NUTRITION SOCIETY OF NIGERIA

53RD
ANNUAL GENERAL MEETING
& Scientific Conference

18th – 22nd September, 2023

Theme:

Strengthening Nutrition Leadership and Workforce Capacity for Improved Health and Development in Nigeria.

CONFERENCE PROCEEDINGS:
Book of Extended Abstracts

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Profile of the Nutrition Society of Nigeria

The Nutrition Society of Nigeria is a professional, non-governmental association founded in 1963 at the University of Ibadan. Her membership cuts across various disciplines. These include, Nutrition, Agriculture, Biochemistry, Physiology, Medicine, Food Science and Technology, Social Sciences, Home Economics and Education.

Membership categories are as follows: Ordinary, Associate, Student, Fellow, Honorary and Corporate.

OBJECTIVES OF THE SOCIETY

a. To promote and foster the study of Nutrition in its widest sense
b. To provide a common forum for physiologists, biochemists, clinicians, agriculturists, food technologists, economists, public health workers, dietitians and any other group professionally qualified in disciplines related to nutrition to exchange information and ideas
c. To purse these objectives by meetings and publications and by cooperation with other organizations having similar aims
d. To serve as a professional body in Nutrition and food science that can offer authoritative advice when called upon to do so

AFFILIATION, CONTACT, COOPERATION AND NETWORKING

The Nutrition Society of Nigeria is an affiliate of the International Union of Nutritional Sciences (IUNS). She is in contact with other Nutritional Societies in the African Region through Federation of African Nutrition Society (FANUS). The Society also recognizes the importance of exchange of ideas with colleagues outside the region and therefore utilizes every opportunity for contact and networking with other Nutrition Societies outside the African region.

The society has linkage with:

A. Government Agencies
   - National Committee on Food and Nutrition (NCFN)
   - Relevant Ministries/ Agencies
B. Institutions of Higher Learning (Universities, Polytechnics, Colleges of Education/ Agriculture etc. especially Nutrition Training Institutions)
C. Societies e.g. NIFST, Home Economics Association, Nigerian, Nigerian Dietetics Association etc
D. Research Institutions
E. Food and Beverages Industries
F. National/ International NGOs and NGDOS

FUNDING

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ABSTRACTS FOR PLENARY SESSION

PLA2

Healthier Diets from Sustainable Food Systems

Global Alliance for Improved Nutrition (GAIN) Nigeria

The importance of changing food systems in helping nations advance faster toward meeting the 2030 Sustainable Development Goals (SDGs) has grown as a result of increased public awareness of these goals. Building resilience against threats, shocks, and various forms of malnutrition is the aim of the transformation of the food systems. Food systems refer to the complex network of activities, processes, and actors involved in food production, processing, distribution, and consumption. It encompasses various chains of activities from production (such as farming, fishing) to consumption, with emphasis on processing, packaging, transportation, marketing, retailing, and management of the waste generated (Marshall, 2015; Ericksen, 2008). Demands to "transform" food systems—that is, to change them qualitatively and on a scale that will guarantee food security and a healthy diet for everyone, good livelihoods, and sustainable operation within planetary limits—have grown over the past few years. This has been informed by the increase in the number of people who cannot afford a healthy diet or suffer from one or more types of malnutrition due to poor diets. Malnutrition is a global challenge, including the burden of non-communicable diseases and large social and economic costs. Both undernourishment and obesity represent risk factors that hinder human well-being and national development. As a result of the national dialogues held in 2021, one of the significant achievements following the United Nations Food Systems Summit (UNFSS) was the emergence of the National Pathways to Food Systems Transformation. The implementation of the Pathway actions by the Government of Nigeria (GoN), through the Federal Ministry of Finance, Budget, and National Planning, started in 2022, with a focus on three priority interventions that were seen as essential to the success of other transformative actions. The three priority actions are intended to produce a wide variety of foods in sufficient quantities to support healthier diets, to ensure that everyone has access to and can afford such foods, and to guarantee that such foods and diets will be desirable by all consumers. These priority actions have immense potential to transform food systems urgently and effectively in Nigeria, however, to perform these actions there is a critical need for transformative leadership. Such leadership is the lever to raise to scale the identified solutions to address inequities in our food systems, across sectors and leaving no one behind. The Nutrition Society of Nigeria conference theme recognizes this and provides a platform to engage in critical discussions stakeholders on efforts and strategies to lead efforts to ensure Healthier Diets from Sustainable Food Systems. The purpose of this plenary session is to highlight the progress made in towards the transformation of the Nigerian food systems and to demonstrate how doing so can improve the nutritional status of the general population. The Session also aims to foster a systems and integrative thinking, which necessitates explicitly rejecting traditional siloed approaches that saw agricultural development as largely separate from health and nutrition concerns, as well as the interaction of both with environmental impacts.

Objectives

- Create deeper awareness about leading Food Systems Transformation among nutrition professionals.
- Create awareness about and mobilize support for the implementation of the Nigerian Food Systems Transformation Pathways.

Seek collaborations and partnerships for a food systems-focused development agenda that prioritizes healthy diets and affordable nutrition, is inclusive, efficient, resilient and sustainable while working for everyone, rebuild our economy, create jobs, spur growth across sectors and sustain our ecosystems.

Highlight the need for generation of strong empirical evidence to guide policy decisions around nutrition, sustainable agriculture, and the environment.

Key messages
Collective food systems transformation efforts will yield improved nutritional outcomes.

PLA3

Mobilizing resources and partnerships for sustainable nutrition interventions - Case Study of the Nestlé for Healthier Kids Initiative

Nestlé

Nestlé for Healthier kids (N4HK), a global flagship initiative, aims to help 50 million children globally lead healthier lives by 2030. In Nigeria, we bring this to life through a school-based nutrition education program designed to help children imbibe healthy habits including good nutrition, good hygiene practices, healthy hydration, and active lifestyles through adequate physical activity. This is to ensure a healthier future by laying a good foundation early in life. In collaboration with the International Climate Change Development Initiative, Nestlé incorporated a Sustainability Training in the N4HK program in 2021. Annually, N4HK reaches over 8,000 children in the 30 participating schools, 20 of them in Ogun State and 10 in the Federal Capital Territory (FCT). N4HK is supported by the Nutrition Society of Nigeria, Federal Ministry of Health, Federal Ministry of Education, Ogun State Universal Basic Education Board and FCT Universal Basic Education Board. As the technical partners of the program, The Nutrition Society of Nigeria is responsible for the development of the manuals for the children and teachers. The program addresses the need to teach children about nutrition from an early age to enable them to make better nutrition decisions for a healthier future. The trainings are focused on the following program pillars which help the children learn and imbibe healthier habits: healthy nutrition, healthy hydration, hygiene and maintaining active physical lifestyles. The in-class trainings are delivered by teachers who are trained by the Nutrition Society of Nigeria. The trainings help to build the knowledge and capabilities of the educators. Beyond the impact on the children and teachers, the schools also positively benefit from the program as Nestlé provides other resources and social amenities for beneficiary schools including water and sanitation facilities, classrooms and furnishing, playgrounds, etc.

PLA4a

Investigating the Impact of Leadership Training Programs on Cultivating Effective Nutrition Leaders

Chukwuma Anene, Stanley Nwosu, Michael Daniel Eveshoyan, Hadiza Marcus, Amuwaoluwa Ebenezer Oluloto, Alysa Grude
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Effective leadership is crucial for driving positive change in the nutrition field. This study aims to investigate the impact of leadership training programs on cultivating effective nutrition leaders. It utilizes a qualitative research approach, specifically a pre and post test analysis, to provide in-depth insights into the experiences and outcomes of leadership training programs in developing leadership skills and competencies among nutrition

professionals. A pre and post test analysis was employed to explore the impact of leadership training programs on nutrition leaders. The study selected a nutrition organization that offers leadership training programs as the case. Data were collected through interviews with 30 persons which included program participants, trainers, and key stakeholders involved in the training programs. The interviews focused on participants' perceptions of the training, the skills and competencies acquired, and the impact of the training on their leadership development.

Thematic analysis was conducted to identify key themes and patterns in the data. The findings of this assessment indicate that leadership training programs have the potential to on cultivating effective nutrition leaders. Participants reported enhanced leadership skills, such as communication, decision-making, and teamwork, as a result of the training. The programs also provided opportunities for self-reflection, personal growth, and networking among nutrition professionals. Participants expressed increased confidence and motivation to take on leadership roles and implement innovative strategies in their organizations and communities. The assessment highlights the importance of tailored leadership training programs that address the specific needs and challenges of nutrition leaders. This assessment demonstrates the positive impact of leadership training programs in cultivating effective nutrition leaders. The findings suggest that organizations and institutions should invest in comprehensive and tailored leadership training programs to foster the development of leadership skills and competencies among nutrition professionals. Additionally, it is recommended that future research explores the long-term effects of leadership training programs and examines the sustainability of leadership development initiatives in the nutrition field.

References:

Cummings G.G, MacGregor T, Davey M, Lee H, Wong CA, Lo E, Muise M, Stafford E. Leadership styles and outcome patterns for the nursing workforce and work environment: A systematic review. Int J Nurs Stud. 2010;47(3):363-385.

Dauwerse L, Romijn-Luijten A. Leadership in healthcare: A study of how leadership styles contribute to patient safety in day-to-day nursing care. J Nurs Manag. 2017;25(7):488-497.

Giltinane CL. Leadership styles and theories. Nurs Stand. 2013;27(41):35-39.

Reay T, Goodrick E, Waldorff SB. Identity work in the transition to motherhood: An exploration of discursive practices within stories of biological risk. J Adv Nurs. 2016;72(12):3025-3035.

Sullivan-Bolyai S, Bova C, Harper D. Developing and refining interventions in persons with health disparities: The use of qualitative description. Nurs Outlook. 2005;53(3):127-133.

PLA4b

Mapping of Counter-referrals and Support Systems to Prevent Relapse among Children Treated for Severe Acute Malnutrition.

Pauline Adah, Stanley Nwosu, Jennifer Nielsen
USAID Advancing Nutrition Nigeria, Helen Keller Nigeria.

Children in Nigeria with wasting (severe acute malnutrition) and who have no apparent health complications are treated through outpatient therapeutic programmes (OTP), a component of the Community-based Management of Acute Malnutrition (CMAM) programme. Children are treated under this programme after meeting the criteria to be classified as SAM, presenting with a middle upper arm circumference (MUAC) measurement of >125 mm for two consecutive weeks. However, a recent study in Nigeria found that 24% of a sample of children discharged from OTP treatment experienced a relapse (to SAM) within two months, indicating the need for a post-discharge follow-up protocol to mitigate the relapse risk to include follow-up care and integration with other preventive services. Therefore, USAID Advancing Nutrition sought to understand the availability and utilization of complementary services, support systems, and referral systems for children discharged from SAM treatment as cured to provide local decision-makers with information relevant to strengthening both the complementary services and the referral systems in Bauchi, Sokoto, Kebbi, Ebonyi States and the Federal Capital Territory. A cross-sectional descriptive study design was adopted for this study. The Referral Systems Assessment (RSA) tool adapted from Monitoring and Evaluation to Assess and Use Results (MEASURE) Evaluation was implemented with the facility in-charge/OTP supervisors in 12 OTP centers (selected using a non-probability purposeful sampling technique) across the project states and the FCT, to elicit basic

information on the existing support services, service providers and their coordination through the referral system.

This tool was also used among supervisors of service providers of the 20 identified facilities and partner programs providing nutrition-related services. In addition, we conducted 18 key informant interviews (KII) to collect detailed information on the types of services rendered to clients, criteria or reasons for referral, and actionable recommendations for improvement from service providers at OTP centers and health facilities providing nutrition-related services. The study identified an existing gap in the referral system between OTP centers and nutrition-sensitive facilities. There were no referrals made from OTPs to access other essential services due to the lack of nutrition-sensitive support systems for caregivers of children recently discharged from wasting (SAM) treatment across the project states and the FCT. Ongoing referrals are mainly from the community to the OTP centers, or OTP centers to secondary health facilities.

A continuum of care for children discharged from SAM treatment as cured is essential for sustained recovery and to minimize/prevent relapse thereby reducing the burden of SAM treatment on the health system. Caregivers or households must be supported with relevant services according to their capacity to prevent relapse, such as nutrition education through support groups to promote optimal maternal infant and young child feeding (MIYCN), income generating activities, food security and livelihood programs. State government ministries and development agencies must align economic and livelihood programs with nutrition services to refer discharged children from SAM treatment for continued care and include them in annual nutrition operation plans.

References

Adegoke, O, Arif, S, Bahwere, P, et al. Incidence of severe acute malnutrition after treatment: A prospective matched cohort study in Sokoto, Nigeria. Matern Child Nutr. 2021; 17:e13070. https://doi.org/10.1111/mcn.13070.

MEASURE Evaluation (2013.) Referral Systems Assessment and Monitoring Toolkit. Carolina Population Center, Futures Group, ICF International et. al. https://www.measureevaluation.org/resources/publications/ms-13-60.html

PLA4c

Mapping of Counter-referrals and Support Systems to Prevent Relapse among Children Treated for Severe Acute Malnutrition.

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State Committees for Food and Nutrition (SCFN) play a critical role in addressing food and nutrition challenges at the state level [1]. However, their effectiveness and functionality vary across states. This study aims to assess the impact of embedded consultants in improving the functionality of SCFNs. It explores the contributions of embedded consultants in building the capacity of SCFN members, facilitating strategic planning, and supporting policy implementation. This study employed a pre-post assessment to evaluate the impact of embedded consultation on SCFN functionality in Ebonyi State. A baseline organizational capacity assessment was conducted and the end-line assessment will be completed by August 2023 [4]. The assessment uses qualitative organizational capacity development tool to assess the perceived effectiveness of embedded consultancy on the Ebonyi SCFN, while qualitative data includes 10 interviews and one focus group discussion with Ebonyi SCFN members [3].

The study deployed a pre and post-assessment research design. A purposive sampling strategy was utilized to select participants from diverse Ministries, Departments, and Agencies (MDAs) that make up the SCFN. At baseline and end-line, we surveyed 30 participants [2] and interviewed 10 participants and feedback was analyzed using thematic analytical method [5]. The study focused on the presence and impact of embedded consultants on SCFN functionality, including their expertise, technical assistance, and contributions to capacity-

building efforts. The baseline findings of this study indicated the potential of embedded consultation in enhancing the functionality of SCFNs. The embedded consultants were found to provide expertise and technical assistance to Ebonyi SCFNs, supporting committee members' capacity-building efforts [1]. They provide demand-driven support and facilitate the development of strategic plans, policy frameworks, and evidence-based interventions to address food and nutrition challenges. Moreover, embedded consultants aimed to foster collaboration and coordination among Ebonyi SCFN stakeholders, which may promote knowledge sharing and best practices exchange. Endline data will indicate the effectiveness of this embedded consultant approach.

Embedded consultants likely play a vital role in improving the functionality of SCFNs [1]. The study will generate learning on how and the extent to which their expertise and support contributes to capacity building, strategic planning, and policy implementation, ultimately enhancing the effectiveness of SCFNs [4]. Based on the study findings, we will develop recommendations for how government agencies and organizations should embed consultants within SCFNs going forward [5]. Our initial findings indicate that efforts should focus on identifying consultants with relevant expertise, ensuring effective communication and collaboration between consultants and SCFN members, and fostering a supportive and sustainable consultant-SCFN relationship.

References:

Boone HN, Boone DA. Analyzing Likert data. J Ext. 2012;50(2):1-5.
Ebrahimzadeh I, Dashtbali M, Raeissi P, Yarmohammadian MH. Evaluating the effectiveness of mentoring program for hospital middle managers in Iran. J Health Adm. 2013;16(53):63-76.
Graham ID, Tetroe JM. Getting evidence into policy and practice: Perspective of a health research funder. J Can Acad Child Adolesc Psychiatry. 2009;18(1):46-50.
Langley A, Smallman C, Tsoukas H, Van de Ven AH. Process studies of change in organization and management: Unveiling temporality, activity, and flow. Acad Manag J. 2013;56(1):1-13.
Rowe G, Wright G, Bolger F. Delphi: A reevaluation of research and theory. Technol Forecast Soc Change. 1991;39(3):235-251.

PLA4d

Cultivating Nutritional Resilience: Strengthening Community access to nutritious foods through capacity strengthening for Ward development committees on home gardening in Bauchi, Kebbi, Sokoto, Ebonyi, and FCT.

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The persistent challenges of food insecurity and malnutrition demand innovative strategies to promote community well-being. This concept note presents Breakthrough ACTION- Nigeria's home gardening intervention that harnesses the power of Social and Behavior Change (SBC) principles to bolster nutritional resilience within communities through capacity building for Ward development committees. Recognizing the potential of home gardening to enhance dietary diversity, empower residents, and encourage healthier food choices, this intervention aims to address pressings nutrition and health issues. The undeniable connection between dietary habits and health outcomes underscores the need for proactive measures. The integration of home gardening, underpinned by SBC principles, offers a locally relevant and sustainable solution to improve community nutrition. By engaging individuals in growing their own food, the intervention aligns with the fundamental principles of empowerment, awareness, and social influence. The primary objective of this intervention is to promote nutritional well-being through home gardening, guided by SBC principles. Specific goals include:

Enhancing Dietary Diversity: Encouraging the cultivation of diverse crops to augment the nutritional value of diets and address deficiencies.
Empowering Communities: Engaging community members in the process of home gardening to foster ownership, responsibility, and empowerment.
Promoting Healthy Food Choices: Leveraging SBC strategies to influence attitudes and behaviors towards

healthier dietary practices.
The implementation strategy include capacity building: Equipping ward development committees and community members with home gardening knowledge and techniques, emphasizing the nutritional benefits of diverse crops. Community Mobilization: Mobilizing communities around the idea of home gardening as a collective effort, reinforcing the positive influence of peers and ward development committees as role models , Community sensitization: Delivering tailored messages that highlight the positive impact of home gardening on nutrition and health and Community Involvement and participation: Involving community members in the process of planning, decision-making, and the establishment of home gardens. This ensures the perpetual relevance and sustainability of the initiative and facilitates community participation in comprehending and applying insights into dietary diversity. Activities such as practical food demonstrations spotlight locally available foods, fostering a deep understanding of diet diversity and food preparation.

Impact and Sustainability was measured through:
- Documenting the number of people reached with messages and nutrition activities including for home gardens.
- Document and monitor the number of home gardens set up.
- Recording success stories and improvements in dietary diversity and the overall nutritional well- being of households engaged in home garden activities.
- Keeping track of the level of community involvement and the sustained practice of home gardening to ensure the enduring impact and success of the initiatives.

In conclusion, The home gardening intervention, driven by SBC principles, offers a promising avenue to strengthen community health and nutritional resilience. By promoting empowerment, awareness, and positive social influence, this initiative aims to transform dietary behaviors and contribute to the broader objectives of community well-being and sustainable development. The presentation will highlight the intervention's strategy, potential outcomes, and its alignment with SBC principles as a blueprint for impactful change.

PLA4e

Improving food safety practices in traditional markets to reduce the burden of foodborne illness through capacity building of stakeholders.

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Feed the Future's EatSafe: Evidence and Action Towards Safe, Nutritious Food is a USAID-funded, five-year program that seeks to enable lasting improvements in the safety of nutritious foods in traditional food markets by focusing on the consumer. EatSafe is led by the Global Alliance for Improved Nutrition (GAIN) and is a consortium of partners including the International Livestock Research Institute (ILRI), Pierce Mill Entertainment and Education, and Busara Center for Behavioral Economics. The program is implemented in Kebbi and Sokoto States. This EatSafe in Nigeria presentation highlight insights from market-based, food safety interventions that are currently implemented in Kebbi and Sokoto States. The Interventions include the Safe Food Market Stand, the Association for Promotion of Food Safety and Improved Nutrition (APFSAN), the Safe Food Brand (Abinci Fes-Fes), and the Radio Show (Sayen Nagari). Learnings and evidence generated from the interventions will showcase the impact of these interventions on consumer demand for safer food.

All the four interventions being implemented embed awareness creation and training of market actors on food safety and good hygiene best practices. A Training of Trainers (TOT) was also conducted for over 30 key stakeholders to facilitate training of other stakeholders. The market actors in the food supply chain in Kebbi and Sokoto States have been trained on safe food handling best practices, WHO's Five Keys to Safer Food, importance of personal hygiene and appropriate hand washing steps, market sanitation and waste disposal, appropriate storage and transportation methods, and the use of clean and potable water. A training on soybean processing under hygienic conditions for improved household nutrition was also conducted. Specifically, about 350 food vendors participating in the Food Safety Brand Initiative (Abinci Fes-Fes) in Birnin Kebbi Central

Market, Kebbi State and from Dankure Market in Sokoto State were trained. Over 2000 food supply chain stakeholders comprising consumers, market actors, food supply chain stakeholders have received targeted information on food safety through public awareness and mobilisation activities, communication assets shared and practical demonstrations at the Safe Food Stands, awareness creation and trainings conducted by APFSAN in both Kebbi and Sokoto States.

PLA4f

Exploring Community Perceptions and Behaviours Regarding Consumption and Purchase of Diverse, Nutritious Foods in Northern Nigeria.

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Acute malnutrition remains a significant challenge for children under five in Nigeria, characterized by severe wasting (Norris, S. A. et al., 2022). The USAID Advancing Nutrition Project, in collaboration with stakeholders, has identified nutrient-rich foods as important sources to increase the consumption of essential micronutrients. Despite the availability of these food groups within communities, their consumption remains low. To understand the factors influencing the consumption and purchase of nutritious foods, a rapid consumer demand assessment was conducted in Bauchi, Kebbi, and Sokoto states. This study aimed to explore the community perceptions, attitudes, and behaviours regarding the consumption and purchase of selected food groups. The assessment took place in three states in Northern Nigeria: Bauchi, Kebbi, and Sokoto. A purposive sampling approach targeted two Local Government Areas (LGAs) per state with a high prevalence of malnutrition. Qualitative data collection method specifically focused group discussions (FGDs) were utilized. The FGD Desirability, Consumer Value, Food Preparation, and Decision Making towards nutrient dese foods. The data collection lasted for a period 5 months. TheFGDs were conducted with a diverse sample of caregivers between the ages of 18 years to 59 years who were responsible for taking care of children vulnerable to wasting. A purposive sampling method was adopted to select 180 participants who were caregivers of children vulnerable wasting, each FGD made up of 10 participants. The FGDs were conducted in a balanced manner, with 12 FGDs involving female caregivers and 6 FGDs involving male caregivers, resulting in a total of 18 FGDs. A thematic analytical method was adopted to understand the patterns of the data. This approach helped to identify recurring themes and patterns within the data set, leading to valuable insights and a deeper understanding of the research topic. The assessment identified key factors influencing the consumption of selected nutrient-rich foods, including health and nutrition considerations, affordability, convenience, personal taste preferences, social influence, and food availability. Factors influencing the purchase of selected food groups included personal preferences, desired quantity, cultural background, taste and flavour preferences, financial aspects, familiarity, and overall market availability. In relation to the choice of any food group, the respondent in Bauchi, Kebbi and Sokoto affirmed the majority of people in the community will choose rice over fish as it serves more people than fish/eggs and satisfies more. In Sokoto, the majority of the respondents agree that price and cost of foods are desirable because they are affordable and always available in addition to being farmed in the community while the less desirable foods are so because of the cost price to get them. The respondent in Bauchi affirmed that the most valued opinion when it comes to what a child should be eating is from the hospital and health workers. Additionally, respondents reported getting information from either radio, social media, during wedding ceremonies, from parents and from spouses, this is line with the findings of Vogels-Broeke, et al (2022) that (91.5%) of information to pregnant women and caregivers are usually from the health facilities while 79.3% obtain information from family or friends. In Bauchi, the respondents affirmed that rice is the most convenient food to prepare. It is so because it is easy to cook in different styles and all the family likes it. Many people in the community are more likely to try or eat more of each of these prioritized foods because we have them available at all times in the community, this aligns with the findings of (GAIN and JHU, 2022) that people consumer what is readily available in their communities as access to and affordability of nutritious foods is a major constraint to improving the diets of mothers and infants and young children in these States. Understanding these factors influencing consumer demand empowers stakeholders to create focused strategies and interventions to

promote the consumption and purchase of selected nutrient-rich foods. Customizing initiatives based on these factors allows for targeted approaches to improve nutrition outcomes and foster healthier food choices within the community. By addressing barriers and challenges, stakeholders can ensure that interventions remain relevant, impactful, and sustainable over time.

