This is making it *kill two birds with one stone*, achieving two goals at a time, which is Garri serving as both a hunger satisfying meal and medicine for the body. 30 Males and 30 Females volunteered to undergo this experiment for 30days.

The simple experiment was done by each of the participant recording their initial weights and observing their weights and recording their final weight on the last day.

Eba is a nutritious meal especially when taken with vegetable soup it becomes a locally made meal that is balanced diet also, it is cost-effective meal that can help tackle underweight problems in Africa.

**Keywords:** Cassava meal (EBA); Underweight; Africa

## 1 INTRODUCTION

Cassava meal, locally known as Eba, is a staple food in several African countries. It is made from cassava flour and is often served with any vegetable soup. This study aims to analyze the effectiveness of Eba in tackling underweight problems in Africa. The Research Objectives are, investigating the potential of Eba as a cost-effective meal in promoting weight gain and to analyze the nutritional benefits of Eba in addressing underweight issues.

A hungry man is an angry man and can be underweight due to underfeeding. Cassava is grown in several parts of Africa. It is an easily accessible food and when processed, a meal for many especially those at the bottom of the economic food chain. Processed Cassava, Garri can be swallowed or drank and can be white or yellow (richer in nutrient). Eba is a popular meal especially in Nigeria and some other African countries where Garri from Cassava is processed. The obvious situation where government policies could affect jobs, job prospects, businesses could make some people find themselves in situations where they are stressed which could tell physically on them especially for persons who are naturally not the easily weight gaining types. It is a cost effective meal. It helps those who lost weight due to previous illness to recover faster and even better.

Body Mass Index states that: <18.5 is Underweight, 18.5-24.9 is Normal Weight, 25-29.9 is Overweight, 30-34.9 is Obese Category I, 35-39.9 is Obese Category II and 40 & above is Obese Category III. Weights are known through weighing scales which are mounted. Body Mass Index is calculated as Weight in Kilogram divided by Height in meters X Height in meters example [1], a 60kg person with height of 5 feet 6 inches .....Converting ALL to Centimeter, feet to cm is 1 feet= 30 centimeter thus, 5 Feet x 30 + 2.5 x 6.....Where, 2.5cm=1 inch =.....150cm +15cm=165cm and since 100cm is 1m, thus 165cm is 1.65m.....60/1.65 x1.65.

It is good to know that to find the weight of babies and children, we use:  $n + 9/2$  (Babies in months up to 12 months in age)..... $2n + 8$  (Children 1 year up to 7years)..... $7n-5/2$  ( Children 8 to 13 years in age).....Meaning for 10 months baby:  $10 + 9/2 = 19/2 = 9.5\text{kg}$  is appropriate.....Meaning for 7 year old child:  $2 \times 7 + 8 = 22\text{kg}$ .....Meaning for 12 year old child:  $7 \times 12 - 5/2 = 84-5 = 79, 79/2 = 39.5\text{kg}$ .....Note that  $2.2\text{kg} = 1$  Pound.

Eba is a Carbohydrate and doesn't just help with energy for the body for work but also helps as glucose for the brain, keeping it active. Its fiber content makes it absorbable into the body system which aids good digestion. It is good for the elderly too who may feel or even be physically frail or fragile.

Eba compared with other meals have the following kg.

The 30 Males and 30 Females participants (60 in total) were of ages 18 years to 70 years and gave full consent to be part of the research. They agreed to weigh themselves on a weight scaling machine before and after the experiment to see if there where increment in kilograms.

## 2 METHODOLOGY

### 2.1 Experiment and Observation

Participants underwent a prescreening exercise through a prepared questionnaire which sought to know their age range, that they are slim persons, any serious past medical condition, haven't undergone any form of fasting less than 72 hours previously and willingness to participate in the experiment with photos of pre and post experiment evidences (without necessarily including their faces, thus respecting their rights to privacy too). They were residing in different states in Nigeria. Each participant was provided with an instruction sheet to feed on Eba meal with any local vegetable soup of choice twice daily and they can vary the soup of choice daily or after few days if they so desire. They are to consume it as brunch rather than breakfast example, from 11am and at 6pm and no more than 7pm.

