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EXPLORING THE MOTHERS UTILIZATION OF FOOD ITEMS FOR INFANT COMPLEMENTARY FEEDING WITH CHILDREN (6-23) MONTHS IN ENUGU STATE NIGERIA: A FOCUS GROUP DISCUSSION

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Abstract
The focus group discussion highlights a clear preference for yellow maize 66.7%, primarily due to its familiarity among women and its appealing color. The yellow pigmentation, associated with β-carotene—a precursor of vitamin A—is believed to contribute to its high acceptability. β-carotene, abundant in yellow-colored plant foods, supports vision, skin health, cancer prevention, and combats vitamin A deficiency. Traditional food processing techniques such as soaking, fermenting, sun drying, roasting, and milling were commonly employed by women in the study area. These methods enhance the digestibility, shelf life, and nutritional quality of complementary foods, especially when combined with amino acid-rich ingredients. Notably, fermentation introduces probiotics that benefits gastrointestinal health. Soaking roasting and milling increases shelf- life of CF. However, the study also observed that a significant number of women (53.3%) introduced complementary foods before the recommended six-months period, which contributes to adverse health outcome such as retarded growth, atopic diseases, and increased risk of type 1 diabetes. The findings underscore the need for nutritional education and promotion of appropriate complementary feeding practices to ensure optimal infant development.

Keywords: Yellow maize, Complementary Feeding, B- carotene, focus group, processing.

Introduction
In developing countries like Nigeria, malnutrition is still a serious health problem affecting infants and young children (black et al. 2013, stuiter et al. 2015 & Chukwuemeka,2021). Nigeria has the highest level of malnutrition in children after India (UNICEF 2011, Nnam 2013 & Chukwuemeka, 2021).
Globally and in sub-Sahara African countries, 144 million children under-five were estimated to be stunted, 47 million were estimated to be wasted and 38.3 million were over weight or obesse (UNICEF 2013).

World Health Organization (WHO) (2019) stated that 44% of infants 0-6 months are exclusively breastfed, few of them received nutritionally adequate and safe complementary foods. However, few aged 6-23 months met the criteria of dietary diversity of feeding frequency that are appropriate for their age.
In Nigeria, the traditional complementary foods are grossly inadequate, mainly cereals, starch and tubers among others, while mode of preparation is not properly optimized to provide the required nutrients.

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The consumption of these starchy gruels that are inadequate in protein and other essential micronutrients have been reported to be the major cause of micronutrient deficiencies and retarded growth in infants (National Nutrition and Health Survey (NNHS), 2015)

Most Nigeria populace cannot afford the commercial complementary foods. FAO/WHO (2015) and Chukwuemeka (2021) noted that 41% of Nigerian population live below poverty line, and do not have a purchasing power, and as such, infants are fed with carbohydrate gruels commonly known as akamu, ogi or pap, that lacks micronutrients and also watery, which cannot meet the nutrient requirement of under-five children. Quality complementary foods should be adequate in protein, energy and micronutrients, no artificial colors, flavors etc. it must be culturally acceptable in health, disease conditions free and locally available.

WHO/UNICEF (2006) in Chukwuemeka, (2021) stated that at six months infants exhibit certain physiological activities that shows readiness for complementary food. Early introduction of complementary food leads to infant morbidity and mortality because of reduced ingestion of protective factors present in breast milk.

Rural communities in Nigeria do not incorporate fruits and vegetables in the food items they used in complementary food production hence many of them suffer from micronutrient malnutrition. Food supplementation during the production of complementary food for feeding infants is one of the ways to address and curb out these micronutrient malnutrition (Habbok, Bulf & Saadeh, 2003; Chukwuemeka, 2021)

In effect of the above assertions, this paper aims at:

1. Explore the food items used for infant complementary food in Enugu State through focus group discussion.
2. Explore the techniques used by the women of child bearing age that has children (6-23)months for the production of complementary food.
3. Discover the time for the introduction of complementary food by the mothers.