References

Vogels-Broeke, M., Daemers, D., Budé, L., de Vries, R., & Nieuwenhuijze, M. (2022). Sources of information used by women during pregnancy and the perceived quality. BMC Pregnancy and Childbirth, 22(1), [109]. https://doi.org/10.1186/s12884-022-04422-7RENCES

Global Alliance for Improved Nutrition, and Johns Hopkins University. 2020. "Food Systems Dashboard - Diets and Nutrition." Food Systems Dashboard. 2020. https://doi.org/10.36072/db.

Norris, S. A. et al. Nutrition in adolescent growth and development. The Lancet 399, 172–184 (2022).

FGN and IITA. National Food Consumption and Micronutrient Survey Preliminary Report. (2022).

Eme, P. E., Onuoha, N. O. & Mbah, O. B. Fat-Related Anthropometric Variables and Regional Patterns of Body Size and Adiposity of Adolescents in Aba South LGA, Abia State, Nigeria. Food Nutr. Bull. 37, 401–408 (2016).

Lauren, S. B. et al (2021). Social and economic factors influencing intrahousehold food allocation and egg consumption of children in Kaduna State, Nigeria. Maternal & Child Nutrition published by John Wiley & Sons Ltd

PLA4g

Key failure factors in Vitamin A supplementation in selected states in Nigeria

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Helen Keller International

Helen Keller International, Nigeria, implements Vitamin A Supplementation (VAS) in 6 states in Nigeria: Adamawa, Akwa Ibom, Benue, Ekiti, Nasarawa, and Taraba. In 2021, Helen Keller International, Nigeria, supported the implementation of two rounds of VAS campaigns in all six states. The aim of this research was to assess VAS coverage and identify factors affecting coverage and campaign success. Cross-sectional study using the WHO (2015) stratified cluster design among 30 households, one community leader, and one health worker, from 30 communities each were randomly sampled and interviewed in Akwa-Ibom, Benue, and Nasarawa states (2880 persons in total) after the second round of the VAS campaign in August 2022. A total of 2,433,117 children in the three states (target = 2,807,261) received VAS during the second round. Coverage by state: Akwa-Ibom: 64.1%, Benue: 68.1% and Nasarawa: 76.1%.

Factors affecting coverage are :

Poor community mobilization for the Maternal Mother and Child Health Week (MNCHW) which was most frequently cited.

Late arrival of commodities and insufficient commodities (Vitamin A capsules) due to inadequate health worker forecasting capacity.

Insecurity and communal clashes made some communities inaccessible.

Disruption due to other competing interventions i.e., Covid- 19 mass vaccination campaign.

Shift from door-to-door implementation strategy to facility base strategy in Nasarawa after the Covid-19 pandemic

VAS coverage was lower than the supplementation target >80% for all children aged 6-59 months in the states that were assessed. In future planning for the intervention, the above factors need to be addressed to help improve coverage.

PLA5

Third-Party Advocacy Campaign: a tool for promoting Compliance for food fortification and workforce nutrition in Nigeria.

Global Alliance for Improved Nutrition (GAIN) Nigeria

Nigeria, one of the African continent's most populous countries, has a severe double burden of malnutrition, with one in every five children undernourished and more than a quarter of adult women overweight or obese (NDHS, 2018). Nigeria has achieved little progress towards its diet-related noncommunicable disease (NCD) targets. Obesity affects 15.7% of reproductive-age women and 5.9% of men. Obesity prevalence in Nigeria is lower than the regional average of 20.8% for women and 9.2% for men (UNICEF/WHO/World Bank, 2021). 1 in 3 people globally suffers from at least one type of malnutrition: this brings significant losses in productivity and potential and poses challenges to employers in both high-and-low-income settings (FAO 2017). Since 58% of the world's population will spend one-third of their adult lives at work, occupational health is a critical determinant of overall well-being (WHO Global Plan of Action on Worker's Health, 2008-2017). Fortifying staples with minerals and vitamins is the most cost-effective and impactful strategy to reach a larger audience with a nutrient-rich meal to reduce micronutrient deficiencies for healthy living and productivity. Food fortification has been legislated in Nigeria for over two decades, but more compliance and enforcement must be done. These gaps must be addressed to maximise access to quality fortified foods across the population and reduce the high levels of micronutrient malnutrition in Nigeria. Workforce nutrition programmes are a compelling part of the solution to malnutrition through the existing structures of the workplace - whether a corporate office or informal setting (farming communities, processing mills). The private and public sectors working together to improve the health of global workforces can significantly reduce the global burden of malnutrition through improved access to - and demand for - safe and nutritious food, change employees' behaviours around food consumption, and improve their health and wellbeing. Evidence suggests that improving workers' access to nutritious meals impacts individual-level outcomes, i.e., increased job satisfaction, reduced sick days, adequate intake of nutrients and business-level productivity outcomes, i.e., enhanced productivity, returns on investment etc. This plenary session aims to highlight the learnings from the third-party advocacy raising awareness on the necessity for food fortification compliance and workforce nutrition in Nigeria. The Session also aims to foster a system and integrative thinking, which necessitates food fortification and workforce nutrition and its economic implications and profitability for businesses and the workplace.

Objectives

- Raise awareness of the importance of workforce nutrition and its impact on employee health, productivity, and well-being.
- Demonstrate how workforce nutrition becomes part of the narrative on tactics for preventing micronutrient deficiencies in the working population.
- Share update on the media strategies towards food fortification and workforce nutrition compliance across the states in Nigeria.
- Address the challenges faced by organizations in promoting food fortification and workforce nutrition programs.

Key messages

Inform the public on Nigeria's collective efforts for food fortification and workforce nutrition compliance.

PLA6

The Link between Nutrition and Childhood Killer Diseases

Mrs. Beatrice Eluaka
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Nutrition stands as a cornerstone of childhood health, profoundly influencing vulnerability to deadly diseases. Malnutrition, encompassing both undernutrition and overnutrition, emerges as a global predicament. Millions of children grapple around the globe including Nigeria grapple with insufficient access to essential nutrients, resulting in heightened susceptibility to infectious diseases, stunted growth, and mortality. Simultaneously, an escalating prevalence of childhood obesity is ushering in a new era of non-communicable diseases. Astonishingly, vitamin A deficiency alone contributes to hundreds of thousands of childhood deaths annually. Highlighting global malnutrition statistics, regional disparities come to the fore, exposing the gravity of the issue. However, a closer look at Nigeria reveals a sobering reality, with malnutrition entrenched in its fabric, contributing significantly to childhood mortality.

In Nigeria, the significance of nutrition as it pertains to childhood health remains paramount, with compelling data underscoring the nexus between malnutrition and a heightened vulnerability to childhood diseases. Malnutrition, both undernutrition and overnutrition, represents a pressing concern in Nigeria. Current statistics reveal that a significant portion of Nigerian children struggle with the adverse effects of inadequate nutrient intake. Such insufficiencies not only predispose them to infections but also result in pronounced developmental issues, further escalating mortality rates.

According to UNICEF, in 2020, approximately 17% of children under the age of five in Nigeria suffered from acute malnutrition. Nigeria also has a high prevalence of stunted growth among children, with nearly 37% of children under five years old being stunted due to chronic undernutrition. Vitamin A deficiency is a significant concern in Nigeria. In 2018, the National Nutrition and Health Survey (NNHS) reported that 30.9% of children aged 6-59 months had a low serum retinol level, indicating a deficiency in vitamin A. Malnutrition contributes significantly to child mortality in Nigeria. According to the World Bank, in 2018, the under-five mortality rate in Nigeria was 117 deaths per 1,000 live births, and malnutrition was a leading underlying cause of these deaths. Malaria is a major killer disease among children in Nigeria. Malnutrition weakens the immune system, making children more susceptible to malaria. The NNHS reported that 18.7% of Nigerian children under five had a fever in the two weeks preceding the survey, indicating the prevalence of malaria. Malnourished children are at a higher risk of contracting respiratory infections like pneumonia. In Nigeria, pneumonia is a significant cause of childhood mortality. In 2018, pneumonia accounted for 18% of under-five deaths. This presentation encapsulates the interconnection between nutrition and childhood killer diseases and these statistics on common childhood diseases correlated with malnutrition, underscores the urgency of addressing this issue in Nigeria.

CS-SUNN's efforts have been instrumental in addressing the nutritional challenges and improving wellbeing of the vulnerable group, particularly women and children. Our initiatives encompass a wide range of activities ranging from advocacy to policy influence to capacity building efforts and civil society mobilization. Some of our impacts are listed below, championing the action agenda for improving women and girl's nutrition, supported some state governments to domesticate the National Plan of Action for Food and Nutrition, effective engagement of Civil Society across Nigeria on Nutrition advocacy and Leadership and Strong Media advocacy efforts for improved sensitization of the populace on good nutrition.. The nexus between nutrition and childhood killer diseases underscores the urgency of prioritizing nutrition-focused strategies to reduce child mortality rates and improve overall child health.

PLA8

Developing Agenda for the Successful Implementation of Multiple micronutrient supplementation in Nigeria.

Alive & Thrive – FHI360 is supporting the government of Nigeria and particularly the- states of Kaduna, Kano, Sokoto, Borno, Bauchi, Yobe and Lagos to implement Accelerating the Scale of Maternal, Infant, and Young Child Nutrition (MIYCN). The project works through the state Primary Health Care Development agencies to strengthen local capacities to improve the delivery of maternal nutrition interventions; as well as to improve MIYCN knowledge, help shift social norms to achieve dramatic increases in MIYCN behaviors. A&T saves lives, prevents illness, and improves the health and wellbeing of mothers, children, and adolescents by using evidence-based approaches in collaboration with governments and other partners at the global, regional, national, and community levels. The initiative is managed by FHI Solutions and funded by the Bill & Melinda Gates Foundation in Nigeria.

Scope of the activity

Micronutrient deficiency is a major public health problem in Nigeria, especially during adolescence, pregnancy and post-delivery due to the increase in nutrient requirements that occurs at these times. Addressing this, Nigeria has continued to promote the use of Iron folate or Iron and folic acid (IFA) supplementation as a core component of antenatal care for pregnant women. While iron and folic acid are critical nutrients, it now evidently proven that they are not the only nutrients that pregnant women may need to support their health and the health of their children (WHO, 2020). Recent development arising from more than 20 years of research provided clear evidence that multiple micronutrient supplementation (MMS) is more effective than IFA supplementation to prevent adverse birth outcomes. MMS is an antenatal supplement that has proven to improve maternal nutritional status and provide additional benefits over iron and folic acid supplements (IFAS) in reducing adverse birth outcomes.

The evidence on the effectiveness of MMS is clear: in comparison with IFAS, MMS lowers the risk of low birthweight newborns, reduces the risk of small-for-gestational age newborns, and reduces risk of stillbirth (UNICEF, 2020). In 2021, the Federal Government of Nigeria approved the use of MMS for pregnant mothers, in line with updated WHO antenatal care recommendations supporting the use of MMS in the context of rigorous research (FMOH, 2021). The MMS formulation approved in Nigeria aligns with the United Nations International Multiple Micronutrient Antenatal Preparation (UNIMMAPP), an established formulation with 15 vitamins and minerals, including recommended amounts of iron and folic acid. It is pertinent to note that over 2 years that this approval has been granted, there is yet to be a national roll out. Therefore, transitioning from IFAS to MMS is an important priority to ensure women in Nigeria experience safe pregnancies and to address the high prevalence of nutritional deficiencies, including maternal anaemia. At the same time, switching to MMS requires high-level stakeholders' engagement and understanding, as well as increased coordination among nutrition partners.

This plenary session aims to generate discussion and dialogue that examine the programmatic evidence, including successful implementation experiences, best practices and lessons learnt, in order to inform the successful switching and scale-up of multiple-micronutrient supplementation in Nigeria . The outcome of the dialogues will contribute to the efforts to strengthen the health systems and provide a summary of lessons learnt and a summary of implementation considerations, which can be useful in the switching and scale-up of this nutrition intervention.

Critical dialogue issues will include : Consideration to include MMS on Nigeria's essential medicine list, the need for additional implementation research on MMS specific to Nigeria, logistics and supply chain concerns, health worker training and supportive supervision on MMS, communication support materials and messages on MMS, private sector opportunities for local production, and integrating an MMS indicator in the National Health Management Information System (NHMIS) form and dashboard. The overall key output from the plenary sessions will contribute to the development of roadmap that will lead to national rollout of MMS in Nigeria.

Reference

WHO 2020- WHO Antenatal Care Recommendations for a Positive Pregnancy Experience. Nutritional Interventions Update: Multiple Micronutrient Supplements during Pregnancy; Geneva, 2020.
UNICEF 2020 - Interim Country-level Decision-making Guidance for Introducing Multiple Micronutrient Supplementation for Pregnant Women

ABSTRACTS FOR PARALLEL SESSION (ORAL AND POSTER)

SUB-THEME D: ADDRESSING EQUITY AND SOCIAL INCLUSION IN NUTRITION GOVERNANCE/LEADERSHIP

OD1

A Mixed Method Approach to Background Profile Analytics of the Prevalence of Blood Pressure Status amongst Adults and Youths in the Rural Communities of Ikono Local Government Area, Akwa Ibom State, Nigeria

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KEYWORDS: *Hypertension, Focus Groups, Free Medical Outreaches*

HIGHLIGHTS

- *There was a significant relationship between blood pressure and marital status*
- *There was a significant association between blood pressure and age*
- *Lack of health literacy and mobile health initiatives resulted in superstition, blindness, stroke, intra/inter family conflicts, untimely deaths, etc*

BACKGROUND AND OBJECTIVE

High blood pressure, is a prevalent and potentially life-threatening condition that affects individuals worldwide. While it's recognized as a major health concern in urban areas, its impact on rural communities often goes unnoticed. The paradoxical coexistence of limited healthcare access and an increased risk of hypertension in rural settings creates a silent threat to the well-being of these communities. Thus, understanding the status and pattern of its prevalence will boost concerted efforts to mitigate potential but avoidable threats to vulnerability to poverty among rural households. Individual's blood pressure, is a significant health concern affecting millions of people worldwide. Its impact can be particularly pronounced in rural areas due to scarcity of medical professionals, lack of education and information about healthy lifestyles and low income levels. The study assessed the background characteristics of participants, identify the prevalence of blood pressure amongst adults and youths in rural communities of Ikono, decompose the blood pressure profile by background characteristics, ascertain the significance association between background characteristics and blood pressure, ascertain the health literacy of adults and youths in Ikono, ascertain the health seeking habits of adults and youths in Ikono, identify the various mobile health initiatives available in Ikono to serve as a guide for advocacy and prevent hypertension in rural populace.

MATERIAL AND METHODS

A mixed method evaluation technique was harness both quantitative and qualitative outcomes in Ikono Local government in Akwa Ibom State. A cross-sectional survey design of correlational research type was adopted to assess the status of prevalence of blood pressure amongst adults and youths in rural communities of the study area. This study adopted convenience sampling to select respondents that responded to a call for free medical services and interventions. Based on the call 410 persons came out and 326 were willing to participate fully in

the programme. Focus group discussions, measurement of weight using bathroom scale and blood pressure checks using Omron Digital and manual Blood Pressure machine. Discussions were video and audio recorded and written down in the outreach register. Descriptive and inferential statistics were computed using IBM SPSS version 20.

RESULTS AND DISCUSSION

Table 1 (background characteristics of the participants) showed that 39.6% were male, 60.4% female, 87.1 married and 12.9% single. Table 2 (status of blood pressure) indicated that 54.3% of the participants had normal blood pressure while 45.7% had hypertension. Table 3 (decomposition of blood pressure profiling by background characteristics and its significance) showed that age and marital status had a significance association with blood pressure status which support the findings by [1] which reported that the prevalence of hypertension was significantly higher in the rural populace than the urban populace. Age, was one of the independent predictors of hypertension. [2], which stated that the prevalence of hypertension was high for both rural and urban settings with the major determinants of blood pressure in the population included age and sex. Another study by [3] reported that hypertension is already a major public health burden in rural communities. [4] Observed a high prevalence of hypertension in rural community.

Also, based on our interactions during health talks and counselling, it was deduced that participants had no health / nutrition education prior to the intervention as almost all of them believe that stroke is as a result of a 'ghost slap', glaucoma, cataract, cancer, arthritis, pterygium and other non-communicable diseases including HiV were from the witchcraft coffin.[5] reported that the prevalence of hypertension is increasing in rural communities in Nigeria and awareness about major cardiovascular risk factors is still very low. Health seeking habits was poor which confirms the observation by [6] as all participants did not develop a lifestyle of routine visit to health facilities for their healthcare services, for instance of them had the service of medical doctors for the first time, all of them saw nutritionists and optometrists for the first time. They patronized patent medicine vendors, quacks, herbalists, prayer houses and practice self-medication with the complain that they could not afford primary healthcare services, non-availability of doctors, lack of 24 hours services and closure of health posts from 4pm and weekends. Visit to secondary and tertiary institutions either by referral from Primary Health Centre or personal/ patient relatives' decision is always considered as the last option at dying minutes. This intervention by Goodnews Livelihood Foundation (NGO whose work is provision of humanitarian and healthcare services to underserved communities with focus on prevention of non-communicable diseases) in collaboration of ELISCOMAS Foundation was the first mobile health initiative the participants benefitted from though a few held for political campaigns.

CONCLUSION AND RECOMMENDATIONS

The work showed that lack of health education programmes, insufficient health workers and insufficient mobile health initiatives in the rural communities lead to high and unmanaged blood pressure resulting in complications and increased disability-adjusted life year (DALY). There is need for all the state including FCT to adopt implementation of mobile clinic services from Katsina State as reported by [7], telemedicine, collaborate with NYSC/NGOs working in this thematic area for more reach.

REFERENCES

Akpan EE, Ekrikpo UE, Udo AI, Bassey BE. (2015) Prevalence of Hypertension in Akwa Ibom State, South-South Nigeria: Rural versus Urban Communities Study. Int J Hypertens.;2015:975819. doi: 10.1155/2015/975819. Epub 2015 Jun 10. PMID: 26171244; PMCID: PMC4478357.

Ogah OS, Madukwe OO, Chukwuonye II, Onyeonoro UU, Ukegbu AU, Akhimien MO, Onwubere BJ, Okpechi IG. (2013). Prevalence and determinants of hypertension in Abia State Nigeria: results from the Abia State Non-Communicable Diseases and Cardiovascular Risk Factors Survey. Ethn Dis. 23(2):161-7. PMID: 23530296.

Andy JJ, Peters EJ, Ekrikpo UE, Akpan NA, Unadike BC, Ekott JU. (2012) Prevalence and correlates of hypertension among the Ibibio/Annangs, Efiks and Obolos: a cross sectional community survey in rural South-South Nigeria. Ethn Dis. 22(3):335-9. PMID: 22870578.

Onwuchekwa AC, Mezie-Okoye MM, Babatunde S. (2012). Prevalence of hypertension in Kegbara-Dere, a rural community in the Niger Delta region, Nigeria. Ethn Dis. 22(3):340-6. PMID: 22870579.

Ahaneku GI, Osuji CU, Anisiuba BC, Ikeh VO, Oguejiofor OC, Ahaneku JE. (2011) Evaluation of blood pressure and indices of obesity in a typical rural community in eastern Nigeria. Ann Afr Med.10(2):120-6. doi: 10.4103/1596-3519.82076. PMID: 21691018.

Ezenwa, H.C., Iheme G.O., Okonkwo, E. M., Adeoye – Agomoh, Q. C. (2022). Prevalence of Hypertension and health seeking behaviours of Market Woment in Abia State, Nigeria. Journal of Dietician Association of Nigeria (JDAN). 13:1(41 – 52)

[7] Peters, G. Doctor, H. Afenyadu, G., Findley, S. Ager, A. (2014). Mobile Clinic Services to serve rural populations in Katsina State, Nigeria: Perceptions of services and patterns of utilization. Health policy and planning. 29: 5(642 – 649)

SUB-THEME E: LEVERAGING DATA AND EVIDENCE TO INFORM DECISION MAKING FOR IMPROVED NUTRITION OUTCOMES.

OE1

Prevalence and pattern of obesity among primary school children in Lagos Nigeria

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KEYWORDS: *Obesity, School, Children, Nigeria*

HIGHLIGHTS

⊙*besity prevalence was significantly higher among female pupils compared to male pupils.*
⊙*besity prevalence was higher among private school compared to public school pupils.*

BACKGROUND AND OBJECTIVES

The escalating concern regarding obesity among school children is a pressing global and national issue.[1] However, in Nigeria, the lack of current data hinders the development of targeted interventions and policies.[2,3] This study aims to bridge that gap by assessing the prevalence and patterns of obesity among primary school children in Lagos, Nigeria.

MATERIALS AND METHOD

This was a cross-sectional survey among primary school children aged 5 to 13 years from randomly selected primary schools in Mainland LGA, Lagos State, Nigeria. Mainland LGA was selected from the 21 LGAs by simple random sampling. Sociodemographic data, height, weight, and other relevant variables were collected. BMI-for-age and sex Z-scores were used to classify children as overweight/obese.