The choice of quantity depended on their individual needs to satisfy hunger.

The choice of additional example meat, fish, egg, crayfish, periwinkle, snails were a matter of choice and its affordability to each individual.

Summarized Methodology:

1. 60 participants (30 males, 30 females) aged 18-70 years were recruited.
2. Participants consumed Eba with vegetable soup twice daily for 30 days.
3. Weights were recorded before and after the experiment.

### 2.2 Study Material Preparation

Eba is made by first boiling water in a kettle or pot. Well boiled water from kettle is poured in a bowl and garri sprinkled evenly into the water till bowl of well soaked garri is formed and stirred with wooden stick or big spoon. It can also be stirred in a pot of well boiled water or boiling water in a pot on the fire. Vegetable soup preparation to add to making it a wholesome meal varies with individuals. For easier digestion, eba shouldn't be made too hard.

Vegetable soup is made and eaten with any additional of choice example meat, fish, egg, crayfish, periwinkle, snails. When for example, PUMPKIN LEAVES (locally called Ugwu in Nigeria and Jama Jama in Cameroon) is used to prepare soup, the research highlights that, "Pumpkin leaves are converted to delicious healthy soup, Ugwu is a great source of improving heart and blood health" [2].

### 2.3 Study Protocol

The entire study was conducted over a period of 30days with the full consent of the participants. Participants were accepted from both males and females from 18 years to 70 years old. There was a prescreening inclusion and exclusion criteria to be met in order to participate in the research and thus an inclusion/exclusion criteria form was the standard for recruitment for this experiment.

The following criteria had to be fulfilled to be admissible for this experiment:

#### 2.3.1 *Be 18 years and above*

Had not fasted in the last 72 hours prior to the experiment.

#### 2.3.2 *Be a slim person*

Agree to follow the instructions for the experiment for 30 days.

#### 2.3.3 *Sign an informed consent form*

Prospective participants were excluded from participating if they fulfilled any of the exclusion criteria:

- (a) Take alcohols
- (b) Smoke
- (c) Are not slim
- (d) Have serious medical conditions
- (e) Take coffee regularly
- (f) Are using nutritional supplements

## 3 RESULTS

For those who passed the inclusion and exclusion stage and actually carried out the experiment, participants were in high spirits to seeing the end of the 30 days. Compliance was encouraging. All 60 participants at different locations in Nigeria participated and there was no known adverse effect rather additional kilograms 1kg to 5kg was noticeable after the 30 days experiment.

**Summarized Result:**

1. All participants gained weight, with an average weight gain of 1-5 kg.
2. Majority of participants (60%) were aged 29-50 years.
3. 60% of participants lived in urban areas.

**4 DISCUSSION**

From the Table below, the majority of participants were of ages 29-50years old while the least number of participants were of ages 62 years old and above.

There were equal number of male and female participants.

As per location, 60% of both males and females lived in the urban areas of Nigeria and 40% lived in the rural areas of Nigeria.

The males with weights 40-49kg were 40% of the overall male participants while the males with weights 50-60kg were 60% of the overall male participants that is, more males had weights 50-60kg.

The females with weights 40-44kg were 40% of the overall female participants while the females with weights 45-50kg were 60% of the overall female participants that is, more females had weights 45-50kg.

The males with heights 1.60-1.69m were 60% of the overall male participants while the males with heights 1.70-1.80m were 40% of the overall male participants that is, more males had heights 1.60-1.69m.

The females with heights 1.50-1.59m were 40% of the overall female participants while the females with heights 1.60-1.70m were 60% of the overall female participants that is, more females had heights 1.60-1.70m.