Area Of Study

The study was carried out in Nsukka, a local government area in Enugu State, Nigeria. Nsukka has eleven (11) towns, an area of 1.810km2 and population of 309,633 (National Population Commission, 2006). It is a University town that is located in a hilly and green site.

Study Design

A cross-sectional design was used through focus group discussion to find out the food items produced by the towns, how they process the food items and their feeding practices.

Pilot Study

A pilot study was carried out through focus group discussion in the study area. Three towns were selected by simple random sampling by balloting without replacement for the selection of the three towns; from the three towns selected, another balloting without replacement was used to select a village from each of the town for focus group discussion.

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Preliminary Visit

A preliminary visit was carried out in the selected villages. The village leaders were visited during the preliminary visit to explain the purpose of the focus group discussion and obtain their consent before the commencement of the study. The village leaders agreed to gather the women of child bearing age that has children 6-23 months. The gathering was done on the day, date and time agreed with each of the village leaders.

A questioner designed was used for the focus group discussion (FGD), Four focus groups were formed, the participants agreed with a verbal consent by signing an informed consent form before the FGD Kruger, (1994), Kruger & Casey, (2000) in chukwuemeka, 2021.

A focus guide for the focus group discussions were formed. It includes:

- A direct discussion with a minimum of six to ten women and filing of the questioner.
- The researcher directed the discussion by asking them questions that stimulate conversations.
- All the respondents were allowed to talk in their dialects and also in English, they filled questionnaire given to them and the research assistant helps the illiterate ones. A video tape is then taken during the session to help facilitate the analysis of the discussion.

Data Analysis

Data were analyzed using descriptive statistics, frequency and percentages. IBM-SPSS statistical package version 23 was used for the analysis.

Ethical clearance was obtained from Health Research Ethics Committee at University of Nigeria Teaching Hospital (UNTH) ituku-ozala in Enugu state, Nigeria, with number NHREC/05/01/2008-FWA00002458-IRB00002323.

Result

Table 1:

The outcome of the focus group discussion (FGD), 66.7% of the women of child bearing age that has children 6-23 months used yellow maize for complementary food, 9.2% used white maize while other form of cereal like sorghum were minimal used (4.0%) and (2.7%) respectively. Legumes were not used by majority of them, (5.3%) used soyabean, (2.7%) incorporate termite especially during the rainy session, (2.7%) add pumpkin leaf and (6.7%) gave pawpaw.

Table 2:

Presents the processing techniques used by the women. Soaking/fermentation majority (80%) wet mill and sieve before preparing the gruel. A handful (7.7%) soak, sundry, mill and sieve thereby having composite flour complementary food (CFCF) while 9.3% soak, roast with sauce pan in an open fire, mill and sieve the same (CFCF). The FCD showed that they used soaking and milling as their source of processing techniques

Table 3:

Presents the age of introduction of complementary food. Majority of the women (53.3%) introduced complementary food at three months, a handful (13.3%) introduced at one month, while 5.3% introduced at six months.

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Discussion

The results of the focus group discussion shows that yellow maize is more acceptable than other cereals. This may be because the women were familiar with it than other brands or the color might be the attraction. Kaul, Kain and Olakin (2019) have identified that generality of people preferred yellow maize than other cereals maybe because of the egg yolk color which signifies B-carotene; that is converted to vitamin A. B- carotene in plants that have pleasant yellow color is a major source of vitamin A (Nagarajaiah et al. 2018). Consumption of foods containing B-carotene helps in the prevention of eye disorders, cancer, skin diseases and vitamin A deficiency (VAI) (Tang, Andersen, Hendrick & Krebs, 2019). The use of yellow maize in production of CF can enhance the nutritional quality of the product.