RESULTS AND DISCUSSION:

The ages of the participants ranged from 5 to 13 years with a mean of 8.61 ± 2.2 years. Majority of the participants were males (185; 55.2%), attending public schools (82.7%) and were from low socioeconomic household (179; 53.4%). Most pupils were of normal weight (301;89.9%); with 21.2% being underweight (Table 1). Thirty-four pupils (10.2%) were either overweight (6.9%) or obese (3.3%). The proportion of overweight (12.1%) and obese (8.6%) pupils in the private school were significantly higher than overweight (5.8%) and obese (2.2%) children in the public school ($p = 0.014$). Female pupils (14.7%) were significantly more obese compared to the male (6.5%) pupils ($p = 0.005$). The overweight and obesity prevalence in this study is similar to findings of 3.1% to 18.9% previously reported in the country[1-5]. This confirmed that obesity prevalence among primary school pupil has not changed in Nigeria. However, the findings should be interpreted in the context, as majority of the pupils were from poor socioeconomic class, unlike the previous studies. Obesity among prevalence of 10.2% among pupils from predominantly low socioeconomic class is rather high. The finding may be suggesting a changing patterns of nutrition status among Nigerian children, which indicates the early stages of a complex nutritional transition, with its associated risks of non-communicable diseases in the future.[2,4,5]

TABLE

Table 1: Nutritional status of pupils by type of school in the study

Nutritional status	All participants	Type of school		p value
	n=335(%)	Public n=277(%)	Private n=58(%)	
Normal	230(68.7)	193(69.8)	37(63.8)	0.61
Underweight	71(21.2)	62(22.4)	9(15.5)	0.0001
Overnutrition	34(10.2)	22(8.0)	12(20.7)	0.014
• Overweight	23(6.9)	16(5.8)	7(12.1)	0.023
• Obesity	11(3.3)	6(2.2)	5(8.6)	0.024

CONCLUSION AND RECOMMENDATIONS:
Prevalence of obesity was found to be 10.2%, with females and pupils in private schools having a significantly higher rates of obesity compared to their male and private school counterparts. Activity that will promote weight loss should be introduced into primary schools to prevent the emergence of obesity epidemic.

REFERENCE
1.Omuemu, V., Omuemu, C. The prevalence of overweight and its risk factors among adolescents in an urban city in Edo State. Nigerian journal of clinical practice, 13: 2010; 128-33.
2.Senbanjo, I. O., Adejuyigbe, E. A. Prevalence of overweight and obesity in Nigerian preschool children. Nutrition and health, 2007;18(4):391-9.
3.Musa, D. I., Toriola, A. L., Monyeki, M. A., & Lawal, B. Prevalence of childhood and adolescent overweight and obesity in Benue State, Nigeria. Tropical Medicine & International Health, 2012; 17(11):1369-75.
4.Adam, V. Y., Isah, J. A. Prevalence and comorbidities of childhood overweight and obesity among school aged children in an urban settlement in Benin City, Nigeria. Nigerian Journal of Paediatrics, 2017; 44(1):7-13.
5.Ajayi, E. O., Elechi, H. A., & Alhaji, M. A. Prevalence of overweight/obesity among primary school pupils in Urban Centre, Nigeria. Saudi J Obesity, 2015;3: 59-65.

PE2

Dietary habits, lifestyle characteristics and prevalence of overweight and obesity among staff of University of Nigeria, Enugu campus. Enugu state, Nigeria

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KEYWORDS: obesity; dietary habits; prevalence; waist circumference
HIGHLIGHTS
Meals were skipped by one-quarter of the respondents.
Most respondents consumed alcoholic beverages.
Overweight, obesity and increased waist circumference existed among the respondents.

BACKGROUND AND OBJECTIVES
The sedentary nature of job done by university workers and long working hours predispose them to overweight and obesity. Decrease in homemade meals, increase in fast food consumption and short periods for eating meals are related to the increase in overweight and obesity [1] which have been observed among university workers. This study assessed the dietary habits, lifestyle characteristics and prevalence of obesity among staff of University of Nigeria, Enugu campus Enugu state, Nigeria.

MATERIALS AND METHODS:
A cross-sectional study in which 315 respondents were selected using multi-stage sampling technique.

Structured and validated questionnaire was used to elicit information on the socio-demography, dietary habits and lifestyle characteristics of the respondents. Anthropometric measurements of height, weight, waist and hip circumferences were taken using standard procedures. Data collected were analysed using the computer program Statistical Product and Service Solution for windows version 21. $P < 0.05$ was the accepted level of significance.

RESULTS AND DISCUSSION:

Meals were skipped by 26.7% of the respondents. Fast foods (19.3%), alcoholic beverages (60.3%), cigarettes (6.3%) were consumed on a daily basis by the male and female respondents. Underweight (12.7%), overweight (19.0%), obesity (7.9%) and increased waist circumference (81.9%) existed among the respondents. Age, gender, monthly income, meal skipping, alcoholic beverage and fast food consumption were significantly ($p < 0.05$) associated with overweight/obesity. Pathologies and health damage associated with this nutritional condition include oxidative stress, metabolic syndrome, systemic arterial hypertension, type 2 diabetes mellitus, osteoarthritis, cardiovascular diseases, various types of cancer and sleep apnoea [2,3].

Table 1: Dietary habits of the respondents

Variables	Frequency	Percentage
Skip meals		
Yes	84	26.7
No	231	73.3
Total	**315**	**100.0**
Reasons for skipping meals		
Inadequate time to eat	20	23.8
No appetite	22	26.2
To lose weight	15	17.9
No food	8	9.5
No money	12	14.3
Too tired to cook	7	8.3
Total	**84**	**100.0**
Eat fast food		
Yes	88	27.9
No	227	72.1
Total	**315**	**100.0**
Frequency of fast food consumption		
Daily	17	19.3
4 – 6 times/day	13	14.8
1 – 3 times/day	26	29.5
Occasionally	32	36.4
Total	**88**	**100.0**

CONCLUSION AND RECOMMENDATIONS:

The dietary habits and lifestyle characteristics of some respondents are worrisome. Nutrition education on the benefits of healthy eating and regular physical activity is imperative.

REFERENCES

[1] *Associação Brasileira Para, O., Estudo Da Obesidade, E. Da Síndrome Metabólica (2016).Diretrizes Brasileiras de Obesidade. 4ª ed. São Paulo: ABESO, Disponível.*

[2] Meldrum, D. R., Morris, M. A. & Gambone, J. C. (2017). Obesity pandemic: causes, consequences, and solutions - but do we have the will? Fertility and Sterility, 107(4), 833–839.
[3] Williams, E. P,, Mesidor, M., Winters, K., Dubbert, P. M. & Wyatt, S. B. (2015). Overweight and obesity: prevalence, consequences, and causes of a growing public health problem. Current Obesity Report, 4(3), 363–370.

OE3

Nutrient composition and sensory properties of biscuit enriched with graded level of Justicia secunda vahl leaf and the one not enriched

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Keywords: vitamins, minerals, enriched biscuit and Justicia secunda vahl leaf

BACKGROUND AND OBJECTIVES:
Biscuit is a popular ready to eat snacks among people all around the world by all age group. However, they have excess calories and also lack micronutrient, Hence, my study is to produce a biscuit (a suitable vehicle) enriched with Justicia secunda vahl leaf which have high array of nutrients which can be used to combat micronutrient deficiencies.

MATERIALS AND METHOD:
The biscuit was produced using composite flour (yellow maize, wheat flour and groundnut flour in the ratio of 40:35:25 respectively), and then enriched with pulverized Justicia secunda vahl leaf of graded level of 1% and 5% for biscuit samples BJ and DJ respectively, while sample EE was not enriched (control). Other ingredients added to the composite flour were: milk powder, granulated sugar, soybean oil, baking powder, egg and salt. The materials were obtained from ogige market, Nsukka, Enugu state while the leaf was obtained from a farm in Umuzi, owerri north, Imo state. The vitamin and mineral contents of the samples were determined using atomic absorption spectrometer model AA-7000, version 1.01. Data was analyzed using SPSS version 23 while statistical analysis was done using ANOVA for separation of mean, Duncan multiple range taste was used to determine significant differences between means of variables at 5% probability level (<0.05).

RESULTS AND DISCUSSION:
There was significant improvement in the value of vitamin contents of the enriched samples (BJ and DJ) when compared to the ones not enriched (EE). Vitamin C had the highest score range (15.50-32.25mg/100g) when compared to other vitamins (A, E, B1, B2, B3, B9 and B12). The percentage minerals of the enriched biscuit had appreciable amount of minerals in calcium (1194.91-2196.55 mg/kg), iron (168.13-173.23 mg/kg), potassium (67.68-367.40 mg/kg), magnesium (504.70-543.54 mg/kg), sodium (323.85-325.15mg/kg) and zinc (9.74-14.43mg/kg) while the least mineral content is selenium and chromium. Cobalt was observed to be absent.

Table 1.1: The vitamins composition values of biscuit enriched with graded level of *Justicia secunda* vahl leaf and the one not enriched.

SAMPLES	Vit. A (ug/g)	Vit.B_1 (mg/100g)	Vit.B_2 (mg/100g)	Vit.B_3 (mg/100g)	Vitamin B_9 (ug/100g)	Vit.B_{12} (mg/100g)	Vit.C (mg/100g)	Vit.E (ug/g)
BJ	$23.55^{c}\pm0.21$	$0.10^{c}\pm0.00$	$0.09^{c}\pm0.01$	$0.17^{c}\pm0.01$	$12.40^{c}\pm0.28$	$0.04^{b}\pm0.01$	$32.25^{c}\pm0.21$	$19.00^{c}\pm0.28$
DJ	$18.35^{b}\pm0.07$	$0.05^{b}\pm0.01$	$0.05^{b}\pm0.00$	$0.12^{b}\pm0.01$	$10.25^{b}\pm0.07$	$0.02^{a}\pm0.00$	$23.35^{b}\pm0.49$	$15.50^{b}\pm0.14$
EE	$15.45^{a}\pm0.35$	$0.03^{a}\pm0.01$	$0.03^{a}\pm0.01$	$0.08^{a}\pm0.01$	$5.50^{a}\pm0.14$	$0.01^{a}\pm0.00$	$15.50^{a}\pm0.14$	$9.45^{a}\pm0.21$

Table 1.2 the mineral composition values of biscuit enriched with graded level of *Justicia secunda* Vahl leaf and the one not enriched

Samples	Ca (mg/kg)	Cobalt (Co) mg/kg	Cr(mg/kg)	Copper (CU) mg/kg	Iron (Fe) mg/kg	Potassium (K) mg/kg	Magnesium (mg/kg)	Sodium (Na) mg/kg	Zinc (Zn) mg/kg	Se(mg/kg)
BJ	$1194.91^{a}\pm0.64$	$0.00^{a}\pm0.00$	$0.00^{a}\pm0.00$	$5.39^{c}\pm0.01$	$173.23^{b}\pm0.01$	$367.40^{c}\pm0.00$	$504.70^{b}\pm0.00$	$323.85^{b}\pm0.01$	$14.43^{c}\pm0.00$	$0.46^{b}\pm0.03$
DJ	$2196.55^{c}\pm0.00$	$0.00^{b}\pm0.00$	$4.86^{b}\pm0.01$	$1.35^{b}\pm0.00$	$168.13^{a}\pm0.01$	$67.68^{a}\pm0.01$	$543.54^{c}\pm0.01$	$325.15^{c}\pm0.01$	$9.74^{c}\pm0.00$	$0.35^{b}\pm0.00$
EE	$1278.06^{b}\pm0.39$	$0.00^{c}\pm0.00$	$0.00^{a}\pm0.00$	$0.00^{a}\pm0.00$	$208.88^{c}\pm0.00$	$296.59^{b}\pm0.12$	$497.39^{a}\pm0.04$	$318.63^{a}\pm0.01$	$11.55^{a}\pm0.00$	$0.14^{a}\pm0.03$

The vitamin result is comparable to Alshehry (1) on biscuit enrichment with pumpkin seed powder which shows a reduced level of vitamins B1(0.033mg/100g), B2(0.5mg/100g) while Igbabul, Ogunrinde and Amove (3) in their study moringa leaf enriched biscuits reported the increased level of vitamin C(19.38mg/100g) which is comparable to the enriched biscuit (EE and DJ). The improvement in mineral content in enriched biscuit is comparable to the finding of Arogbodo (2) who reported the presence of Ca, Fe, K, Mg, Na and Zn in Justicia secunda vahl leaf is higher which explain why the enriched biscuit has higher mineral content.

CONCLUSION AND RECOMMENDATIONS:
Enrichment of biscuit with graded levels of Justicia secunda vahl leaf improved the micronutrient content of the biscuit samples. Use of graded levels of the leaf plant should be encouraged at all level especially among nutrition experts and food companies. Nutrition Education is imperative to enlighten people and create more awareness about consumption of enriched biscuit which will boost their micronutrient status.

REFERENCES
1. Alshehry, G.A. (2020) Preparation and Nutritional properties of cookies from the partial replacement of wheat flour using pumpkin seed powder. World Journals of Environmental Biosciences. 9(2), 48-56
2. Arogbodo, J.O. (2020) Evaluation of phytochemical, proximate and elemental constituent of Justicia secunda M. Vahl leaf. International journal of innovative science and research technology. 9(5), 2456-2165
3. Igbabul, B., Ogunride, M.D., Amove, J. (2018). Proximate micronutrient composition, physical and sensory properties of cookies produced with wheat, sweet detar and moringa leaf flour blends. Nutrition and Food Science Journal. 6(3) 690-699

OE4

Hypertension and it's a Asssociation between with anthropometric indices and hypertension among undergraduates Students in Nsukka town

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KEYWORDS: Hypertension, overweight, obesity, undergraduates
HIGHLIGHTS:
Prevalence of hypertension increased with age, peaking at age 26 to 29 years.
Body fat percentage deduced from skinfold thickness measurement was more associated with prehypertension.

BACKGROUND AND OBJECTİVES:
In recent times, the prevalence of hypertension has been on the increased among youths due to their engagement in unhealthy lifestyles behaviours, including excessive consumption of alcohol, tobacco and cigarette smoking, low intake of fruits and vegetables, and high stress levels [1]. This study assessed the prevalence of hypertension and its association with anthropometric indices among undergraduate students. This is to gain a clearer understanding of which index has the greatest impact on the risk of developing hypertension among the youths.

MATERIALS AND METHOD:
A cross-sectional survey was carried out on a population of students enrolled in two tertiary institutions in Nsukka town. A well-structured questionnaire containing information on demographic, dietary habit, lifestyle, anthropometry, and blood pressure measurement was used for data collection. The data obtained were analyzed using Statistical Product and Service Solutions (SPSS), version 23.

RESULTS AND DISCUSSION:
A total of 403 (205 male and 198 female) undergraduates within the age range of 18 to 29 years participated in the study. The prevalence of hypertension increased with age, peaking at age 26 to 29 and was higher in females

than males. A positive correlation was observed between Waist-Hip-Ratio (WHR) and blood pressure (BP) of the respondents (r=0.166, p<0.001). This is in agreement with a community -based study, which showed that WHR was independently associated to diastolic DBP and overall prevalence of hypertension, although it was reported that eliminating the impact of Body Mass Index (BMI) greatly reduced the relationship between WHR and hypertension [2]. The present study showed a significant correlation (r=0.537, p<0.000) between BMI body mass index and blood pressureBP of the respondents. This finding is similar to earlier report [3] on positive correlation between obesity indicator (BMI) and blood pressure. Humayun et al. [4] also indicated strong association of hypertension to BMI among female and male population of Peshwar, Pakistan. No sSignificant association was not observed between blood pressure and body fat percentage deduced from skinfold thickness measurement. The result of this study indicated that BMI and WHR would be better predictors of elevated blood pressure than skinfold thickness among the study population.

Table1a
Table 1b: Correlation of blood pressure with anthropometric indices of the respondents

Variables		SBP	DBP	Overall BP
Waist hip ratio	r-value	-0.051	0.166**	0.166**
	P-value	0.303	0.001	0.001
	N	403	403	403
Body mass index (BMI)	r-value	0.123*	0.071	0.537**
	P-value	0.013	0.157	0.000
	N	403	403	403
Body fat composition (Skin fold	r-value	0.059	-0.049	-0.49
thickness)	P-value	0.235	0.328	0.328
	N	403	403	403

CONCLUSION AND RECOMMENDATİON(S):

Hypertension prevalence increased with age among young adults, and was higher in females than males. Both WHR and BMI are positive predictors of hypertension. It is important to create awareness about the associated risks of hypertension and implement early screening initiative, particularly within schools to reduce the potential complications of this disease in later stages of life.

REFERENCES

1. *Rivara, M.B. (2023). Hypertension in Older Adolescents and Young Adults. In: Flynn, J.T., Ingelfinger, J.R., Brady, T.M. (eds) Pediatric Hypertension. Springer, Cham.*
2. *Jain, J., Mathur, H., & Apte, S. (2014). Prevalence of pre hypertension and hypertension and its correlation with anthropometric measurements in medical students of Central India. Journal of Evaluation of Medical and Dental Sciences. 3(10):2429-2433.*
3. *Adedoyin, R. A., Mbada, C. E., Bisiriyu, L. A., Adebayo, R. A., Balogun, M. A. & Akintomide, A. O. (2008). Relationship of anthropometric indicators with blood pressure levels and the Risk of hypertension in Nigerian adults. International Journal of General Medicine 2008:1 33–40.*
4. *Humayun, A., Shah, A.S., Sultana R. (2009). Relation of hypertension with body mass index and age in male and female population of Peshwar, Pakistan. Journal of Ayub Medical College Abbottabad. 21(3):63-5*

OE5

Chemical composition of Kaolin clay "Nzu" and Bentonite clay "Ulo" and their Consumption Prevalence among women in Calabar and Onitsha.

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KEYWORDS: Edible clays, pica, nzu, ulo

ABSTRACT

Aim: *To determine the chemical composition of kaolin and bentonite clays, and ascertain their consumption prevalence among women in Calabar and Onitsha.*

STUDY DESIGN:
Quantitative analysis and cross-sectional survey.

METHODOLOGY:
The edible clays collected were grinded to fine powder, and sieved for analysis. Proximate analysis was carried out using AOAC standard methods. For the determination of macro minerals, heavy metals and anti-nutrients, the samples were digested and analysed using Atomic Absorption Spectrophotometry. To assess the consumption prevalence, a structured questionnaire was designed, content-validated, pre-tested and used. Data was analysed using Microsoft Excel and Statistical Package for Social Sciences (SPSS).

RESULTS:
The results of proximate analysis showed a high content of Ash (85%) in both samples. Bentonite (48.65±0.52 Kcal) had significantly ($p<0.05$) higher energy content than kaolin (37.94±0.28 KCal). Kaolin had significantly ($p<0.05$) higher content of sodium and magnesium while calcium was significantly ($p<0.05$) higher in bentonite. It is worthy of note that kaolin (16.89 ± 0.01mg/g) had significantly ($p<0.05$) higher content of phenols than bentonite (5.18 ± 0.01mg/g). For the heavy metals, kaolin had significantly ($p<0.05$) higher content of lead, arsenic and aluminium, than bentonite. Among the respondents, about 75% admitted to consuming the two edible clays (both during their pregnant and non-pregnant states).

Table 1: Mineral composition of Kaolin clay and bentonite clay

	Ash (%)	Na (mg/g)	K (mg/g)	Ca (mg/g)	Mg (mg/g)	Pb (mg/g)	Cd (mg/g)	As (mg/g)	Al (mg/g)
Kaolin clay	85.20 ±0.10	0.18 ±0.01	0.21 ±0.01	1.22 ±0.01	2.16 ±0.00	0.09 ±0.01	0.02 ±0.00	0.02 ±0.00	0.28 ±0.01
Bentonite clay	85.29 ±0.14	0.11 ±0.01*	0.17 ±0.02	2.21 ±0.00*	1.69 ±0.01*	±0.00 ±0.00*	0.02 ±0.00	0.01 ±0.00*	0.18 ±0.01*
T-test	0.632	0.003	0.070	0.001	0.001	0.001	0.725	0.001	0.001

CONCLUSION:
The two edible clays are commonly consumed by many women, irrespective of age and educational status (Madziva and Chinouya, 2020). Both clays contained appreciable quantities of important micronutrients but in addition, also contained some amount of anti-nutrients and heavy metals, hence they should be consumed with caution (Kennedy et al., 2012; Taiye et al., 2013).

REFERENCES

•*Kennedy, D., Woodland, C., & Koren, G. (2012). Lead exposure gestational hypertension and pre-eclampsia: a*

systematic review of cause and effect. Journal of Obstetrics and Gynecology, 32 (6), 512-517.
•Madziva, C. & Chinouya, M. J. (2020). Clay Ingestion During Pregnancy Among Black African Women in a North London Borough: Understanding Cultural Meanings, Integrating Indigenous and Biomedical Knowledge Systems. Front. Sociol. 5:20. doi: 10.3389/fsoc.2020.00020
•Taiye, F., Koduah, G., & Mork, S. (2013). Geophagia clay soil as a source of mineral nutrients and toxicants. African Journal of Food, Agriculture, Nutrition and Development, 13 (1), 7157-7170.

SUB-THEME F: PROMOTING SUSTAINABLE, RESILIENT AND AFFORDABLE NUTRITIOUS FOOD SYSTEMS

OF1

Nutrient Composition of Bread Produced from Fortified Wheat Flour and Its Effect on the Blood Glucose Level

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Keywords: Nutritional composition, Fortification, Sensory evaluation, Blood glucose
Highlights:
Fortified wheat flour contains an appreciable amount of nutrients.
There is acceptability for wheat-fortified products.
Wheat fortified with water melon seed powder lowers blood pressure.

BACKGROUND AND OBJECTIVE
Bread is universally accepted as a very convenient form of food that is important to all populations (1). In Nigeria, bread has become the second most widely consumed non-indigenous food product after rice (2). It is consumed extensively in most homes, restaurants, and hotels. Hence, this study was aimed to assess the nutrient composition of bread produced from fortified wheat flour and its effect on glucose levels.

MATERIALS AND METHOD
The nutrient composition, sensory evaluation, and effect of the samples on blood glucose levels were tested. The chemical analysis of the samples was done using standard laboratory procedures. For sensory evaluation and the effect of products on blood glucose levels, twenty-five (25) respondents were randomly recruited for the study.

RESULTS
The result of proximate composition showed that sample A (wheat flour) has the highest percentage of protein (1.92%), which is a total diversion from the result of Igbabul et al, (3) that reported higher level of protein (13.12%) in their wheat bread sample. Sample B (wheat flour + plantain flour) has the highest percentage of phosphorus (81.60%), and higher than the value reported for phosphorus in the study of Okoye et al, (4), and sample C (wheat flour + pawpaw seed) has the highest percentage of fat (6.53%) and moisture (25.62%), while sample D (wheat flour + watermelon seed) has the lowest percentage of protein (0.21%) and phosphorus (7.29%). For sensory evaluation, it shows that virtually all the samples were accepted except for sample D, which was least acceptable due to its appearance ($p<0.05$). The effect of the samples on blood glucose levels shows that all the samples have a significant impact on the glucose levels of the respondent, with sample C being the most effective when compared to other samples.