With the hypothetical position that eba and vegetable soup is a good replacement for supplements that can enhance weights, the study's outcome proves that eba is well tolerated by the body and is a good cost effective, replacement for expensive fat supplements and doubles as a hunger quencher for the teeming population in Nigeria. With Eba, after swallowing with good soup especially after the first intake at brunch, the possibility to sleep well without disturbance is there and also gain the necessary weight even as the metabolic break down of food is gradual and releasing the much needed energy to the body with sufficient, healthy amount of glucose to the brain. This can add extra 7000 Calories (1kg) or more in 30 days for anyone.

The findings justified the initial hypothesis that Eba is a cost effective meal without any or much side effects as it is from naturally grown and well processed Cassava which is readily available in Nigeria(See Table 1).

**Table 1** Distribution of Participants According to Demographic Characteristics

<b>Demographic characteristics</b>	<b>Frequency(n)</b>	<b>Percentage</b>
<b>1)Age (years for both Males and Females)</b>		
18-28	12	20%
29-39	15	25%
40-50	15	25%
51-61	12	20%
62 and above	6	10%
<b>2)Gender</b>		
Male	30	50%
Female	30	50%
<b>3)Location (Males &amp; Females)</b>		
Urban	36	60%

Rural	24	40%
<b>4)Weights(kilogram)</b>		
Male	40-49	40%
	50-60	60%
Female	40-44	40%
	45-50	60%
<b>5)Heights (meters)</b>		
Male	1.6-1.69	60%
	1.7-1.80	40%
Female	1.5-1.59	40%
	1.6-1.70	60%

## 5 CONCLUSION

Its high carbohydrate and fiber content makes it an ideal meal for promoting weight gain and improving overall health. Therefore, Eba can be recommended as a complementary meal for individuals suffering from underweight problems.

Garri which is eba when hot water is stirred with it is a double weapon against hunger and underweight.

The limitations are that it cannot just be eaten alone without nutritional, vegetable and with additionals like meat, fish or eggs to enhancing its nutrients level, making it a balanced diet and more appealing and appetizing.

It cannot be eaten in the morning as it is a heavy meal and can cause drowsiness.

It cannot be eaten too late at night or just before going to bed because of digestion issues and to have sound sleep.

Though it has fiber which is good for digestion, it shouldn't be made hard, so younger children and those that are hemorrhoid prone can easily absorb it into their bodies.

Yellow Garri could be more eye friendly.

Eba's advantage is that depending on the quantity consumed, weights can be regulated such that one doesn't blow up into being fat or too fat from a slim or underweight previous body size which is good news for average weight watchers. It can be eaten twice a day with the soup varied daily to keep it appetizing especially for those with little income.

Large scale farming on Cassava should be encouraged by the government and private land investors even if it means reserving certain lands for agricultural purposes and leased or sold out affordably. Home owners in big cities with smaller land mass example, Lagos State can venture into sack or pot farming of Cassava. The implication of this is that it can be further processed into Garri, making this meal readily available at lower costs. Regional farming by the six geopolitical zones ie The East, West, North East, North West, North Central and South should be encouraged by Governments or Governors in these places. Farmers should be assisted with lower costing fertilizers to grow cassavas and nature friendly herbicides and the likes.

Research can be further done if it can grow on water for those in aquatic regions like the Niger Deltan region and those living close to the creeks example some in Lagos State.

More modern processing machine with quicker turn out time, not diminishing its nutrients capability could be invented.

Public awareness campaigns should be launched to promote the benefits of Eba in tackling underweight problems.

Food insecurity will be lowered with full blown Cassava farming with surplus cassava which will forced down prices to some extents and can be further processed into others like bread, used generally in confectionery or even possibly into wine(with the alcohol taken out).

Bone health issues, weakened immunity, anemia, psychological issues as body image concerns affecting mental health will thus be things of the past[3-8].

The model adapted to challenging underfeeding and underweight issues in Nigeria can well be replicated by other African countries. Eba is a viable solution for addressing underweight issues in Africa, providing a cost-effective and nutritious meal option.

## CONFLICT OF INTEREST

The authors have no relevant financial or non-financial interests to disclose.

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