The women applied soaking/fermenting, sun drying, roasting and milling technique in processing the food items for complementary food. Fermented cereal-baked gruels with poor nutritional value form a major component of the diet of infants during the transition phase of childhood. Soaking and fermentation is an aged old technology whereby microorganisms help in improving the quality attributes of foods making it easily digestible, palatable and beneficial to the gastrointestinal tract of the consumer. This functional microorganisms called probiotics when present as life cultures in foods, helps protect the gut linen and improve digestion and nutrient availability. Yellow maize when subjected to some degree of processing can be supplemented with amino acid- rich food sources for protein and minerals suitable for complementary food blend. The processing method of roasting is in line with the National Academy of Science (NCS) 2012 in Chukwuemeka (2021) stated that drying, roasting and milling are effective preservation techniques in complementary food products, they help to enhance shelf life of cereal products if they are applied. Majority of women (53.3%) in the study area introduced complementary foods within three months after birth. This early introduction of (CF) leads to retarded growth. WHO,(2012) & (Przyrembel, 2012) both stated that early introduction of complementary foods leads to retarded growth and also lead to atopic disease.

WHO (2021) Explained that normal introduction of complementary foods from appropriate age can help avert type 1 diabetes in infant/ childhood especially if cow's milk is not given at that early stages of life.

Table 1

The outcome of the focus group discussion on the utilization of identification of foods for complementary food by women of child bearing age(18-40 years) that has children (6-23)months in Nsukka L.G.A.

Food items identified in the community used for complementary foods in the LGA	Frequency Yes F	(%)	Percentage No F	(%)	Total F	(%)
Yellow maize	50	(66.7)	25	(33.3)	75	(100.0)
White maize	7	(9.2)	68	(90.7)	75	(100.0)
Red sorghum	3	(4.0)	72	(96.0)	75	(100.0)
White sorghum	2	(2.7)	73	(97.3)	75	(100.0)
Millet	0	(0.0)	75	(100.0)	75	(100.0)
Groundnut	0	(0.0)	75	(100.0)	75	(100.0)
Soybean	4	(5.3)	71	(94.7)	75	(100.0)
Beans	0	(0.0)	75	(100)	75	(100.0)

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Pawpaw	5	(6.7)	70	(93.3)	75 (100.0)
Orange	0	(0.0)	75	(100.0)	75 (100.0)
Guava	0	(0.0)	75	(100.0)	75 (100.0)
Avocado pear	0	(0.0)	75	(100.0)	75 (100.0)
Cray fish	0	(0.0)	75	(100.0)	75 (100.0)
Grasshopper	0	(0.0)	75	(100.0)	75 (100.0)
Rat	0	(0.0)	75	(100.0)	75 (100.0)
Lizard	0	(0.0)	75	(100.0)	75 (100.0)
Red meat	0	(0.0)	75	(100.0)	75 (100.0)
Termite	2	(2.7)	73	(97.3)	75 (100.0)
Spinach	0	(0.0)	75	(100.0)	75 (100.0)
Pumpkin leaf	2	(2.7)	73	(97.3)	75 (100.0)
Garden egg leaf	0	(0.0)	75	(100.0)	75 (100.0)
Yam	0	(0.0)	75	(100.0)	75 (100.0)
Rice	0	(0.0)	75	(100.0)	75 (100.0)
Garri	0	(0.0)	75	(100.0)	75 (100.0)

Table 2

Technique used by women of child bearing age that has children (6-23)months for the production of complementary food in Nsukka L.G.A

Processing Technique for complementary Food.	**Frequency Yes F (%)**	**Percentage Yes F (%)**	**Total F (%)**
Soaked, wet milled and sieved	60 (80)	15 (20)	75 (100)
Soaked, sun dried; milled and sieved	8 (10.7)	67 (89.3)	75 (100)
Soaked, roasted; milled and sieved	7 (9.3)	68 (90.7)	75 (100)

Table 3

Time of the introduction of complementary food by the respondents

Introduction of complementary food by women of child bearing age that has children (6-23)months.	**N Yes F (%)**	**% No F (%)**	**Total F (%)**
One month	10 (13.3)	65 (86.7)	75 (100)
Two months	7 (9.3)	68 (90.7)	75 (100)
Three months	40 (53.3)		35 (46.7)
Four months	75 (100)		
Five months	8 (10.7)	67 (89.3)	75 (100)
Six months	6 (8.0)	69 (92.0)	75 (100)
	4 (5.3)	71 (94.7)	75 (100)

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