Table 1: Nutrient composition of the samples

Samples (%)	A	B	C	D
Protein	1.92±0.05	1.09±0.03	0.50±0.02	0.20±0.01
Moisture	22.34±3.02	22.86±3.10	25.62±4.02	23.55±3.11
Crude Fibre	2.87±0.06	1.05±0.01	1.93±0.03	3.21±0.05
Carbohydrate	73.17±1.14	41.21±0.20	46.13±1.21	64.40±1.17
Fat	2.62±0.03	2.25±0.01	6.53±0.03	3.04±0.01
Phosphorus (mg/100g)	76.58±5.03	81.60±4.12	61.53±3.23	27.29±0.12
Potassium (mg/100g)	84.20±0.10	124.12±0.18	130.08±0.23	145.14±0.31

Table 2: Sensory Evaluation of the Samples

Samples	A	B	C	D
Taste	6.11±1.31	6.25±1.51	5.01±1.31	5.52±1.42
Aroma	6.01±1.10	6.10±1.31	4.31±1.12	5.36±1.31
Colour	6.50±1.20	6.21±1.12	5.32±1.21	5.42±1.22
Texture	6.72±1.42	6.24±1.18	5.32±1.12	4.89±1.43
Overall acceptability	6.31±1.42	5.53±1.34	4.63±1.60	5.32±1.33

Values are mean of triplicate determinations. Within the same column are not significantly different ($P > 0.05$)

Table 3: Effects of the Bread samples on the blood glucose level

Samples	B.G Before Consumption (mm/Hg) Fasting Blood sample	BP After Random 30 minutes	Consumption 45 minutes	(mm/Hg) 60 minutes
A (Wheat Flour Only)	93.4	120.2	69.6	107
B (Wheat + Plantain flour)	88.8	116.8	97.6	102.2
C (Wheat + watermelon seed powder)	98.0	126.6	101.2	98.8
D (Wheat + pawpaw seed powder)	81.4	115.2	98.8	104.6

Values are mean of quintuplicate determinations. BG – Blood glucose

CONCLUSION AND RECOMMENDATION

This study revealed that the fortified wheat bread produced could assist in reducing the high glucose in the blood, thereby assisting in maintaining an optimum level of blood glucose. It is therefore recommended that the government should support the production of wheat bread fortified with plantain flour, pawpaw seeds, and watermelon seed powder, as it increases the nutritional value of bread and reduces high blood glucose.

REFERENCES

Iluwajoba, S.O. Malomo, O. Ogunmoyela, O.A.B. Dudu, O.E.O. Odeyemi, A. (2012). "Microbiological and nutritional quality of warankashi enriched bread," Journal of Microbiology, Biotechnology and Food Sciences, 2

(1): 42–68.
Ijah, U.J. Auta, H.S. Aduloju, M.O. Aransiola, S.A (2014). Microbiological, Nutritional, and Sensory Quality of Bread Produced from Wheat and Potato Flour Blends. International Journal of Food Science Volume 2014: 1-6.
Igbabul, B. Num, G. Amove, J. (2014). Quality Evaluation of Composite Bread Produced from Wheat, Maize and Orange Fleshed Sweet Potato Flours. American Journal of Food Science and Technology, 2(4): 109-115.
Okoye, J. I and Egbujie, A. E. (2018). Nutritional and Sensory Properties of Maize-Based Complementary Foods Fortified with Soybean and Sweet Potato Flours. Discourse Journal of Agriculture and Food Sciences. 6(3): 17-24.

OF3

Macro and Micronutrient Composition of Brillantasia nitens leaves.

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KEYWORDS: *Vegetables, Nutrients, Leaves*

BACKGROUND AND OBJECTIVES

Brillantasia nitens commonly known as the "Tropical Giant Sage," is a plant native to tropical regions. Its leaves have been traditionally used for their medicinal properties. Recent studies have focused on exploring the nutrient composition of Brillantasia nitens leaves extracts to understand their potential health benefits [1]. These extracts are known to contain various bioactive compounds that contribute to their nutritional value. Understanding the nutrient composition of Brillantasia nitens leaves extracts can provide valuable insights into their potential applications in the field of nutrition and health. This study evaluated the macro and micronutrient composition of Brillantasia nitens leaves.

MATERIALS AND METHODS

Fresh Brillantasia nitens leaves were collected from a home garden in Alike Obowo in Imo State, Nigeria and botanically identified at the Bio-resources Development and Conservation Programmes (BDCP) Research Centre, Nsukka, Enugu State, Nigeria. Fresh vegetable leaves were plucked, sorted and washed with clean tap water and allowed to drain for 15mins in a metal sieve. The leafy vegetables were cut and ground using Warburg laboratory blender. Extracts were made using standard procedures. Proximate compositions of the extracts were determined using standard laboratory procedures as described by Association of Official Analytical Chemistry (AOAC), [2]. Mineral composition (Iron and Zinc) and Vitamins (Beta carotene, Vitamin C, Vitamin B6 and Vitamin E) were determined using standard laboratory process. Data collected were analyzed using Statistical Product for Service Solution (SPSS) Ver. 22 and were presented as means and standard deviation.

RESULTS AND DISCUSSION

The result (Table 1) showed that Brillantasia nitens contained 97.99 % moisture, 1.18% Protein, Ash content 0.53%, fats 0.17% and Carbohydrate 0.13%. The high moisture content of the vegetables was expected because fresh vegetables are known to contain much water. The protein composition is relatively low. Fat generally is low in leafy vegetables. Ash content is a measure of nutritionally important minerals present in a food. On the other hand, Table 2 showed that the mineral composition of the leaf extract showed that it contained 0.08mg Iron and 0.12mg Zinc. The study also showed that the leaf extract contained 42.13 mg/100ml of Vitamin C, Beta-carotene was 629.93 IU, Vitamin E 0.78mg/ml and Vitamin B6 2.83 mg/100ml.

Table 1: Proximate Composition of Brillantasia nitens leaves extract (Wet weight %)

Moisture	Protein	Ash	Fats	Carbohydrate
97.99±0.05	1.18±0.02	0.53±0.01	0.17±0.01	0.13

Table 2: Minerals and Vitamin Composition of *Brillantasia nitens* leaves extract (Wet weight)

Iron (mg)	Zinc (mg)	Vit. C (mg)	Beta-Carotene (IU)	Vit. B6 (mg)	Vit. E
0.08±0.02	0.12±0.00	42.13±0.02	629.93±0.04	2.83±0.25	0.78±0.04

CONCLUSION AND RECOMMENDATION

Brillantasia nitens leaf extract had high moisture but were low in protein, ash, fat and carbohydrate. Further studies will be necessary to establish its role in health and general wellbeing of humans.

REFERENCES

1. Khan, M. A., Hussain, A., & Khan, S. (2019). Phytochemical and Pharmacological Studies on Brillantasia nitens Lindau. Journal of Pharmacognosy and Phytochemistry, 8(1), 154-160.
2. A.O.A.C, (2010). Association of Official Analytical Chemist, Official Method of Analysis. 18th Edition Washinton D.C. USA.

PF5

Nutrient Composition and Sensory Evaluation of Cake Produced from Composites of Wheat and Breadfruit Flours

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KEYWORDS: *Flours, Bake, Cake, Dessert*
HIGHLIGHTS:
- *Cakes made from composites of wheat and breadfruit were acceptable*
- *Cake made from the composite where comparable to cake made from just wheat*

BACKGROUND AND OBJECTIVES:

Cakes are delightful and enjoyable baked foods that are usually sweet and can be consumed at home or served during special ceremonies. Cakes are typically baked desserts with ingredients, including flour, sugar, shortening, baking powder, eggs, flavourings, nuts, chocolate, and dried fruits. Flour is a fundamental component when making cakes [1]. The availability of wheat is limited in certain regions due to variations in climate and soil types [2]. As a result, these areas rely on importing wheat to meet the increasing demand for cakes and baked foods. This poses a significant challenge for bakers, as production costs rise due to total reliance on wheat importation, leading to higher prices for baked foods [2]. In this study, the potentials of flour blends of wheat and breadfruit in the production of cake were evaluated as a way of mitigating the problems associated with the economic implication of over-dependence on wheat flour for baking, The main aim of this study was to determine the nutrient composition and acceptability of cake produced from composites of wheat and breadfruit flours.

MATERIALS AND METHODS:

The raw materials, wheat (Tritium spp) and unripe breadfruit (Artocarpusaltilis) processed into fine flours, granulated sugar, vanilla essence, margarine, eggs, baking powder, and powdered milk used for this study were all purchased from Ogige Market, Nsukka, Enugu State Nigeria. Cakes were prepared using the following ratio of wheat to Breadfruit combination: WB1 – Control (100% wheat); WB2 70:30; WB3 - 60:30; WB4 - 50:50 and WB5

– 30:70. A 9-point Hedonic scale was used to determine the sensory properties and general acceptability of the cakes. Twenty panellists involving undergraduate students selected from the Departments of Nutrition and Dietetics the University of Nigeria Nsukka participated in testing the samples. Nutrient composition (proximate composition, vitamins and minerals) was determined using standard laboratory procedures according to AOAC. Data generated were analyzed using the Statistical Software SPSS V. 21 (Statistical Product for Service Solution). Results were presented as means and standard deviation, analysis of variance and Duncan New Multiple Range Test was used for separate and compare means respectively.

RESULTS AND DISCUSSION:

The result of the study showed that WB4 (50% Wheat, 50% Breadfruit) ranked (8.0) the same as the control but higher than the other test samples in terms of general acceptability. This could be attributed to it ranking higher than the other samples for other sensory characteristics. The Proximate composition showed that crude protein was highest in WB5 (30% Wheat; 70% Breadfruit), Carbohydrate ranged from 55.17%-50.19%, Ash ranged from 1.38%-1.03%, Crude fat 7.58%-3.39%, Crude fibre 11.23%-5.39%) and Moisture (19.85% -16.43%). Vitamin analysis showed that Ascorbic acid was highest in WB5 (19.80 mg/100g), Thiamin was highest in WB1 (1.21 mg/100g), Beta-carotene was highest in WB4 (2.10 mg/100g). Mineral composition showed that Iron was highest in WB1 (1.76 mg/100g), Calcium and Sodium were highest in WB5 (8 mg/100g and 7.72 mg/100g respectively).

Table 1: Proximate composition of the cake samples (g/100g)

Samples	Crude protein	Ash	Crude fat	Moisture	Carbohydrate	Crude fibre
WB1	11.76 ± 0.00^{a}	1.07 ± 0.01^{b}	3.39 ± 0.01^{a}	19.85 ± 0.00^{e}	52.70 ± 0.05^{b}	11.23 ± 0.04^{e}
WB2	13.14 ± 0.12^{b}	1.38 ± 0.00^{c}	5.49 ± 0.02^{b}	16.43 ± 0.04^{a}	55.17 ± 0.13^{d}	8.39 ± 0.02^{d}
WB3	14.06 ± 0.06^{c}	1.35 ± 0.01^{c}	5.22 ± 0.02^{c}	17.50 ± 0.03^{b}	53.69 ± 0.16^{c}	8.18 ± 0.04^{c}
WB4	14.72 ± 0.03^{d}	1.35 ± 0.04^{c}	6.24 ± 0.01^{d}	17.64 ± 0.03^{c}	52.61 ± 0.14^{b}	7.44 ± 0.04^{b}
WB5	$16.43+0.03^{e}$	$1.03+0.01^{a}$	$7.58+0.03^{e}$	$19.38+0.03^{d}$	$50.19+0.07^{a}$	$5.39+0.02^{a}$

CONCLUSION AND RECOMMENDATION

Composites of wheat and breadfruit flours showed great potential for making cakes in terms of nutritive and sensory properties. A ratio of 50:50 is ideal for combining both flours.

REFERENCES

1. Adegbanke, O. R. and Ayomiposi, A. R. (2019). Physical, chemical and sensory properties of cakes produced from wheat flour enriched with Bambara Groundnut Flour. Annals of Food and Nutrition Research, 1(1): 1-6.
2. Wujun, M. (2019). Wheat Gluten Protein and its Impacts on Wheat Processing Quality. Frontiers of Agricultural Science and Engineering, 6(3): 279-287.

PF8

Bioactive Compounds, Amino and Fatty Acid Composition of Asystasia gangetica (Mmeme): a wild vegetable consumed in Cross River State, Nigeria.

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KEYWORDS: Bioactive Compounds, amino, fatty acids, wild vegetable.

HIGHLIGHTS
Asystasia gangetica (Mmeme)
Contains appreciable amounts of Bioactive compounds, amino and fatty acids
Due to the bioactive and amino acids contents of the vegetable, it strongly recommended for wide consumption

BACKGROUND/ OBJECTIVE
Asystasia gangentica is a wild vegetable that belongs to the family Acanthaceae Waugh and Grant (2018). The leaves are consumed by the people of Cross River and Akwa Ibom States. As a wild edible green leafy vegetable, it grows in unattended or uncultivated places all over the world in many different climate zones. It is a leafy food that is nutritious to incorporate into meals and salads from time to time. Consuming this wild vegetable is a great way to obtain phytonutrients (bioactive) compounds found in plants WHO (2020). The objective of the study was to determine the bioactive compound, amino and fatty acid composition of Asystasia gangentica.

Plate 1: Image of Asystasia gigantica leaves. (Source: Australian National Botanic Gardens (2002))

METHOD:
Experimental research design was adopted for this study. Phytochemical analysis for glycosides, flavonoids, phenols, saponins, and were done using standard procedures of the dried, powdered leaves for its bioactive compounds as described by Senguttuvan et al., (2014). Amino and fatty acids compositions were also done using standards procedures as highlighted in AOAC (2005). phytate

RESULT:
The bioactive composition of the leaves revealed flavonoids (3.40±0.06), saponins (3.17±0.09), phenols (2.97±0.07), glycoside (2.54±0.0), alkaloids (2.30+0.06) and B-CAROTENOIDS (432.14±0.01) while total oxalate (142.4±0.01) and phytate (135.44±0.01) were the predominant anti-nutrients. The C16:3 (18.90±0.01), was the most predominant kind of saturated fatty acid while the glutamic acid (13.48±0.01), aspartic acid (9.49±0.00) and leucine (8.42±0.01) were in high level according to hierarchy.

CONCLUSION/RECOMMENDATION:
The results obtained showed that the leaves of Asystasia gangentica contain appreciable amounts of bioactive, amino and fatty acids. It is thus recommended that the nutritive, therapeutic and pharmacological benefits of these leaves be utilized for the good health of individuals.

REFERENCES

- Association of Official Analytical Chemist (AOAC) (2005). Chromatographic determination of amino acid in food journal of AOAC
- Senguttuvan, J, Paulsamy, S and Karthika, K (2014). Phytochemical analysis and evaluation of leaf and root

parts of the medicinal herb, Hypochaeris radicata L. for in vitro antioxidant activities. Asian Pac J Trop Biomed.; 4(Suppl 1): S359–S367. DOI: 10.12980/APJTB.4.2014C1030
- Waugh, A and Grant, A (2018). Ross & Wilson: Anatomy and Physiology in Health and Illness. 13th ed Elsevier, London
- World Health Organization (WHO) (2020). Healthy diets, nutrition and the prevention of chronic disease. WHO Technical Report Series 916, Report of a Joint WHO/FAO Expert consultation, World Health Organization, Geneva, 88
- Australian National Botanic Gardens (2002). Integrated Botanical Information System (IBIS) Australian National Botanic Gardens Australian National Herbarium (Accessed; 29th of August 2023)

OF9

Physicochemical and Sensory Properties of Cereal-legume based Whole Cereals

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KEYWORDS: food-to-food fortification, cereal-legume, whole cereal, acceptability
HIGHLIGHTS
- *Processing methods improved protein and vitamin C composition of cereals*
- *Food-to-food fortification produced acceptable plant-based whole cereals*

BACKGROUND AND OBJECTIVES:
Consumption of whole cereal is crucial due to considerable amount of nutrients they provide in addition to reducing risk of heart diseases and diabetes by 20-30% [1]. Moreover, sustainable healthy eating guideline, recommends high and regular consumption of whole grains, legumes, nuts, fruits and vegetables [2]. The study was designed to investigate physicochemical and sensory properties of cereal-legume based whole cereal produced through food-to-food fortification.

MATERIALS AND METHODS
Two kilogram (2kg) each of raw sorghum (sg), yellow corn (yc) and soybean (s) was cleaned fermented (24-48 hours), boiled (20-45 minutes) and dried at 600C in an oven. Groundnut (g) was toasted over a low gas heat for 20 minutes while dates was cleaned, washed and dried. Processed samples were ground into flour and stored in airtight plastic containers. Six samples of whole cereals representing YCSGD-A(50sg:30sy:10g:10d),YCSGDB(35sg:35sy:10g:20d),YCSGD-C(30sg;30 sy:20g;20d)SSGD-D(50yc:30sy:10ycg:10d),SSGD-E(35yc:35sy:10g:10d),SSGD-F(30g;30 sy:20g;20d) were formulated through food-to-food fortification. Samples were subjected to physicochemical (pasting, proximate, anti-nutrientand microbial) analysis following standard scientific procedures. Thirty (30) trained and semi-trained taste panel members organoleptically evaluated the samples on a 9-point hedonic scale rating.

RESULT
Protein composition of cereals ranged from8.4 -15.7g (YCSGD) and 15.6- 18.2g (SSGD)similar to the range previously reported [3].Vitamin C content ofsamples ranged from27.05-38.43g (YCSGD) and 25.32- 31.65g (SSGD), higher than the range previously reported [4]. The observed low phytate (0.06-0.21g), oxalate (0.16-0.38g), tannin (0.59-0.8g) and saponin (1.27-2.16 g) composition of samples could be attributed to processing methods (fermentation and boiling) applied.

Table 1a. Protein and Phytochemical composition of whole cereals

Sample	Parameter					
	Protein (g/100g)	Vit. C (g/100g)	Phytate (g/100g)	Oxalate (g/100g)	Tannin (g/100g)	Saponin (g/100g)
YCSGD-A	8.4	38.43±0.03	0.21±0.02	0.16±0.02	0.65±0.03	2.15±0.01
YCSGD-B	14.9	29.41±0.03	0.17±0.01	0.26±0.03	0.59±0.03	2.16±0.02
YCSGD-C	15.7	27.05±0.01	0.1±0.01	0.13±0.01	0.66±0.01	2.21±0.01
SSGD-D	15.6	31.85±4.35	0.13±0.01	0.38±0.02	0.51±0.01	1.27±0.01
SSGD-E	16.3	27.25±0.02	0.19±0.01	0.26±0.02	0.8±0.02	1.53±0.02
SSGD-F	18.2	25.32±0.03	0.06±0.00	0.24±0.01	0.69±0.01	1.41±0.01
P Value	0.07	0.06	0.121	0.178	0.183	0.172

*Significant at $p \leq 0.05$.*Whole cereal samples: YCSGD-A(35yc:35sy:10g:20d); YCSGD-B(50yc:30sy:10g:10d); YCSGD-C(30yc:50sy:10g:10d);SSGD-D(35sg:35sy:10g:20d);SSGD-E(50sg:30sy:10g:10d);SSGD F(30sg:50sy:10g:10d)

CONCLUSION AND RECOMMENDATION

Fermentation and boiling processing methods improved protein, vitamin C, pasting and sensory properties of whole cereals, while drastically reducinganti-nutrient composition of samples. Therefore, a combination of fermentation and boiling processing methods are recommended in food-to-food fortification for production of less toxic and affordable plant base foods.

REFERENCES

Lee, S.H., Lee, H.S., Lee, J., Amarakoon, D., Lou, Z., Noronha, L.E and Smolensky, D. (2021). Polyphenol containing sorghum brans exihibit an anti-cancer effect in Ape Min/+mice treated with dextran sodium sulfate. International Journal of Molecular Science. 22(15), 8286

FAO.WHO (2019).Sustainable Healthy Diets. FAO; Rome, Italy: WHO; Geneva

Gwer, J. H., Igbabul, B. D., and Ubwa, S. T. (2020). Micronutrient and Antinutritional Content of Weaning Food Produced from Blends of Millet, Soya Beans and MoringaOleifera Leaf Flour. European Journal of Agriculture and Food Sciences, 2(5).https://doi.org/10.24018/ejfood.2020.2.5.88

OF14

Evaluation of the Nutritional Value and Acceptability of Milk Produced from Plant-based Sources

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KEYWORDS: low-fat milk, Tigernut, soybean, Coconut, Nutritional value

HIGHLIGHTS

Plant-based milk is richer in minerals compared to cow milk

The milk derived from the plant products had protein and fat similar to commercial milk

BACKGROUND AND OBJECTIVES:

The global rise in an epidemic of non-communicable diseases has necessitated the current dietary trend geared

towards low-fat, low-cholesterol, and low-saturated-fat diets [1], such as low-fat milk, skimmed milk, and plant-based milk. Plant-based milk has the potential to replace animal milk as it is cheaper, suitable for people with lactose intolerance, and vegan. It could be helpful in combating obesity, diabetes, cardiovascular diseases, and other metabolic diseases. The aim of this study was to assess the nutritional value and acceptability of milk produced from plant products.

MATERIALS AND METHODS:
Tigernut (Cyperus esculentus), Coconut (Cocos nucifera), and Soybean (Glycine max) were purchased from a local market. These samples were sorted, washed, soaked, milled, and filtered to remove the chaff. The nutritional quality of milk obtained from the Tigernut, coconut, and Soybean was analyzed using standard AOAC methods, while the sensory evaluation of the milk samples was conducted using a 9-point hedonic scale. The collected data were analyzed with the Statistical Software SPSS V. 21 (Statistical Product for Service Solution). The results were presented as means and standard deviations, with analysis of variance and the Duncan New Multiple Range Test used to separate and compare means, respectively.

RESULTS AND DISCUSSION:
Tigernut milk had the highest amounts of crude protein (3.4 g/100g), crude fat (2.68 g/100 g), and calories (54.35 Kcal). The three milk samples' crude protein and fat compositions were comparable to those of commercial Peak milk (3.4 g/100g and 3.6 g/100g, respectively). In addition, plant-based milk contained higher amounts of magnesium and zinc compared to Peak milk. Tigernut milk had more vitamins A, B1, B2, and D compared to coconut and soy milk. Conversely, soy milk had higher amounts of calcium (85.66 mg/100g), magnesium (51.66 mg/100g), potassium (113.66 mg/100g), zinc (2.84 mg/100 g), and phosphorus (63.85 mg/100g) than tiger nut and coconut milk. The sensory result revealed that coconut milk had the highest sensory scores for colour, appearance, taste, flavour and aroma and had the best general acceptability with a score of 6.99. This score was higher than the general acceptability score for Peak milk (6.6). The protein content of soy milk was also similar when compared with that of cow milk (3.2 g/100 g) and goat milk (3.1 g/100 g), according to USDA (2015), while that of tiger nut milk (3.4 g/100g) was higher than both animal milk sources in the study. Another study [2] reports the protein content of cow and goat milk at 4.09 g/100g and 3.55 g/100 g, respectively, which is comparable to tigernut milk and soy milk in this study.

Table 1: Proximate composition (g/100g) of Tigernut milk, Coconut milk, and Soy milk

Parameters	Tigernut milk	Coconut milk	Soy milk	Peak milk*
Crude protein	$3.4^{c}\pm0.041$	$2.8^{a}\pm0.046$	$3.21^{b}\pm0.03$	3.4
Crude fat	$2.68^{b}\pm0.018$	$2.51^{a}\pm0.02$	$2.57^{a}\pm0.012$	3.6
Crude fibre	$0.40^{a}\pm0.015$	$0.41^{a}\pm0.017$	$0.51^{b}\pm0.012$	
Ash	$0.71^{a}\pm0.012$	$0.69^{a}\pm0.020$	$0.81^{b}\pm0.018$	-
Moisture	$88.65^{a}\pm0.014$	$90.2^{c}\pm0.024$	$89.76^{b}\pm0.012$	87.7
Carbohydrate	$4.15^{c}\pm0.013$	$3.39^{b}\pm0.043$	$3.13^{a}\pm0.009$	4.7
Total Energy (Kcal)	$54.35^{c}\pm0.225$	$47.37^{a}\pm0.312$	$48.50^{b}\pm0.204$	65

CONCLUSION AND RECOMMENDATION
Plant kinds of milk are rich in calcium, zinc, potassium, phosphorus, magnesium, and vitamins B1 and B2. Hence, they can help address micronutrient deficiencies in children. However, further research is needed to ascertain the best processing and preservation methods in order to improve their keeping quality and shelf-life

REFERENCES
1. FAO (2012) Milk availability trends in production and demand and the medium-term outlook Food and Agriculture Organization, United Nations Retrieved from

OF15

Assessment of Households food security in Gabari Community of Zaria local government area, Kaduna State.

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KEYWORDS: food security, assessment, household

BACKGROUND AND OBJECTIVE

The concept of food security is defined as including both physical and economic access to food that meets people's dietary needs as well as their food preferences. Food insecurity, on the other hand, is a situation of limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways [1]. According to Global food security [2], nearly a billion people across the world experience the effects of food insecurity. The aim of this study is to determine food accessibility and coping strategies among households within Gabari community in Zaria LGA, Kaduna State.

METHODOLOGY

Research Design: A cross-sectional descriptive survey design was used to undertake the study of investigating food accessibility and coping strategies among households in the Gabari community, Zaria LGA. This design considered the use of a semi-structured questionnaire as the research instrument. The sample size determined using Fisher's formula was 26 households.

Data Analysis: The data collected was analyzed using descriptive statistics and the result was presented as Mean ± Standard Deviation.

RESULTS AND DISCUSSION:

Table 1: Household Dietary Intake of Respondents in Gabari Community, Zaria LGA, Kaduna State

Item	More than a week ago		Less than a week ago		Never taken		Do not know		Total	
	F	%	F	%	F	%	F	%	F	%
Vegetable	10	38.5	16	61.5	0	0	0	0	26	100.0
Meat	23	88.5	3	11.5	0	0	0	0	26	100.0
Chicken	26	100.0	0	0	0	0	0	0	26	100.0
Fish	19	73.1	7	26.9	0	0	0	0	26	100.0
Diary product	11	42.3	10	38.5	5	19.2	0	0	26	100.0
Egg	19	73.1	5	19.2	2	7.7	0	0	26	100.0
Bread	6	23.1	20	76.9	0	0	0	0	26	100.0
Tea	6	23.1	20	76.9	0	0	0	0	26	100.0
Rice	1	3.8	25	96.2	0	0	0	0	26	100.0
Butter	17	65.4	9	34.6	0	0	0	0	26	100.0

F = Frequency

The result of the dietary intake of the household was represented in Table 1. It reveals that the majority (100%) of the respondents consume chicken more than a week, while (7.7%) of the respondent has never taken an egg, the result further reveals that (61.5%) consume vegetable less than a week with (19.2%) of the respondents never taken dairy products. Furthermore (76.9%) of the respondents take bread and tea less than a week with (96.2%) of the respondents consuming rice less than a week. This variation in food consumption patterns is due to either their sociodemographic characteristics or other intrinsic factors.

CONCLUSION AND RECOMMENDATION: In conclusion, all the households selected have variations in their

food intake, however, all households have diversity in their food intake which indicates some level of food security.

REFERENCES

- *Abu, G.A., and Soom, A, (2016). "Analysis of Factors Affecting Food Security in Rural and Urban Farming Households of Benue State, Nigeria. International Journal of Food and Agricultural Economics, 4(1): 1-14.*
- *Global Food Security (GFC) (2020). The food security challenge., Retrieved 27th September 2020. URL:* https://www.foodsecurity.ac.UK.challenge.

OF16

Preparation and Nutritional Evaluation of Enriched Jam Made from Blends of Apple, Strawberry and Grapes.

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Keywords: Jam, Fruits, Proximate Composition and sensory evaluation.

Highlights

Jam produced had a good shelf life.

Jam produced had nutrient content higher than the commercial controls.

Jam produced from sample A was the most preferred in overall acceptability..

BACKGROUND AND OBJECTIVES:

Fruits are of great importance in human nutrition [1]. They are only available while they are in season and can deteriorate quickly due to ripening. [2]. Jam is a shelf-stable food made of fruit pulp, pectin, and sugar that has been heated into a gel [3]. The aim of this study is to prepare an acceptable jam from blends of Apple, Strawberry and Grapes.

MATERIALS AND METHOD:

Two samples of Jams were produced from blends of Apple, Strawberry and Grapes in the following ratios 30:20:10:40 (A= 30g apple, 20g strawberry, 10g grapes and 40g of sugar) and 35:10:15:40 (B= 35g apple, 10g strawberry, 15g grapes and 40g of sugar) respectively. The pulp mixtures were combined with 40g of sugar. Mixed fruit jam and strawberry jam were used as Commercial control labelled as sample C and D respectively. Standard methods were used for the determination of proximate composition, sugar content, phytochemical constituents and sensory evaluation of the Jams.

RESULTS AND DISCUSSION:

The proximate composition indicated that sample A (15.31±0.12) and B (16.86±0.03) had a moisture content lower than the Commercial control C (27.05±0.03) and D (27.60±0.45). Results of the ash, fiber and lipid contents showed no significant difference in the jams produced and the commercial controls. Sample A and B had higher protein 27.58±0.02 and 29.41±0.01 as compared to the commercial controls C and D (24.62±0.02 and 25.15±0.01). Sample A and B had higher carbohydrates level than the commercial controls. The sensory evaluation revealed that sample A which comprises of 30% apple, 20% strawberry, 10% grapes and 40% sugar was rated best in terms of color, odour taste, aroma, texture and overall acceptability.

Table1 Proximate Composition of Jam Produced from blends of Apple, Strawberry and Grapes (%)

Sample	Dry Matter	Moisture	Ash	Lipid	Fibre	Protein	CHO
A.	41.69±0.01^{a}	15.31±0.12^{d}	3.87±0.00^{b}	9.02±0.06^{c}	1.58±0.01^{c}	27.58±0.02^{b}	42.64±0.08^{a}
B.	43.14±0.03^{b}	16.86±0.03^{c}	3.28±0.00^{a}	9.09±0.05^{ab}	1.63±0.00^{b}	29.41±0.01^{a}	38.93±0.03^{b}
C.	72.95±0.03^{c}	27.05±0.03^{b}	3.26±0.24^{d}	9.27±0.14^{c}	1.54±0.00^{d}	24.62±0.02^{d}	35.01±0.08^{c}
D.	72.40±0.05^{d}	27.60±0.45^{b}	3.65±0.01^{c}	9.37±0.08^{a}	1.69±0.01^{a}	25.15±0.01^{c}	32.54±0.04^{d}

Values are mean± SEM. Values with different superscript along the column are significantly different (P< 0.05)
Key: A= 30g apple, 20g strawberry, 10g grapes and 40g of sugar, B= 35g apple, 10g strawberry, 15g grapes and 40g of sugar, C= Commercial control 1(mixed fruit jam), D= Commercial control 2 (strawberry jam)

Table 2 Showing the Results of the Sensory Evaluation of Jam Produced from Apple, Strawberry and Grapes (%)

Sample	Colour	Odour	Taste	Texture	Overall appearance
A.	8.71±0.17^{a}	7.86±0.030^{a}	8.52±0.30^{a}	8.76±0.23^{b}	9.43±0.15^{c}
B.	7.57±0.22^{a}	7.71±0.17^{a}	7.90±0.21^{a}	7.52±0.33^{a}	8.14±0.13^{b}
C.	7.67±0.27^{a}	6.52±0.19^{a}	6.62±0.23^{a}	5.14±0.30^{b}	7.43±0.27^{c}
D.	7.43±0.31^{a}	7.43±0.27^{a}	5.00±0.40^{b}	5.43±0.36^{b}	5.52±0.42^{b}

Values are mean± SEM. Values with different superscript along the column are significantly different (P< 0.05)

Key: A= 30g apple, 20g strawberry, 10g grapes and 40g of sugar, B= 35g apple, 10g strawberry, 15g grapes and 40g of sugar, C= Commercial control 1(mixed fruit jam), D= Commercial control 2 (strawberry jam).

CONCLUSION AND RECOMMENDATION:
The findings from this study revealed that apple, strawberry and grapes could be used in the preparation of quality jam. Prepared jam from sample A (30g apple: 20g strawberry: 10g grapes: and 40g of sugar) had the highest in terms of proximate composition, sugar contents and sensory evaluation. It is recommended that the amino acid content and shelf life be determined.

REFERENCES
•*Adebayo, F.O and Abdus Salaam, R.B. (2019). Jam Making and Packaging in Nigeria, Sub-Sahara Africa A review. African Journal of Food Science and Technology. (ISSN: 141-5455) Vol. 10(1), 5-10.*
•*Nafisah, S, Konadu, L., and Kafui, S.E. (2020). Production and Acceptability of Jam Produced from Pineapple, Watermelon and Apple Blends. Journal of Nutrition and Food Sciences. 2(6), 321-325.*
•*Moshiur, R. (2018). Preparation of Strawberry Jam and Estimation of its*

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Food security, nutritional status and dietary Practices among students of michael okpara University of agriculture umudike, Abia state Nigeria.

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KEYWORDS:food, food security, anthropometric status, nutritional status, dietary practices, students
HIGHLIGHTS:
15.1% and 11.3% were food insecured and underweight respectively. Majority (89.9%) of the respondents skipped meals. There was relationship between monthly income and meal skipping as well as monthly income and food availability (p<0.05).

BACKGROUND:
Food insecurity among students is a critical issue and it is hard to be noticed because most of the students try to hide such problems and are ashamed to talk about these kinds of issues [1]. Majority of students rely on food procurement and this affect food accessibility, which causes food insecurity among students and encourages the adoption of unhealthy dietary patterns [2].

OBJECTIVE:
This study was designed to investigate the food security status, dietary practices and nutritional status among

students of Michael Okpara University of Agriculture Umudike, Abia state, Nigeria.

METHODOLOGY:

A cross sectional and descriptive study was carried out on 432 students of Michael Okpara University of Agriculture Umudike. The students were selected using simple random sampling. Socio-economic/demographic data and dietary practices data were obtained using questionnaire. Food security status were assessed using U.S Adult Food Security Module while the nutritional status was determined using Anthropometric measurement. The data collected was sorted and analyzed statistically using SPSS (Statistical Package for Social Science). Data was presented in frequencies, percentages, means and standard deviations. Correlation was used to assessed relationships between socio demographic/economic characteristics and dietary practices.

RESULTS AND DISCUSSION:

The result revealed that 58.6% of the students had monthly income and expenditure less than 30,000 were 58.6% while 37.3% had 31,000 to 50,000. Based on Dietary practices, majority (89.9%) of the respondents skipped meals and out of the 89.9% that skip meal 69.4% skipped lunch and 69.9% of respondents skipped meal because they could not afford it. The study also revealed low consumption of vegetables and fruits among respondents of which about 69.7% and 71.3% consumed vegetables and fruits once a week. The level of food security and insecurity status among the respondents and from the result, it was observed that 35.4% of the respondents were highly food secured, 48.4% of the respondents were marginal food secured, 10.2% were Low food insecured while 4.9% had very low food security. Result from the Body mass index of the respondents revealed that 11.3% were underweight, 72.9% were normal weight, 17.8% of the respondents were overweight while 3.9% were in obesity grade one. Results from the waist hip ratio of the respondents revealed that 97.5% of the respondents were normal while 2.5% are at risk. The study's findings indicated a substantial correlation between the respondents' body mass index, monthly income, monthly expenditure and their sex. Result revealed that there was a substantial correlation between monthly income and skipping meals ($p<0.05$).

Table 1: anthropometric status of students

Variables	Male		Female		Total	
Body mass index	**F**	**%**	**F**	**%**	**F**	**%**
Underweight	32	10.6	17	13	49	11.3
Normal weight	234	77.7	81	61.8	315	72.9
Overweight	29	9.6	22	16.8	51	11.8
Obesity class I	6	2	11	8.4	17	3.9
Obesity class II	0	0.0	0	0.0	0	0.0
Obesity class III	0	0.0	0	0.0	**0**	0.0
Total	**301**	**100**	**131**	**100**	**432**	**100**
Waist Hip Ratio						
Normal	298	99	123	93.9	421	97.5
At risk	3	1	8	6.1	11	2.5
Total	**301**	**100**	**131**	**100**	**432**	**100**

Table 2: Levels of food security and insecurity among the respondents

Food security grade	Scores	F	%	Mean ± SD
High food security	0	153	35.4	1.06 ± 0.04
Marginal food security	1-2	209	48.4	1.16 ± 0.22
Low food security	3-5	44	10.2	1.27± 0.15
Very low food security	6-10	21	4.9	1.32 ± 0.09
Total		432	100	1.10 ± 0.16

Table 3: relationship between socio-demographic/economic characteristics and food security of the respondents

Variables	Age	Monthly income	Monthly expenditure	Skip meal	Food availability	Worried of no food
Age	1					
Monthly income	0.051	1				
Monthly expenditure	0.012	0.533	1			
Skip meal	-0.011	0.165**	0.203**	1		
Food availability	0.076	-0.067	-0.117*	-0.248**	1	
Worried of no food	0.034	0.055	0.082	0.169**	0.061	1

CONCLUSION:

The study also demonstrated that there is a significant relationship between monthly expenditure and skipping meals. The likelihood of food availability and anxiety over running out of food were both significantly correlated with skipping meals ($p<0.05$). Based on the study's findings, it was recommended that awareness should be

raised to educate and sensitize leaders and experts in the field of nutrition as well as the general public on every aspect related to access, availability, preparation, and utilization to satisfy individual physiological needs.

REFERENCES
Afolabi, W.A.O., Towobola, S.K., Oguntona, C.R.B. and Olayiwola, I.O. (2013). Pattern of fast foods consumption and contribution to nutrient intake of Nigerian university students. International Journal Education and Research, 1 (5).
Cady, C. (2014). Food insecurity as a student issue. Journal of College and Character, 15(4): 265–272. doi:10.1515/jcc-2014- 0031.

OF18

Effect of Anthocyanin on Cognitive Performance

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KEYWORDS: anthocyanin, cognitive performance
HIGHLIGHTS
Anthocyanin decreases brain oxidative stress, neuro-inflammation, and degeneration

BACKGROUND AND OBJECTIVES: Anthocyanin is a class of water-soluble flavonoids present in some plants such as fruits and vegetables. Several factors can affect the content of anthocyanin in food sources, including cultivar variety, ripeness stage, processing methods, and storage conditions [1]. For instance, exposure to light and heat can cause the degradation of anthocyanin while low pH may promote their pigment stability. Foods such as black beans (Akidi), onions, red apples, berries, and grapes are good sources of anthocyanin. Cognitive performance encompasses multiple mental abilities that can be categorized into various domains, such as attention and psychomotor speed, memory, and executive function [2]. The objective of this review paper is to evaluate the effect of anthocyanin on cognitive performance.

MATERIALS AND METHOD: Ten papers that studied the effect of anthocyaninoncognitive performance were identified and reviewed.

RESULTS AND DISCUSSION: Recent studies have shown that increased dietary intake of anthocyanin is associated with improved cognitive performance particularly memory recall ability, processing speed, decision-making, and creativity among others, especially in older adults with mild cognitive impairment (MCI) [3]. The mechanism of action in anthocyanin improving cognitive performance is related to the capability of anthocyanins to decrease brain oxidative stress, inflammation, and degeneration [4]. The antioxidant and anti-inflammatory properties of anthocyanin help to neutralise free radicals produced during neuro-inflammation and fight against oxidative and nitrosative stress [4].

Table 1: Clinical Study Characteristics

Author (year)	Study Population	Intervention	Antho Dose	Study Span	Sample size	Mean age	Cognitive domain
Krikorian (2010)	Older adults with MCI	Blueberry juice	428-598 mg	12 wks	9	76	Memory
Miller (2018)	Healthy older adults	Freeze-dried blueberry powder	230 mg	90 Days	18	68	All
Watson (2019)	Healthy young adults	Blackberry juice	115.09mg	2 hrs	9	23	Attention & psycho
Whyte (2016)	Healthy children	Freeze-dried blueberry powder	127 mg; 254 mg	6 Hrs	21	9	All

CONCLUSION AND RECOMMENDATION
To maximize the intake of these beneficial compounds it is vital to incorporate a varied diet rich in colourful fruits and vegetables, especially for children, to improve their learning abilities in school and for the elderly to prevent and manage cognitive decline related to old age. I recommend that fruits that are not locally available, should be grown with pots to improve the availability and intake of anthocyanin food sources.

REFERENCES
1. Khoo, H. E., Azlan, A., Tang, S. T. & Lim, S. M. (2017). Anthocyanidins and anthocyanins: Colored pigments as food, pharmaceutical ingredients, and the potential health benefits. Food Nutr. Res. 61:136-179.
2. Harvey, P.D. (2019). Domains of cognition and their assessment. Dialogues Clin. Neurosci., 21: 227–237.
3. Ahles, S., Joris, P. J. & Plat, J. (2021). Effects of Berry Anthocyanins on Cognitive Performance, Vascular Function and Cardiometabolic Risk Markers: A Systematic Review of Randomized Placebo-Controlled Intervention Studies in Humans. International Journal of Molecular Sciences, 22: 6482.
4. Di Filippo, M., Chisserini, D., Tozzi, A., Picconi, B. & Calabresi, P. 2010. Mitochondria and the link between neuroinflammation and neurodegeneration. Journal of Alzheimer's Disease, 20: S369–S379.

SUB-THEME G: ENCOURAGING INNOVATION AND ENTREPRENEURSHIP IN THE FOOD INDUSTRY TO PROMOTE HEALTHY FOOD OPTIONS.

OG1

Nutrition profile and Functional properties of cereal-tuber flour blends

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KEYWORDS: Cereals, tubers, composite flour

HIGHLIGHTS
- *Flour samples have similar fat, ash, and carbohydrate content.*
- *Flour samples had good functional properties.*

BACKGROUND AND OBJECTIVES:
Local yam flour meal (Amala) is a major staple food consumed among the Yoruba tribe in Nigeria (1). Although tubers are major staples and rich sources of energy, they are relatively poor sources of other major nutrients (2). Cereals are rich in nutrients such as carbohydrates, vitamins, minerals, and phytonutrients (3). Despite the nutritional richness of these crops, they remain underutilized. This study formulated and determined the functional properties and nutritional profile of flour blends of cereals (maize, millet, and sorghum) and tuber (cassava).

MATERIAL AND METHOD:
Cereal grains: maize (Zea mays), millet (Pennisetumglaucum), sorghum (Sorghum bicolor) and cassava tubers were purchased from Molete market in Ibadan, processed and milled. The milled grains and tubers were mixed in different proportions (90%grain and 10% cassava, 80%grain and 20% cassava) and assayed for their functional properties and nutritional profile using standard methods.

RESULTS AND DISCUSSION
Millet with 20% cassava flour had significantly higher oil absorption and solubility index compared to other samples ($p<0.05$) while there was no significant difference in the water absorption, swelling capacity, and bulk

density of the other samples (Table 1). There were no significant differences in the fat, ash, and carbohydrate content of the different flour samples (p>0.05) (Table 2). However, the protein and fibre content of samples with lower cassava proportions (20%) was higher (protein: 11.08±0.44- 12.87±0.44, fibre: 0.67±0.00- 0.78±0.00) compared to the samples with 30% cassava flour (protein: 10.51±0.44- 12.48±0.44, fibre: 0.64±0.00- 0.76±0.00). The protein and fibre content of the controls (100% maize, 100% millet, and 100% sorghum) were significantly higher than the composites.

Table 1: Functional properties of composite flours

Samples	Oil absorption (%)	Water absorption (%)	Swelling capacity (%)	Bulk density (g/ml)	Solubility index
A1	72.33±0.58^{b}	107.67±4.16^{a}	9.42±0.19^{bc}	0.66±0.01^{a}	24.93±0.23
A2	70.00±1.00^{ab}	114.67±3.06^{bc}	9.34±0.45^{bc}	0.65±0.04^{a}	28.00±0.40
B1	69.33±1.12^{a}	116.67±2.31^{bc}	10.37±1.36^{c}	0.66±0.03^{a}	27.73±0.46
B2	86.33±1.12^{e}	118.67±1.53^{bcd}	9.99±0.29^{c}	0.68±0.02^{ab}	34.53±0.46
C1	84.33±2.31^{de}	113.00±1.00^{ab}	8.37±0.84^{ab}	0.63±0.00^{a}	33.73±0.92
C2	82.67±2.08^{d}	113.67±5.03^{b}	7.96±0.60^{a}	0.64±0.01^{a}	33.07±0.83
D1	77.67±1.53^{c}	124.00±2.00^{d}	9.74±0.66^{c}	0.71±0.01^{bc}	31.07±0.61
D2	86.00±1.00^{e}	120.67±0.58^{cd}	7.66±0.27^{a}	0.72±0.02^{c}	34.40±0.40
D3	89.00±2.00^{f}	120.00±5.29^{cd}	9.96±0.15^{c}	0.67±0.02^{ab}	35.60±0.80

Mean values with the same superscript within the same column are not significantly different (p>0.05); composite samples flour proportion: A1-70maize:30cassava flour, A2-80maize:20cassava flour, B1-70millet:30cassava flour, B2-80millet:20cassava flour, C1-70sorghum:30cassava flour, C2-80sorghum:20cassava, D1-100%maize, D2-100%millet, D3-100%sorghum.

Table 2: Proximate composition of flour samples

Samples	Moisture (%)	Fat (%)	Protein (%)	Ash (%)	Fibre (%)	Carbohydrate (%)
A1	5.50±0.87^{ef}	3.00±0.00^{a}	10.51±0.44^{a}	2.50±0.87^{bcde}	0.64±0.00^{a}	77.85±1.77^{bc}
A2	5.67±0.29^{ef}	2.67±0.58^{a}	11.08±0.44^{c}	2.33±0.29^{bcd}	0.67±0.00^{c}	77.58±0.29^{bc}
B1	5.00±0.00^{de}	2.00±0.00^{a}	10.68±0.44^{b}	2.67±1.15^{cde}	0.65±0.00^{b}	79.00±1.11^{b}
B2	4.00±.50^{c}	2.33±0.58^{a}	12.39±0.44^{d}	3.37±0.32^{e}	0.75±0.00^{d}	77.16±0.35^{bc}
C1	5.17±0.76^{de}	2.67±1.16^{a}	12.48±0.44^{e}	1.50±0.00^{ab}	0.76±0.00^{e}	77.43±0.75^{bc}
C2	6.33±0.29^{f}	2.33±0.58^{ab}	12.87±0.44^{f}	2.50±0.00^{bcde}	0.78±0.00^{f}	74.18±0.73^{a}
D1	2.67±0.29^{b}	4.67±1.53^{bc}	14.54±0.44^{i}	3.07±0.40^{ce}	0.89±0.00^{i}	74.18±1.48^{a}
D2	4.33±0.76^{cd}	3.33±0.58^{ab}	13.31±0.44^{g}	1.20±0.26^{a}	0.81±0.00^{g}	77.01±1.50^{bc}
D3	1.17±0.29^{a}	5.67±0.58^{c}	14.45±0.44^{h}	1.83±0.29^{abc}	0.88±0.00^{h}	76.01±0.29^{ab}

Mean values with the same superscript within the same column are not significantly different (p>0.05); composite samples flour proportion: A1-70maize:30cassava flour, A2-80maize:20cassava flour, B1-70millet:30cassava flour, B2-80millet:20cassava flour, C1-70sorghum:30cassava flour, C2-80sorghum:20cassava, D1-100%maize, D2-100%millet, D3-100%sorghum.

CONCLUSION AND RECOMMENDATION

Cereal and tuber flourblends for staple meals can possibly improve nutritional profile and economic importance of the crops in the food and nutrition security of its consumers.

REFERENCES

1. Ojo, M. A.; Ologunde, M. O.; Alabi, O. D.; Ohijeagbon, O. R.; Ojo, H. (2022). Evaluation of Cocoyam-Soybean Flour Blends and Sensory Properties of the Amala Dumpling. Agriculture and Food Sciences Research, 9(1): 44-49.

2. Ugwu, F. M. (2009). The potentials of roots and tubers as weaning foods. Pakistan Journal of Nutrition, 8(10), 1701-1705.

3. Sidhu, J. S., Kabir, Y., & Huffman, F. G. (2007). Functional foods from cereal grains. International Journal of Food Properties, 10(2), 231-244.

OG3

Proximate and sensory evaluation of swallow (stiff porridge) produced from composite flour blend of selected cereals/grains, legumes, tubers, and plantain flour for the Aged with Diabetes.

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KEYWORDS: Aged, Composite Flour Blend, Plantain, Millet, Sorghum, Stiff porridge.

BACKGROUND AND OBJECTIVES:
Aging is unavoidable but sadly it increases other forms of gastrointestinal disorders. Diabetic patients are challenged with what kind of food they will eat that will reduce monotony and give them variety (2 and 3). Hence this study seeks to develop and evaluatethe swallow (stiff-porridge) produced from composite flour blend of selected cereals/grains, legumes, tubers, and plantain flour.

MATERIALS AND METHOD
Millet, sorghum, and palm oil were bought from Port Harcourt town market.
Proximate analysis and Sensory evaluation: The proximate composition of the stiff porridge samples was determined using the official method described by (1). The sensory attributes of the stiff porridge were evaluated by 35 semi-trained panelists. The panelists rated their preference for each attribute of the samples on a 9-point Hedonic scale. The least score was 1 (dislike extremely) and the highest was 9 (like extremely). A criterion means of 5.0 was used to judge the attributes of the samples.

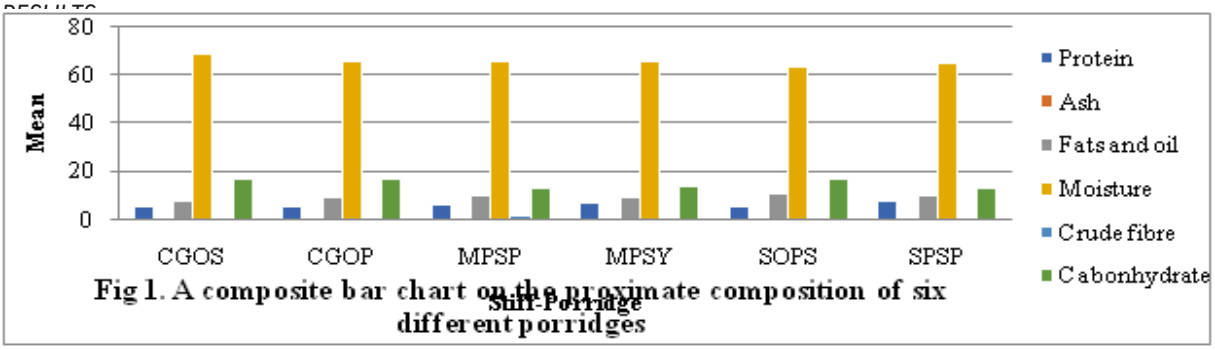

Fig 1. A composite bar chart on the proximate composition of six different porridges

The six samples had appreciable test acceptance for all the attributes except for millet that is not accepted for smell and colour.

CONCLUSION AND RECOMMENDATION
The study concludes that the use of selected composite flour blends from locally grown cereals/grains, legumes, and plantain to make stiff-porridges could add to the variety of foods (stiff-porridge) for the aged with diabetes that are always complaining of monotony of meals whenever hungry. The study therefore recommended among other things, the use of selected cereals/grains, legumes, tubers and plantain composite flour for the production of stiff-porridge for the aged.

REFERENCES
1. Edet, E. E., Onwuka, G. I. &Orieke, C. O. M. (2017). Nutritional properties of composite flour (blends of rice (oryza sativa), acha (digitaria exilis) and soybeans (glycine max) and sensory properties of noodles produced from the flour. Asian Journal of Advances in Agricultural Research 1(2): 1-13; Article no AJAAR.34429
2. Olapade, A., & Ogunade, O. (2014). Production and evaluation of flours and crunchy snacks from sweet potato (Ipomeabatatas) and maize flours. International Food Research Journal, 21, 203–208.
3. Adedeji, O. E.; Oyinloye, O. D. & Ocheme, O. B. (2014). Effects of germination time on the functional properties of maize flour and the degree of gelatinization of its cookies. African Journal of Food Science, 8,

PG5

A Review on the development of entrepreneurial Nichesin Food and Nutrition

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KEYWORD: Nutrition, Entrepreneurship, Niche.
HIGHLIGHT:

- *Nutrition Innovations was indicated*
- *New niches wasmentioned.*

BACKGROUND/OBJECTIVES: To give an in-depth explanation on the need of innovative and niche identification in Food and Nutrition entrepreneurship.
Entrepreneurship and the quest to explore opportunities has been raised to create a high value in the economy development[1]. In 2018, India's natural health food business was worth $3.8billion and 2023 it was $8.5billion[2] The food and nutrition sector comprises of different niches which can be used effectively by experts by developing innovative ideas that can help individuals to make healthy food options. Healthy consumers worldwide understand the essence of consuming nutritious foods and currently there's a shift towards healthy eating[3] However, there are some niches that are yet to be dominated by young graduates and inculcated in school curriculum to encourage young minds to have an endearing entrepreneurial spirit that will create employment and aid in addressing some nutritional issues by making healthy food choices, for example, Nutrition Journalism, Consultancy, healthy food Shoppers, Nutrition Chef, Social Nutritionist, Food Clinics and Nutrition bloggers.

METHOD: Data gotten from existing research work especially on Food Entrepreneurs in Scientific Journals.

RESULT/DISCUSSION: Result will be gotten from existing data on similar work carried out.

CONCLUSION/RECOMMENDATION: Healthy food choices, diversification of niches and having experts contributing immensely in solving poor food choice can help to improve the nutritional status of the population. I recommend experts not to overcrowd one niche rather discover new ones and work in collaboration to enhance right food choices while making profit.

REFERENCE
1. M.Estrada-Cruz A.Verdu-Jover, J.Gomez-Gras, J.Guouta(2019) Martinez Entrepreneurial Social Identity and Stakeholders: The Socio-economic Implications. Journal of enterprising communities: People and Place in the Global Communities, 14(1) (2019), pp, 128-144. 10.1108/jec-10-2019-0103.
2. Statista(2021):India-Natural Healthy Food Market Value 2014-2023.Statista.https://www.statista.com/statistic/1061734/India-naturally-healthyfood-market-value/
3. FReSH.(2018) Consumption Behaviour and Trends: Understanding the Shift required towards healthy sustainable and enjoyable diets. World Business corner for sustainable development https://docs.wbcsd.org/2018/07/FReSH-Consumption-Report.pdf

PG6

Evaluating the Effect of Preservation Methods on Proximate, Vitamin and MineralContent of Capsicum annum (Bell Pepper)

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HIGHLIGHTS

1. *The fresh bell pepper has significant high (P<0.05) moisture with least carbohydrate content than the other samples. The shed dried has the highest (P<0.05) composition of ash,fiber and protein as compared to the other three samples. The sun dried sample has significant amount of crude lipidwith the blanched samplehaving the least.*
2. *The mineral content of all the samples analyzed indicates no significant difference (P<0.05).*
3. *Vit. E of fresh sample was found to be higher (P<0.05) than the other samples. Shed dried and blanched sample has high (P<0.05) amount of vit. Cand A respectively.*

KEY WORDS: Bell Pepper, Preservation, Proximate analysis, Vitamin

BACKGROUND AND OBJECTİVES

Preservation of food has several objectives such as control of foodborne infections, spoilage of food, extending the shelf life as well as reduce financial losses [1,2].The Bell pepperalso known as sweet pepper, pepper or Capsicum is the fruit of plants in the Grossum cultivar group of the species Capsicum annuum. The study was aimed at comparing the effect of preservation methods nutrient composition of bell pepper.

MATERIALS AND METHOD

Some of the materials used in this research include; glass dishes, crucible, electric shaker, beaker, filter, oven, desiccator, furnace, volumetric flask etc. Freshly harvested capsicum annumwas purchased from Janguza Market, Kano State, Nigeria. The proximate composition was determined [3], vitamins [4] and minerals (AAS).

RESULTS AND DISCUSSION:

Proximate, Vitamin and mineral compositional analysis result, is presented in Table 1 and 2 respectively. Nutrient and other bioactive compounds of vegetables are affected by processing, storage techniques,time of exposure, temperature of processing method and this could result to nutrient denaturation [5].

CONCLUSION AND RECOMMENDATİON(S)

The various storage methods used in this research might be effective in preserving the nutrients as well as reducing the risk of spoilage and thereby increasing the shelf life of this vegetable.

Table1: Proximate Composition (%) of Processed Capsicum annum.

Sample	Moisture	Ash	C. Protein	C. Lipid	C. Fibre	CHO
Fresh	81.73±1.72^a	5.81±0.30^a	2.65±0.36^a	0.81±0.04^a	0.73±0.05^a	8.14±1.86^a
Sun dried	2.54±0.07^b	1.413±0.84^b	2.23±0.11^b	2.17±0.18^b	8.67±0.31^b	70.26±1.11
Shed dried	5.78±0.32^c	11.21±1.30^c	4.04±0.19^c	1.68±0.29^c	17.85±0.45^c	59.45±2.18
Blenched	42.03±1.78^d	3.21±0.32^d	2.30±0.20^d	0.45±0.08^d	0.39±0.04^d	51.61±1.24

Values are presented as Mean±Standard deviation, n=4. Values bearing different superscript in the same column are significantly different (P<0.05). C =crude, CHO= carbohydrate

Table 2: Vitamins (µg) and Mineral (ppm) Composition of Processed *Capsicum annum*

Sample	Vit A	Vit C	Vit E	Calcium	Iron	Potassium	Magnesium	Sodium	Zinc
Fresh	0.71±0.03^{a}	17.68±0.84^{a}	23.12±0.82^{a}	8.40±0.04	2.82±0.03	6.93±0.25	5.60±0.02	2.81±0.18	0.82±0.17
Sun dried	0.64±0.02^{a}	14.76±0.08^{c}	2.89±0.82^{b}	7.83±0.08	2.94±0.62	5.86±0.72	4.36±0.92	1.89±0.97	0.89±0.00
Shed dried	0.85±0.03^{a}	21.73±0.08^{b}	20.23±0.82^{c}	7.18±0.18	2.28±0.80	5.98±0.32	6.68±0.08	1.13±0.82	1.02±0.00
Blanched	2.02±0.44^{b}	16.73±0.08^{a}	17.05±1.23^{d}	8.68±0.19	2.39±0.70	5.39±0.03	5.52±0.16	2.46±0.40	0.91±0.02

Values are presented as Mean±Standard deviation, n=4. Values bearing different superscript in the same column are significantly different (P<0.05).

REFERENCES

1. *Pal, M. and Devrani, M. (2018). Application of Various Techniques for Meat Preservation. J Exp Food Chem, 4(1):134.*
2. *Pal, M. andMahendra, R. (2015). Sanitation in Food Establishments. First Edition, LAMBERT Academic Publishing, Saarbruchen, Germany.*
3. *AOAC. (2000). Offical Methods of Analysis. Association of official Chemists. 17th Ed. Washington DC. Association of official and Analytical Chemists: 234.*
4. *Pearson, D. (1970). The Chemical Analysis of Foods. 8th Ed. J and N Churchin. London.*
5. *Ahmed, J.A, Idris, R.I. and Markus, F.D. (2020). Proximate, Mineral and Vitamin Content of Flesh, Blanched and Dried Tomatoes (L.esculentum). AFSJI, 18(4):11-18*

PG7

Effect of Preservation Methods on Nutrient Composition of Silver Catfish (Genus bagrus)

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KEY WORDS: Silver catfish, Preservation, Proximatecomposition, Vitamin

HIGHLIGHTS

1. *The result of proximate analysis of silver catfish reveals significant high percentage (P<0.05) of moisture and protein in freeze sample. Canning was observed to constitute significant high (P<0.05) fat content. Carbohydrates level was found to be significantly high (P<0.05) in oven dried sample with salting methods having significant ash content.*
2. *The mineral analysis shows significant high levels of Fe and Zn in the salted sample, Mn (0.04±0.01) and K (38.86±0.45) in the smoked sample.*
3. *The oven dried, smoked and salted samples were found to have significant high amount of vitamin A (38.09±0.40), C (36.85±0.03) and E (13.51±0.49) respectively.*

BACKGROUND AND OBJECTİVES

Food preservation is the process of treating and handling food so as to stop or delay spoilage (loss of quantity, edibility or nutritional value) and thus, allow for longer storage[1,2]. Therefore, this research was aimed at evaluate the effect of different preservation methods on the nutritional composition of silver catfish.

MATERIALS AND METHODS

Proximate composition was determined according to AOAC [3], vitamin composition using Atomic Absorption Spectrometry[4] and mineral composition using UV/VIS Spectrometry[5].

RESULTS AND DISCUSSION:

The proximate analysis of silver catfish was evaluated (Table 1). The vitamin A, C and E composition were

analysed in oven dried, smoked, salted, canned, frozen and brined sample and the result was presented in (Table 2). The minerals analysed reveals insignificant levels of potassium and manganese, whereas significant difference was observed in the levels of iron and zinc in all the samples (Table 2).

CONCLUSION AND RECOMMENDATİON(S):
Based on this research, freezing was found best method of preservation. Blast freezing should be encouraged.

Table 1: Proximate Composition (%) of Processed Silver Catfish Using Different Preservation Methods

Methods	Moisture	Ash	C. Protein	C. Fat	CHO
Oven drying	4.88 ± 0.001^{d}	21.80 ± 0.01^{b}	19.69 ±0.00^{d}	6.80 ± 0.01^{c}	45.1± 0.01^{a}
Smoking	14.82±10.6^{c}	21.94±0.16^{b}	56.77±0.33^{b}	9.70±0.51^{b}	3.91±14.57^{d}
Salting	13.94±1.43^{c}	28.92±0.74^{a}	49.80±0.02^{c}	6.69±0.21^{c}	1.45±1.30^{e}
Canning	69.05±0.01^{b}	0.75 ±0.001^{d}	6.56 ±0.001^{e}	13.35 ±0.00^{a}	8.51±0.11^{b}
Freezing	78.17±0.92^{a}	6.37±0.40^{c}	2.11±0.78^{a}	10.21±0.16^{b}	6.42±2.03^{c}
Brinning	72.64±0.00^{a}	0.80±0.01^{d}	20.06±0.01^{d}	4.80±0.02^{d}	1.00±0.001^{e}

Values are presented as Mean±Standard Deviation, n=3. Values bearing different superscript across the columns are significantly different at (p<0.05). C= Crude, CHO=Carbohydrate

Table 2: Vitamins and Mineral composition of Processed Silver Catfish Using Different Preservation Methods

MTH	Vit. A (μ mol/L)	Vit. C (mg/L)	Vit. E (mg/L)	Iron (mg/L)	Manganase (mg/L)	Zinc (mg/L)	Potassium (mg/L)
OD	38.09±0.4^{a}	18.09±0.51^{c}	12.14±0.21^{b}	0.81±0.1^{b}	0.10±0.00^{d}	0.56±0.00^{c}	22.93±0.22
Smk	37.5±0.1^{b}	36.85±0.03^{a}	9.52±0.29^{c}	1.04±0.2^{c}	0.04±0.01^{d}	1.60±0.00^{b}	38.86±0.45
SLT	30.7±0.7^{d}	24.32±0.14^{b}	13.51±0.49^{a}	1.18±0.1^{c}	0.03±0.00^{d}	2.10±0.00^{b}	32.50±0.15
CNG	32.3±0.4^{e}	24.32±0.14^{b}	3.38±0.18^{e}	0.68±0.0^{b}	0.03±0.00^{d}	0.23±0.00^{c}	34.28±0.62
FZG	25.2±1.4^{f}	13.44±0.04^{e}	7.62±0.30^{d}	0.35±0.2^{b}	0.02±0.00^{d}	0.23±0.00^{c}	26.07±0.15
BRG	35.8±0.9	5.81±0.13^{f}	9.37±0.02^{c}	0.89±0.0^{b}	0.03±0.00^{d}	0.25±0.00^{c}	5.25±0.06

Values are presented as Mean±SD, n=3, superscript indicate significant different (P<0.05). MTH=methods, OD=oven drying, SMK=smoking, SLT=salting, CNG=canning, FZG=freezing, BRG=bri

REFERENCES

1. *Syeda, N. and Jahan, A.R. (2019). Assessment of proximate composition of oven dried Channapunctatus at three differerent temperature. IJFAS, 7(5), 311-314.*
2. *Ndife, J., Onyeiwu, S., Ubbor, S. and Ukor, I. (2022). Effect of curing methods on quality of hot smoked fish (Sardinapilchardus). Science World Journal, 17(2), 281-285.*
3. *Nursyah, F., Sharon, X. and Farida, A. (2022). A Comprehensive Review on the Processing of Dried Fish and the Associated Chemical and Nutritional Changes. Foods, 11(19), 2938.*
4. *Oboh, A. and Onoabhagbe, A.C. (2013). Effect of brine and vinegar on nutrient composition and shelf-life of dried catfish. GJBAHS, 2(3), 185-188.*
5. *Ogbe, K. and Omada, O. (2020). Comparative Studies on the Proximate Composition of the Body Part of C. gariepinus and S.scomrus. J. Appl. Sci. Environ. Manage.,24(4), 615-618.*

SUB-THEME H: STRATEGIES TO PROMOTE BEHAVIOR CHANGE COMMUNICATION FOR IMPROVED HEALTHY FOOD CHOICES.

PH1

Effect of Alcoholic Herbal Drinks and Beverages Consumption on students in Tertiary Institution of Osun State, Nigeria.

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HIGHLIGHTS:

The study centers on so many domains such as

1. *Alcohol consumption was associated with poor academic performance.*
2. *There is an inverse relationship between alcohol consumption and nutritional status.*
3. *Alcohol consumption is linked to malnutrition*

BACKGROUND AND OBJECTİVES:
Alcoholic herbs and beverages are major health concerns in developing countries [1], with Nigeria ranking second in per capita alcohol consumption and heavy episodic drinking in Africa[2]. This study assessed the effects of alcoholand herbal beverage consumption on students and herbal beverage consumption on students' academic performance and nutritional status, highlighting the growing concern over a "perfect storm" of alcohol availability and consumption

MATERIALS AND METHOD:
The study comprised individuals both young and old, ranging from low to high socioeconomic status. The cross-sectional study was carried out on students across some high institutions of learning in Osun State. Four hundred subjects were used, a simple random sampling method was used.Validated questionnaires containing different sectionsinclude, sociodemographic, characteristics, measurements of anthropometric, lifestyle, history of diseases, food frequency and Data analysis was carried out using SPSS version 25 software (SPSS Inc., IL, USA). Descriptive statistics including mean, frequency and standard deviation (SD) were determined for all variables.

RESULTS AND DISCUSSION:

Table 1 Nutritional status of the respondents taking alcohol

Brands	Frequency	Percent
Underweight	128	59.3
Normal	38	17.6
Overweight	7	3.2
Obesity I	43	19.9
Total	216	100.0

Table 2: Cumulative grade point aggregate (CGPA) of the respondents taking alcohol

CGPA	Frequency	Percent
Distinction (3.50-4.00)	-	-
Upper credit (3.00-3.49)	3	1.4
Lower credit (2.50-2.99)	72	33.3
Pass (2.00-2.49)	141	65.3
Total	216	100.0

The above table reviewed that 3(1.4%) of the respondents were in upper class, 72(33.3%) in the lower credit, 141(65.3%) had pass grade while none of them had distinction.

CONCLUSION & RECOMMENDATION:
The excessive and continuous consumption of all forms of alcoholic beverages may be a major factor to their bad academic performance as a result of absenteeism, forgetfulness, and lack of concentration in the class and during study because more than half of them had an ordinary pass. Government should regulate production and importation of alcoholic beverages to prevent malnutrition and diseases, which are directly associated with level of reasoning and cognitive retardation.
Key words: Alcoholic, Herbal drinks, Beverage, consumption

REFERENCES
1..National Institute on Alcohol Abuse and Alcoholism (2014). Alcohol facts and Statistics..Overview of alcohol consumption, 11:6 Available from: https://niaaa.nih.gov/alcohol.health/overview-alcohol-consumption/alcohol-facts-and-statistics.
2.WHO (2014). Alcohol and inequalities Guidance for addressing inequities in alcohol-related harm. Copenhagen: WHO Regional Office for Europehttps://Apps.who.int/iris/handle.

3.Owolabi E.O, Goon D.T, Adeniyi O.V, Seekoe E. (2017). Adult binge drinking: rate, frequency and Intensity in Buffalo city metropolitan municipality, South Africa. SA frFamPract. .https://www.aspenridgerecoverycenters.com/list of diseases caused by alcohol).

OH2

Identification of the drivers of food choice among households in Abia State

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KEYWORDS: Food choice, determinants, households
HIGHLIGHTS
- *Most of the respondents were female and within the 31-40 year age bracket*
- *Price, convenience, and sensory appeal were the most important drivers of food choice.*
- *Food choice was significantly related to age and household income.*

BACKGROUND AND OBJECTIVES:
Poor food choices are associated with all forms of malnutrition and diet-related non-communicable diseases [1]. Hence, there is a need for systemic research that contextually appreciates rural and urban determinants of food choice, to inform a leverage point for more targeted interventions in the promotion of healthier dietsand lifestyles, particularly in low- and middle-income countries (LMICs). Therefore, the purpose of this study is to identify the drivers of food choice among households in Abia State.

MATERIALS AND METHOD:

This study was a cross-sectional study that used a validated, structured questionnaire, including The Food Choice Questionnaire (FCQ) by Steptoe et al., (1995), in order to obtain data on respondents' motivations on food choice.

The study areas were Aba North and South; Umuahia North and South; and Ohafia Local Government Areas. The sample size for the three study areas was determined using the Taro Yamane (1973) formula. The sample sizes for each of the study areas were 400 respectively.

The study used a multi-stage sampling technique. In the first stage, 5 local government areas were purposively chosen to represent all three senatorial zones in Abia State. In the second stage, five communities were randomly selected by balloting without replacement. In the third stage, 40 households were randomly selected from each of the five (5) selected communities. This made up the total sample size of 400 households per senatorial zone and a total of 1200 respondents participated in the study.

RESULTS AND DISCUSSION:

Table 1: Factors affecting food choice

Variables	Not important at all (n (%))	A little important (n(%))	Moderately Important (n(%))	Very Important (n(%))
Convenience	309 (26)	257 (21)	447 (37)	168 (14)
Health	392 (33)	292 (24)	340 (28)	172 (14)
Mood	423 (35)	377 (31)	147 (12)	156 (13)
Natural Content	307 (26)	318 (27)	349 (29)	206 (17)
Weight Control	396 (33)	366 (31)	307 (26)	135 (11)
Familiarity	325 (27)	334 (28)	377 (31)	174 (15)
Ethical Concern	447 (37)	373 (31)	225 (19)	144 (12)
Price	309 (26)	222 (19)	398 (33)	260 (19)
Sensory Appeal	390 (33)	260 (22)	327 (27)	225 (19)

The finding of this study revealed that price (260) was the most important factor that determined the food choices of the respondents, and this agreed with the findings of Assefa et al. (2019) where price, convenience, and food quality are also important drivers of food choice. This is similar toother studies conducted by Kibr et al., (2019) and Melesse et al. (2019) (2). The result further revealed that sensory appeal (225), natural content (206) and familiarity (174) were also selected as the most important factors by the majority of the participants.

CONCLUSION AND RECOMMENDATIONS:

The drivers of food choice among households in Abia State as revealed by the study are price of food items; Convenience in food purchasing and preparation; Natural Content of the food and Health Concerns as identified by the participants. Therefore, different strategies and targeted interventions are necessary to create supportive food environments; promote sustainable food production; and improve and maintain healthy dietary intake.

REFERENCES:

[1] De Quadros, V. P. et al., (2022). Global trends in the availability of dietary data in low- and middle-income countries. Nutrients 14:2987.

[2] Melesse, M.B., de Brauw, A.,& Abate, G.T. (2019). Understanding urban consumers' food choice behavior in Ethiopia: Promoting demand for healthy foods: Intl Food Policy Res Inst; 2019.

PH7

Nutrition Education Model to improve the Nutritional knowledge of pupils and parents in selected Public Primary Schools in Akinyele Local Government Area Ibadan

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KEYWORDS: Nutrition Education, Knowledge, Parents, Pupils
HIGHLIGHTS

- *Before the intervention, the pupils and parents both in intervention and control group had poor knowledge of nutrition*
- *There was a significant increase in the nutritional knowledge of Pupils and Parents in the intervention groupafter intervention*
- *About more than half of both pupils and parents in the intervention group were able to retain the knowledge gotten one month after the post intervention program*

BACKGROUND AND OBJECTİVES:
Nutrition education serves as an effective tool for encouraging the improvement in dietary habits and behaviour of school aged children in elementary schools which makes promotive interventions in the early stage of life very crucial. Therefore, this study aimed at examining the extent to which a nutrition education model that involves both the pupils and their parents in selected public primary schools in Akinyele Local Government Area Ibadan could improve their nutritional knowledge

MATERIALS AND METHOD:
This was a quasi-experimental study conducted among 60 pupils within the age bracket 6-9 years and their parents from two selected public primary schools in a Peri-Urban Community in Akinyele local government area Ibadan. A total of 30 pupil-parent pairs were enrolled into the intervention group and were introduced to the Pupil-Parent Participatory Nutrition Education Model, while 30 pupil-parent pairs were enrolled in the control group without intervention. The baseline, end line and follow up knowledge on nutrition of both the pupils and their parents were assessed using a semi-structured questionnaire which was adopted from each of the modules in the PPP model, a total of 30 questions were asked and the knowledge scores were categorized into good and poor knowledge (less than 15 was poor knowledge while more than 15 was good knowledge) and the results were analyzed using the SPSS version 20 software. Descriptive statistics (mean and standard deviation) was used to find the frequency and inferential statistics (ANOVA test analysis) was used to find the mean scores of the baseline, endline and follow up groups at 95% confidence interval, $p<0.05$ was considered statistically significant.

RESULTS AND DISCUSSION:
The mean age of participants was 8 ± 0.81years and 8 ± 0.76 years for control and intervention groups respectively, the selected pupils were majorly in primary 1 and 2. Before the intervention, 23.3% of pupils in the intervention group and 13.3% of pupils in the control group had adequate nutritional knowledge while 50% of parents in the intervention group and 46.7% in the control group had good nutritional knowledge. After the intervention, the proportions of pupils in the intervention group increased significantly ($p<0.000$) to 97.2% while no significant improvement was recorded within the control group ($p=0.145$) and for the follow up which was used to assess their retention level after the intervention, shows that about 50% of the pupils in the intervention group were able to retain the nutrition knowledge after a month of the post-intervention program. Similarly, the proportion of parents in the intervention group with adequate nutrition knowledge increased significantly ($p=0.000$) from 50% (baseline) to 86.7% (end line) while no significant difference ($p=0.152$) in nutrition knowledge improvement was observed within the parent in the control group and about 66.7% were able to retain the nutrition knowledge after the post-intervention program.

Brief discussion on the implications of the results should be provided with references.
This study's post-intervention findings are consistent with a prior interventional study conducted among private primary school students in Ibadan, Nigeria, utilizing a similar nutrition education intervention paradigm (The PPP

model) (Falade et al., 2022). The study found that students who got the intervention had significantly improved their understanding, which lends support to the current study. Several other school-based interventional studies conducted among Africans (de Villiers et al., 2016; Jacobs et al, 2013; Vorster et al, 2013) and other parts of the world (Nyberg et al., 2015; Kipping et al., 2014; Neidere et al., 2009) school-going children reported the effectiveness of a well-planned and innovative school-based nutrition education program

Table I: Comparison in Mean Knowledge Scores Of The Research Group (Pupil and Parent)at Baseline, Endline and Follow Up

		N	Mean	Std. Deviation	F	Df	p-value
Research (Pupils)	Baseline	30	10.17	3.833	33.613	89	.000
	Endline	30	20.07	4.805			
	Follow-Up	30	14.47	6.174			
Research (Parents)	Baseline	30	14.27	2.982	9.575	89	.000
	Endline	30	18.20	4.080			
	Follow Up	30	16.43	3.245			

Table I reveals that a one-way ANOVA was done to compare pupils' and parents' mean scores of the research groups at baseline, endline and follow up. There was a significant difference in the scores of the pupils in the research group at baseline (10.17±3.833), Endline (20.07±4.805).and Follow Up (14.47±6.174) [f (89) = 33.613, p < 0.05]
There was a significant difference in the scores of the parents in the research groupat baseline (14.27±2.982), endline (18.20±4.080) and follow up (16.43±3.245). [f (89) = 9.575, p < 0.05]

CONCLUSION AND RECOMMENDATİON(S):
This study's findings indicate that majority of pupils and their parents had inadequate knowledge of nutrition and that this knowledge significantly (p<0.001) improved through the pupils-parent participatory nutrition intervention.This implies in summary that the PPP nutrition education model significantly enhanced the pupils and their parent nutritional knowledge in public primary schools in Akinyele Local Government Area.Based on the findings of this study, Implementation and sustainability of effective nutrition education programs in primary schools with the active involvement and participation of their parents could serve as a means of increasing nutrition knowledge. Also, the pupil-parent participatory nutrition education model should be adopted into the school's curriculum as a teaching aid/manual in primary schools.

REFERENCES

1. *Haghani S. Shahnazi H. Hassanzadeh A. (2017). Effects of tailored health education program on overweight elementary school students' obesityrelated lifestyle: a schoolbased ınterventional study. Oman Medical Journal. 32(2): 140–147.*
2. *Mamba N, Napoles L, Mwaka N. (2019). Nutrition knowledge, attitudes and practices of primary school children in Tshwane Metropole, South Africa. African Journal of Primary Health Care and Family Medicine. 11(1): a1846.*
3. *McHugh CA, Anderson L, Lloyd J, (2019) Influences on diet and physical activity choices of 11–13-yearolds in a school setting. Health*
4. *Qian L. Zhang F. Newman I.M. Shell D.F. Du W. (2018). Effects of selected socio-demographic characteristics on nutrition knowledge and eating behavior of elementary students in two provinces in China. BMC Public Health. 18 (21): 2-8.*
5. *Ruth, C.S.; Suriani, I.; Norliza, A.; Lim, P.Y.; Ibrahim, A.N (2020). Systematic review: Effect of health education intervention on improving knowledge, attitudes and practices of adolescents of malnutrition. Nutrients, 12, 2426.*

OH9

Association between cardiovascular diseases (Risk factors) and nutritional status among adults working in Bida, Local Government area (LGA), Niger state, Nigeria.

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INTRODUCTION

According to the world health organization, (1) cardiovascular diseases are the number one cause of death globally, more people die annually from these diseases than any other cause. An estimated 17.9 million people died from CVD in 2019, representing 32% of all global deaths, 85% were due to heart attack and stroke. Out of the 17 million premature deaths (under the age of 70) were due to non-communicable diseases in 2019 and 38% were caused by CVDs.The less developed countries of Africa suffer multiple burdens of disease as a result of rapid urbanization and the adoption of a Western lifestyle (2). Hence this study tends to evaluatethe association between cardiovascular disease risk factors and Nutritional statusamong adults working in Bida local government area (LGA), Niger State, Nigeria.

RESEARCH METHODOLOGY

Area of Study/Study Location: The study was conducted using adults working in Bida local government area (LGA), Niger State. Bida local government area is one of the local governments in Niger State. Furthermore, Bida is the second largest city in Niger state.
Sampling Technique: Systematic random sampling was adopted for selecting the respondents in the study area, Glenn formula was used to determine the sample size which is 227.
Study Design: Descriptive cross-sectional study was used to select subjects in the study area.
Data Analysis: Data collected were analyzed using descriptive statistics.

RESULTS AND DISCUSSION

Table 1: Association between Cardiovascular disease(Risk factors) and Nutritional status of the Respondents
Results in Table1; illustrate the association between cardiovascular risk factors and nutritional status (BMI) of the Respondents. The association between body mass index (BMI) and cardiovascular disease risk factors like family history was (x2=112.988 and the p-value was 0.000, chi= .706), alcohol (x2=95.866 and p-value = .000, chi= .650), smoking (x2=227.0009 and p-value = .000, chi= 1.000), activity at work (x2=96,886 and p-value = .000, chi= .651), systolic blood pressure (x2=390.643, p-value= .000, chi= 1.321), diastolic blood pressure (x2=238.661, p-value= .000, chi= 1.025) Therefore this result indicated that there is an association between cardiovascular diseases risk factors (CVD) and body mass index (BMI) of the respondents with strong statistical significance which equalled to the A-value or perfect.

Table 1 : Association between Cardiovascular Disease (Risk factors) and Nutritional Status (BMI) of the Respondents

CVD risk factors	Body mass index (BMI) indicators				X^2	p-value
	Underweight	Normal	Overweight	Obese		
Family history						
Yes	1	0	0	0		
No	1	112	75	38	111.99	.000
Smoking						
Yes	2	0	0	0		
No	0	112	75	38	227.01	.000
Alcohol						
Yes	2	0	0	0		
No	0	47	140	38	95.89	.000
Activity at work						
Sitting down	0	56	75	38		
Light activity	0	39	0	0		
Active activity	2	17	0	0	96.16	.000
Systolic blood pressure						
Normal	2	0	0	0		
Pre-hypertension/elevated	109	3	75	6		
Stage 1 hypertension	0	0	0	9	390.64	.000
Stage 2 hypertension	0	0	0	13		
Diastolic blood pressure						
Normal	2	109	0	0		
Pre-hypertension/elevated	0	3	20	0	196.60	.000
Stage 2 hypertension	0	0	55	38		
Obesity (WHR)	2	112	12	0	238.01	.000

Key: P-value = .000, X^2 = Chi-square

CONCLUSION

This study reveals that there is an association between nutritional status, physical activity level, lifestyle and occurrence of cardiovascular diseases. Hence, different behavioural risk factors of CVD havea significant association with nutritional status (BMI), it is recommended that positive changes in behaviourand lifestyle will havea positive impact on the nutritional status can CVD with other metabolic diseases.

REFERENCES

1. World Health Organization, WHO (2019) Cardiovascular disease fact sheets. Reviewed 2021 W H O https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases- (CVDS).

2. Hamid, S.; Groot, W.; Pavlova, M.(2019). Trends in cardiovascular diseases and associated risksin sub-Saharan Africa: A review of the evidence for Ghana, Nigeria, South Africa, Sudan and Tanzania. Aging Male 2019, 22, 169–176.

OH10

Nutrient Composition and Sensory Evaluation of Infant Food Produced from Maize, Soy bean and Tiger nuts.

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KEY WORDS: Exclusive Breast feeding, Knowledge,Lactating, Mothers, Prelacteal

ABSTRACT
INTRODUCTION:
Undernutrition remains a major problem as a result of suboptimal breastfeeding practices. Exclusive Breastfeeding practice helps to space children, reduces the risk of ovarian and of breast cancers and increases family and natural resources. This study was conducted to assess the mothers' knowledge and practice of exclusive breastfeeding among mothers.

METHODOLOGY:
This cross sectional study was conducted in Karu. Data were collected by interview method from 200 lactating mothers attending four (4) randomly selected government health facilities using redesigned questionnaire, information regarding socio-demographic profile, and breastfeeding practices was collected. The data was analyzed using Statistical Package for Social Sciences (SPSS) (Version 20.0). Tests were statistically significant at $p \leq 0.05$.
RESULTS AND DISCUSSION:
The majority (55.5%) of the respondents were between the age brackets of 21-30 years, 34.3% had National Diploma and 43.1% were self-employed. The result of the breastfeeding practice among respondents is shown in Table 1. Majority (65.7%) initiated breastfeeding within one hour of delivery. The prevalence of early initiation of breastfeeding of 65.7% was higher than 23% National figure (MICS, 2021) as well as the 44.5% Atimati and Adam (2020) in Edo State, Nigeria but much lower than the 78.5% reported by Awogbenja et al., (2022) in Paikoro, Nigeria. The different prevalence of early initiation of breastfeeding observed can be attributed to the influence of traditional socio-cultural factors obtained in the various areas of study which are dynamic and vary within and between regions. Early initiation is recommended because it contributes to prevention of stunting and promotion of a optimal growth, health and behavioural development among middle and low-income countries such as Nigeria. The prevalence of pre-lacteal feeding practice among respondents in this study was 39.2%. This finding is higher when compared to 11.7% reported by Atimati and Adam (2020) Benin City, Nigeria . The main reason given by the respondents for this practice include breast milk did not flow immediately (43.1%), mother not well, evacuation of menconium (7.8%), mother's breast was bad (7.8%), culture (4.9%) and to stop diarrhea. Prelacteal feeding practice are associated with higher risks of infection and hospital admission, less intake of nutritious breast milk which may results in reduced lactation, breastfeeding cessation and high incidence of undernutrition (Atimati and Adam, 2020).

CONCLUSION:
In conclusion, most of the respondents believed that exclusive breastfeeding is very important to the infants, for good health, growth and protect the child from infection, depicting good knowledge. It is recommended that Exclusive Breastfeeding Feeding (EBF) should be taken seriously and the government should organize program to provide adequate knowledge for lactating mothers in the urban and rural areas of the country so as to increase EBF practice among mothers.

Table 1. Exclusive Breastfeeding Practice by Respondents

Characteristics	No (%)	Chi-square	P -value
Who made major decision on how the baby is to be fed?			
Husband	12 (11.8)		
Myself (Mother)	72 (70.6)		
Mother in-law	3 (2.9)		
Grandmother	6 (5.9)		
Hospital staff	8 (7.8)		
Friends/Relations and Neighbour	1 (0.98)	217.882	0.01**
How soon after delivery did you start breastfeeding?			
Within an hour	67 (65.7)		
1-5 hours	17 (16.7)		
6-10 hours	7 (6.9)		
Third day	3 (2.9)		
Within 24 hours	2 (2.0)		
Second day	6 (5.9)	184.824	0.01**
What is usually the first thing (food/drink) you give to your baby after delivery?			
Plain warm water	11 (10.8)		
Glucose water	21 (20.6)		
Breast milk	62 (60.8)		
Honey	4 (3.9)		
Infant formula	2 (2.0)		
Herbal tea	2 (2.0)	158.588	0.01**
Who recommends the food/drinks given above?			
Myself (Mother)	47 (46.1)		
Hospital staff	23 (22.5)		
Mother in-law	14 (13.7)		
Grandmother	6 (5.9)		
Husband	1 (0.98)		
Peers (friends and Neighbors)	11 (11.7)	134.863	0.01**
Why was the baby given the food/drink above?			
Breast milk did not flow immediately	44 (43.1)		
Mother not well	11 (10.8)		
Baby not well	3 (2.9)		
To evacuate meconium	8 (7.8)		
It is our culture	5 (4.9)		
To stop diarrhea	3 (2.9)		
Mother's breast was bad	8 (7.8)		
Others	20 (19.6)	104.118	0.01**

REFERENCES

1. *Atimati AO, Adam VY. Breastfeeding practices among mothers of children aged 1–24 months in Egor Local Government Area of Edo State Nigeria South African. Journal of Clinical Nutrition. 2020; 33: 10-16.*
2. *Awogbenja MD, Osabo PO, Ojo CA, et al. Mothers' Feeding Practice and Nutritional Status of Infants in Selected Primary Health Care Center of Paikoro Local Government Area, Niger State, Nigeria. Nur Primary Care. 2022; 6(6): 1-8. MICS (2021)Multiple Indicator Cluster Survey 2021, Survey Findings Report. Abuja, Nigeria: National Bureau of Statistics and United Nations Children's Fund. .*

PH11

Insights from Capacity Building of Primary Education Actors in Bauchi State on Nutrition Education using Storytelling Approach

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KEYWORDS: Storytelling; Co-creation, Context-relevant, Nutrition education

HIGHLIGHTS

Storytelling approach is feasible in facilitating nutrition education for primary school pupils.
Co-creation of stories makes the process of story development faster and easier

BACKGROUND AND OBJECTIVES:

The importance of age-appropriate and context-specific scenarios in nutrition education is well known, yet the application is limited. Current efforts at promoting healthy dietary behaviour across all age groups in Nigeria include incorporating nutrition education into the primary education curriculum. Teachers remain strategic stakeholders in facilitating this nutrition education. However, capacity-building opportunities still need to be improved. Strengthening the system to support nutrition education at elementary schools is therefore imperative. To this end, USAID Advancing Nutrition conducted a workshop to build the skills and competencies of 26 basic education actors in Bauchi state through the use of storytelling in facilitating nutrition education. This report summarizes insights and outcomes of the capacity-building workshop.

MATERIALS AND METHOD:

A co-creation approach was adopted for the workshop. Twenty six participants were drawn from the three senatorial districts of Bauchi state, Bauchi State Universal Basic Education Board, Ministry of Education, and Ministry of Budget and Economic Planning. Presentations covered key nutrition concepts, storytelling as an education approach, and locally available nutritious foods. Participants shared experiences on dietary practices and changes over time with the consequences of such changes. Thereafter, participants worked in three groups to develop context-relevant, nutrition stories to support nutrition education at elementary school in the state.

RESULTS

Based on the outcome of the workshop, six (6) stories were developed, critiqued, and finalized with the following titles:

1. *"Magical Cereals Adventure" built around the use and consumption of biofortified maize, millet and rice to prepare "massa delight", "fura fusion" and "shinkafa surprise", respectively and their nutritional benefits.*
2. *"Medicinal Masara" to promote uptake, cultivation and consumption of yellow maize and roles in promotion of immunity and good vision.*
3. *Abolishing harmful food taboos and preparing "KununGyade" (groundnut pap) for complementary feeding to support optimal growth of infants.*
4. *"Nana and the secret of soya beans" to promote the increased consumption of legumes and preparation of healthy snacks from legumes*

5. *"Safiya and her mother Orange" which targets the promotion of the uptake and consumption of orange flesh sweet potato*
6. *"Safiya and Egg" promoting homestead egg production and consumption with its importance in human nutrition.*

The principal characters for the six stories were entirely local names like Binta, Fatima, Korijo, Nana, and Safiya. The implication of these stories as a tool in the promotion of behaviour change communication on healthy food choices was discussed.

CONCLUSION AND RECOMMENDATION(S):
Storytelling is an innovative approach in facilitating nutrition education for primary schoolpupils, and the adoption of co-creation approach hastens story development and assures context-relevance. The story telling approach should be adopted to deliver nutrition education for primary school levels in Nigeria.

SUB-THEME I: STRENGTHENING THE EVIDENCE BASE FOR EFFECTIVE MATERNAL, CHILD AND ADOLESCENT NUTRITION INTERVENTIONS

OI1

Nutrient Composition and Sensory Evaluation of Infant Food Produced from Maize, Soy bean and Tiger nuts.

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KEYWORDS: Malnutrition, Sensory attributes, Complementary foods
HIGHLIGHTS
- *Malnutrition can be prevented with the available, cheap food materials.*
- *Food supplementation is a good vehicle for managing malnutrition.*
- *The nutrient composition and acceptability of the produced products make them good complementary foods.*

BACKGROUND AND OBJECTIVE
Infancy and childhood are periods that deserve adequate nutrition, which is vital for proper growth and the assurance of a healthy adulthood (1). During infancy (6–24 months), children are fed high-nutrient diets as a complementary food. Protein-rich complementary foods produced from animal milk are good for infants, but due to the high cost of milk, low-nutrient foods are commonly used as complementary foods in developing countries for infants. Fortunately, malnutrition among infants can be prevented in developing countries using nutritious and cheap complementary foods from nutrient-dense locally available crops. This study was carried out to determine the nutrient composition and sensory properties of the locally available food products that can be used to produce nutrient-dense infant food.

MATERIALS AND METHOD
The infant food was formulated from different blends of maize, soy bean, and tiger nuts [A= Maize (90%) + soy bean (10%), B = soy bean (90%) + maize (10%), C = tiger nuts (90%) + maize (10%), D= maize (50%) + soy bean (30%) + tiger nuts (20%)]. The nutrient composition (2) and sensory attributes (3) of the formulated products were determined. All data obtained in this study were analysed using SPSS. Duncan's new multiple-range tests were used to compare and separate means. Significance was accepted at $p<0.05$

RESULT& DISCUSSION

The result of the nutrient composition of the food product showed that protein ranged from 10.72% (sample A) to 31.79% (sample B). The protein content is higher than that reported by Noah (4), who reported 10-15% protein in the samples. The variation may likely be as a result of the quantity of soybean used in the samples. Fat ranged from 5.40% (sample A) to 15.90% (sample B), Fibre ranged from 2.10% (sample A) to 16.98% (sample C), ash content ranged from 1.30% (sample A) to 3.40% (sample B), and carbohydrate content ranged from 39.81% (sample B) to 73.90% (sample A). Energy (kcal) was in the same range for the samples, while iron content (mg/100g) ranged from 1.41 (sample C) to 4.92 (sample B). Sensory evaluation results showed that the infant food containing 50% maize, 30% soybeans, and 20% tiger nuts had the most preferred attributes in terms of taste, flavor, and aroma, appearance and color, texture, and overall acceptability. The acceptability result is in line with the studies of Ezegbe et al.(5) and Bolarinwa et al. (1) that showed more than average of the panelists like the product sample.

Table 1: Nutrient composition of the complementary foods

Samples	A	B	C	D
Protein (%)	10.72±0.12	31.79±0.23	16.81±0.15	19.44±0.18
Ash (%)	1.30±0.02	3.40±0.05	3.00±0.03	2.55±0.04
Fat (%)	5.40±0.04	15.90±0.14	12.00±0.13	11.40±0.11
Fibre (%)	2.10±0.03	4.88±0.05	16.95±0.23	4.18±0.12
CHO (%)	73.90±0.32	39.81±0.21	48.30±0.24	57.93±0.26
Energy (Kcal)	3474.86	3177.82	3244.07	3629.35
Iron (mg/100g)	2.24±0.03	4.92±0.07	1.41±0.01	2.88±0.05

Values are mean of triplicate determinations. Within the same column are not significantly different (P > 0.05

Table 2: Sensory evaluation of the complementary foods

Samples	A	B	C	D
Taste	6.23±1.72	5.25±1.81	5.01±1.31	6.12±1.52
Aroma	6.65±1.51	5.10±1.22	4.55±1.62	5.73±1.41
Colour	6.60±1.28	7.20±1.42	4.30±1.41	5.40±1.36
Texture	6.90±1.53	6.35±1.29	4.86±1.42	4.95±1.53
Overall acceptability	7.20±1.51	5.40±1.42	6.53±1.51	5.60±1.53

Values are mean of triplicate determinations. Within the same column are not significantly different (P > 0.05)

CONCLUSION AND RECOMMENDATIONS

This study revealed that the infant food produced could improve the nutritional status of infants, thereby reducing the rate of malnutrition and macronutrient deficiency in children. There is need to carry out a study to determine the anti-nutrient properties of formulated food and also to create awareness about the food produced so that adequate nutrients needed for optimum well-being can be adopted.

REFERENCES

- *Bolarinwa, I.F Olajide, J. Oke, M. Olaniyan, S. Faromiki, O. (2016). Production and Quality Evaluation of Complementary Food from Malted Millet, Plantain and Soybean Blends. 7. 663-2229.*
  AOAC, (2012). Official Methods of Analysis (19th edition), Association of Official Analytical Chemists.
- *Nwakalor, C.N. Obi, C.D. (2014). Formulation and Sensory Evaluation of Sorghum Based Weaning Food Fortified with Soybean and Unripe Plantain Flour. International Journal of Nutrition and Food Sciences. vol. 3, no. 5, pp. 387-390.*
- *Noah, A. A. (2017). Nutrient Composition and Sensory Evaluation of Complementary Food Made From Maize, Plantain Soybean Blends. Int.J.Curr.Microbiol.App.Sci. 6(12): 5421-5428.*
- *Ezegbe, C. Agu, H. Ezeh, M. Anarado, C. Abah, C.R. Okocha, K. (2021). Quality Evaluation of Custard*

Produced from Blends of Sweet Potato and Corn Starch Enriched with Defatted Soybean. European Journal of Nutrition & Food Safety. 32-44.

PI2

Knowledge, Attitude And Practices Of Exclusive Breastfeeding Among Mothers In Ekpoma, Edo State

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KEYWORDS: Exclusive ,breast feeding ,Attitude, knowledge breastmilk.

BACKGROUND AND OBJECTİVES
Exclusive breast feeding is the practice of feeding the newborn just breast milk for the first six months of life, without any other sort of sustenance, not even water [4].Exclusive breastfeeding is now considered as a global public health goal that is linked to the reduction of infant morbidity and mortality and helping to control health care costs in the developing world[4].Knowledge is a powerful tool to practice,One of the main goals of antenatal and postnatal clinics is to broaden the knowledge of expectant and nursing mothers[2].Breastfeeding attitude refers to the level of mother's positive or negative beliefs regarding exclusive breastfeeding and the outcome evaluation of these beliefs. Attitude and knowledge of nursing mothers affects their practices of exclusive breastfeeding [3]

METHODS
Location of Study: The study was conducted at Ekpoma, Edo State. Ekpoma is a town in Edo State, Nigeria is Local Government is Esan West located in south-western Nigeria.
Target population: The study population consisted of, pregnant,lactating women, and nursing mothers who are residents of Ekpoma.

STUDY DESIGN:
A descriptive cross sectional design was used.
Sampling technique: The population sample comprised ofmothers who exclusive breastfeed in this area.
Ekpoma was purposively selected for this study. The sampling frame was drawn randomly from four communities in the town.

INCLUSION CRITERIA:
Study included allMothers who delivered within Ekpoma and whose infants are less than 6 months and up to two years of age and are healthy also willing to participate in the study.
Exclusion criteria: Excluded were the Mothers who are not residents of Ekpoma also with severely sick babiesalso not willing to participate in the study

INSTRUMENT FOR DATA COLLECTION
The instrument for data collection was questionnaire consisting of closed and open ended questions was used to generate useful information from the respondents. The questionnaire was divided into different sections for easy response and filling. The questionnaire was developed in a user friendly manner such that it can be self administered or interviewer administered by literate or illiterate respondents respectively. Data was collected through face to face interview and administered questionnaire

RESULT:
From this descriptive cross-sectional study of the knowledge, attitude and practices of exclusive breastfeeding among mothersshowsthat 93.6% of the mothers had heard about exclusive breastfeeding, 63.6% knew the duration was for the first 6 months of life and 60.8% knew breastfeeding should start immediately after delivery. Majority (95.6%) also knows the importance of exclusive breastfeeding. In addition, 77.6% agreed that exclusive

breastfeeding is better than artificial feeding, 68.4% agreed that breast milk alone is enough for a child for up to six months and 77.2% agreed exclusively breastfed children are healthier than non exclusively breastfed children. However, 63.6% of the mothers preferred to feed their babies breast milk alone for the first six months, only 30.4% had practiced exclusive breastfeeding for six months.

DISCUSSION AND CONCLUSION.
Our findings showthat the mothers have good knowledge and attitude, but the practice of exclusive breastfeeding was not as expected. Mixed feeding still seems to be more prevalent in Ekpoma, Edo state. This implies that the knowledge of exclusive breastfeeding does not necessarily translate into the practice.This suggests there should be more public awareness on exclusive breastfeeding through television, radio, newspaper and other mass media.

REFERENCES

1. *Maduforo A.Y, Ubah N.C, Obiako Okeke P.N (2019). The practice of exclusive breastfeeding by lactating women in Owerri Metropolis, Imo State, Nigeria. Glob Adv Res J Med Sci.*
2. *Branson B, Handsfield H, Lamp M, Janssen R, Taylor A, Lyss S, and Clark, JE (2020). Revised recommendations for HIV testing of adults, adolescents, and pregnant women in healthcare settings. Morbidity and Mortality Weekly Report.*
3. *Davis S.K, Stichler J.F & Poetler D.M (2020). Increasing exclusive breastfeeding rates in the Well Baby Population. Nursing for Women's Health. 16(6):*
4. *WHO(2018). Nutrition: Exclusive breastfeeding. Retrieved form WHO.WHA Global Nutrition Targets 2025: Breastfeeding Policy Brief 2018. http://www.who.int/nutrition/topics/globaltargets_breastfeeding_policybrief.pdf460-470 National institute of Child Health and Human Development (NICHD) 2022.*

PI4

Assessment of Nutritional Status of Under-Five Orphans in selected Orphanages in Enugu State

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KEYWORDS: Malnutrition, Orphans, Nutritional status, Protein Energy Malnutrition (PEM).

HIGHLIGHTS:
•Majority of the orphans did not meet up their energy requirements when compared to FAO/WHO standards.
•Most of the caregivers did not know about Nutrition Assessment

BACKGROUND AND OBJECTIVES:
Malnutrition in children under 5 years is a major problem in developing countries as it is the commonest cause of child mortality and morbidity.UNICEF, (2015) agrees that children living in orphanages worldwide are often present with nutritional deficiencies. The aim of the study is to assess the Nutritional status of under-five orphans in orphanages in Enugu state.

MATERIALS AND METHODS:
A cross-sectional descriptive study was conducted using 100 orphans (46 males and 54 females) aged between 0 – 5 years living in seven registered orphanages in the Enugu State of Nigeria. The subjects were purposively selected for the study and 10% of the sample was randomly selected for weighed food intake assessment. Anthropometric status was assessed using height, weight and mid-upper arm circumference. Nutrition-focused physical finding was used to assess the clinical features of the children. Dietary intake was determined using both a food frequency questionnaire and weighed food intake techniques.

RESULTS AND DISCUSSION:
The mean intake of nutrients of the children were compared with FAO/WHO recommended intake. About 21% of the children were underweight, 34% were stunted and 27% were wasted. These deficiencies were associated with poor feeding practices, low socio-economic status and income level per month (p<0.000).

Table 1: Anthropometric assessment of the children

Variables	Frequency	Percentage (%)
Weight – for – age (underweight)		
Severely underweight	8	8
Moderately underweight	13	13
Normal	79	79
Total	100	100
Length/height – for – age (stunting)		
Severely stunted	17	17
Moderately stunted	17	17
Normal	66	66
Total	100	100
Weight – for – height/ length (wasting)		
Severely wasted	13	13
Moderately wasted	14	14
Normal	73	73
Total	100	100
MUAC for age		
Normal	88	88
Sever	2	2
Moderate	10	10
Total	100	100

CONCLUSION AND RECOMMENDATION:
The study showed that Protein Energy Malnutrition (PEM) and micronutrient deficiency are of public health importance among children in Nigeria.Intensified Nutrition education should be directed at caregivers, health workers and managementof the orphanages as this will help improve the feeding practices, hygiene and nutritional status of the children.

REFERENCES:

[1] United Nations Children's Fund (UNICEF) United Kingdom. The Right Ingredients: The Need to Invest in Child Nutrition 2011 [cited 2015 Dec 2]. Available from: https://www.unicef.org.uk/Documents/Publicationspdfs/UNICEFUK_ChildNutritionReport2013w.pd

PI7

Assessment of infant and young child feeding awareness and application of infant and young child feeding practices of mothers with infants aged (0-24 months) in Nsukka Local Government area, Enugu state:

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KEYWORDS: Breastfeeding, complementary feeding, Indicators, infants.

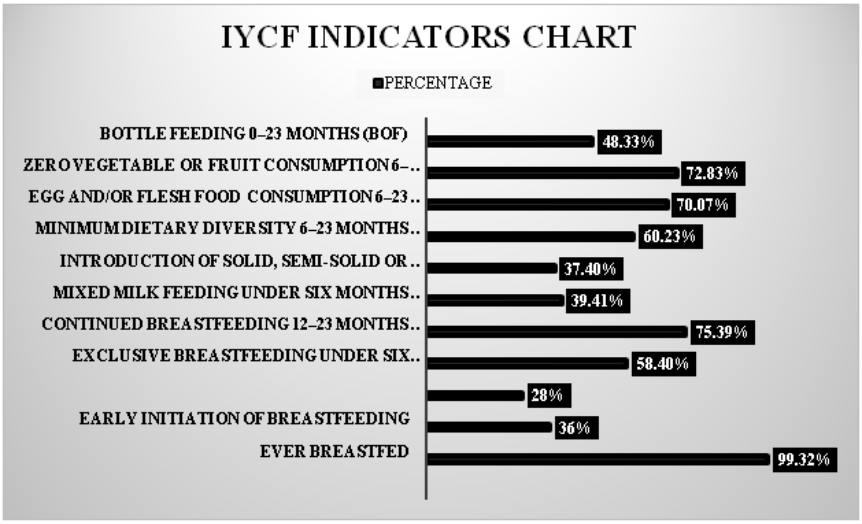
HIGHLIGHTS

Infant and young child feeding knowledge did not translate into practice.
BACKGROUND AND OBJECTIVES:
Poor infant and young child feeding practices are the most important direct factors responsible for under-five malnutrition and illness among children in most developing countries such as Nigeria, Kenya and India. Therefore, this study assessedknowledge and practice of mothers of infants (aged 0-24 months) on infant and young child feeding practices in Nsukka local government area, Enugu state.

MATERIALS AND METHOD:
The study adopted a cross sectional survey design. A total of 444 respondents were selected from three different health facilities in Nsukka urban using multi-stage sampling technique. Questionnaires were used to obtain information on the demographic characteristics of the respondents and infant and young child feeding(IYCF) guidelines was used to collect information on their practices with regards to infant feeding. Data obtained was coded and analyzed using the computer software package; Statistical Product for Service Solution, (version 21). Chi-square was used to define relationship among variables. Significance was accepted at $P < 0.05$.

RESULTS AND DISCUSSION:
The result showed that more than half (57.2%) of the mothers were within the age of 20-29 years old. Abouthalf (52%) knew that breastfeeding should start within one hour after birth,About 55% of the mothers knew the recommended duration of exclusive breastfeeding and when to introduce complementary foods, majority of the mothers could define both exclusive breastfeeding and complementary feeding. Only 30% of the respondents practiced exclusive breastfeeding up to six months. Majority (70%) reported to have given their children egg and/or flesh food while about 72.83% had zero vegetable or fruit consumption and only 48.33% used bottle for feeding.

FIGURE 1: Indicators for assessing infant and young child feeding practices.



Only 30% of the respondents practiced exclusive breastfeeding up to six months. This is higher than that reported by Ibrahim, Gboluwaga and Iliyasu (2019) where majority (91.1%) of the children were not exclusively breastfed and more than half (57.3%) were given prelacteal feeding in a rural community in Kano state, north-west Nigeria. Thirty-four-point five percent of the children who met the minimum dietary diversity score in this study is higher than the findings of Ariyo et al. (2021) who reported that 25.3% of infants and young children aged 6-24 months in Iseyin, Ibadan southwestern Nigeria met the minimum dietary diversity score.Majority of the mothers in this study had heard of exclusive breastfeeding and this was similar to the study by Ibrahim Gboluwaga and Iliyasu (2019) in a rural community of Kano state, northwest Nigeria as well as the study by Kalu and Ibe (2021) in Imo state.

CONCLUSION AND RECOMMENDATION:
Mothers in this study showed having a understanding of what some IYCF recommendations, it did not translate into practices.to strength this, implementing a multifaceted strategy that not only emphasizes the world health organizations IYCF guidelines but also incorporates tailored support mechanisms such as hands on training, interactive sessions and community based reinforcement activities. This approach could bridge the gap between theoretical knowledge and practical implementation,thereby enhancing the nutritional status and long term

outcomes of infants and young children.
REFERENCES:
1. *Ibrahim, U.A., Gboluwaga, A.T., &Iliyasu, Z. (2019). Mothers' feeding practices and nutritional status of infants in a rural community in Kano state northwest Nigeria. Journal of Tropical Medicine, 21, 93-99.*
2. *Ariyo, O., Aderibigbe, O.R., Ojo, T.J., Sturm, B. &Hensel, O. (2021). Determinants of appropriate complementary feeding practices among women with children aged 6-23 months in Iseyin, Nigeria. Scientific African, 13, e00848-E00858.*

OI10

Practices of Infant and Young Child Feeding (IYCF) among Caregivers of Malnourished Children in Institute of Child Health (ICH), Ahmadu Bello University Teaching Hospital, Zaria

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Key words:Malnutrition, IYCF, Children, Caregivers

BACKGROUND AND OBJECTIVES:
The first two years of the child's lifeprovide a critical window of opportunity to ensure survival,growth and development through optimum IYCF practices (1, 2 and 3). This study aimed to assess the practices of IYCF among Caregivers of Malnourished children Attending Institute of Child Health, ABUTH Zaria.

METHODOLOGY:
A descriptive, cross sectional study involved randomly selected 30caregivers with malnourished children (6–59 months). A semi-structured questionnaire was used to obtain information relating to socio-demographic characteristics, IYCF practices, factors affecting the feeding practices and other factors influencing child malnutrition. Relevant anthropometric assessments were measured using standards; bilateral pitting edema was checked.Descriptive statistics was used to analyze the data.

RESULTS/DISCUSSION:
Study revealed that 40% of the caregivers were within the age of 20-25years.Most (60%) and 33.3% were severely malnourished as classified by their Z-score and MUAC, respectively.Some (23.3%) initiated breastfeeding within 1hour of birthwhich is higher than the national,North Westand Kaduna state average of 19.2%, 13.3% and 5.7%, respectively (4). Only 30% and 23.3% of the mothers respectively practiced Exclusive breastfeeding consistent with (4) and timely introduction of complementary foods.

Table1: Socioeconomic profile, degree of malnutritionand feeding practices of the children

	Frequency	Percentage (%)
a) Age of the mothers/caregivers		
<20 years	8	26.7
20-25 years	12	40.0
26-30 years	6	20.0
Above 30 years	4	13.3
b) Total number of children in the household		
1 – 4	12	40.0
5 – 8	9	30.0
>8	9	30.0
c) Age of the child (months)		
6-12 month	13	43.3
13-23 months	11	36.7
>23 months	6	20.0
d) Birth weight of the children		
Don't know	21	70.0
<2.5kg	1	3.3
2.5 – 4.5kg	8	26.7
e) Current Weight For Age (WFH)		
Severe undernutrition	18	60.0
Moderate Undernutrition	5	16.7
Mild under nutrition	7	23.3
f) MUAC		
Severe undernutrition (<11.5cm)	10	33.3
Moderate Undernutrition (11.5 12.5cm)	12	40.0
Mild under-nutrition (>12cm)	8	26.7
g) Edema		
Present	6	20.0
Absent	24	80.0
h) Immunization		
Fully immunized for age	14	46.7
Not fully immunized for age	16	53.3
i) Breastfeeding initiation		
Can't remember/don't know	15	50
Within 1st hour	7	23.3
Between 2-4hours	5	16.6
After 4hours	3	10.0
j) Exclusive breastfeeding (0-6months)		
Yes	9	30.0
No	21	70.0
k) Age you introduced complementary foods		
<6th month	21	70.0
At 6th month	7	23.3
7th month and above	2	6.7
l) Age you weaned the child		
13 – 18 months	13	76.5
19 – 23 months	3	17.6
24 months and above	1	5.9

CONCLUSION/RECOMMENDATION:
IYCF practices is poor among the caregivers, there is need to intensify nutrition education and other strategies to curb malnutrition in the area.

REFERENCE

1. Black RE, Allen LH, Bhutta ZA, Caulfield LE, et al. (2008). Maternal and child undernutrition: global and regional exposures andhealth consequences. Lancet. 371:243–60.
2. WHO: Global strategy for infant and young child feeding, the optimal duration of exclusive breastfeeding, Provisional agenda item 13.1. 2001.
3. Jones G, Steketee RW, Black RE, Bhutta ZA, Morris SS. (2003). How many child deaths can we prevent this year? Lancet.362:65–71.
4. National Nutrition and Health Survey (NNHS) 2018.

PI11

Compositional Analysis of Breast Milk Samples of Some Nursing Mothers Resident in Artisanal Refining Community in Rivers State Nigeria

KEYWORDS: Artisanal, breast-milk, nutrients, nursing mothers

HIGHLIGHTS:

- Albumin, calcium, protein and magnesium were below the WHO reference range
- Potassium was within the WHO reference range
- Calcium was above the WHO reference range

BACKGROUND AND OBJECTIVES:
Human milk is the optimal source of nutrient for infants for the first 6 month of life. Breast milk provides core required nutrients which include proteins, lipids, carbohydrates and minerals for infant growth and development [1]. The nutritional status of the woman (before conception and gestation period) in addition to other factors influence the composition of breast milk.
Crude oil was discovered in the Niger Delta Region of Nigeria in 1956 with exportation of the product in 1959. The government and its subsidiary apparatus by law control all aspects of crude oil exploration and exploitation but recently there has been a lot of agitation over the failure of the progress made so far from the oil business of the country, to reflect on the socio-economic development and progress of the county, the environments and the residents of the oil producing communitiesleading to some rebellion by some locals in the Niger Delta region with their attendant environmental pollution. [2]. This has led todestruction of the farm lands and low food (both in terms of quality and quantity) production in those communities. This study was designed to carry out nutrient compositional analysis of breast milk samples of some nursing mothers resident in an artisanal refining community in Rivers State Nigeria to ascertain if the artisanal refining of crude oil has any effect on the quality of breast milk of nursing mothers residing in such a community.

MATERIALS AND METHODS:
Thirty (30) breast milk samples were collected from consenting nursing mothers who met the inclusion criteria and consented to the study, by self-milking with the nipples well inserted into the bottle after a proper wash. Laboratory analysis was conducted for specific nutrients such as total protein, albumin, minerals elements (calcium, potassium, chloride and magnesium), and lipids (total cholesterol, triglyceride, high density lipoprotein) using standard laboratory protocols [3,4].

RESULTS AND DISCUSSION:
The result obtained from this study showed that compared to WHO reference range values, across all the age groups the values of all the nutrients determined were below the normal reference ranges. Very significant of this observation is that of albumin and protein which were all below the reference range. The result is as shown in table 1. The implication of this is that the breast feeding mothers were deficient in these very important nutrient required for the growth and development of the infants and the well being of the mothers themselves.
Table 1: Concentration of Breast Milk Protein and Related Parameters of the Subjects with Reference Ranges in bracket under each parameter

Table 1: Concentration of Breast Milk Protein and Related Parameters of the Subjects with Reference Ranges in bracket under each parameter

Age Range	Albumin	Protein
(Years)	(35 - 52 g/L)	(66 - 83 g/L)
18-25	13.58 ± 3.29[a]	32.92 ± 7.24[a]
26-30	14.36 ± 1.63[a]	32.00 ± 3.58[a]
31-36	14.00 ± 2.00[a]	37.50 ± 5.00[a]
37 and above	13.33 ± 1.53[a]	30.67 ± 4.04[a]

Values are mean ± standard deviation (SD). Values in the same column with same superscript symbols are not significantly different at P<.05. Figures in bracket are the WHO reference range

Table 2: Plasma mineral Profile of the Breast Milk with Reference Ranges as shown in bracket under each parameter

Age	Calcium	Magnesium	Potassium	Sodium
Range	(2.2 - 2.6 mmol/L)	(0.7 - 1.1 mmol/L)	(3.5 - 5.5 mmol/L)	(135 -145 mmol/L)
(Years)	WHO refernce range	WHO refernce range	WHO refernce range	WHO refernce range
18-25	5.28 ± 0.88[a]	1.27 ± 0.17[a]	4.80 ± 0.47[a]	61.00 ± 7.22[a]
26-30	5.26 ± 0.93[a]	1.30 ± 0.20[a]	4.98 ± 0.29[a]	64.10 ± 11.66[a]
31-36	5.70 ± 1.37[a]	1.28 ± 0.21[a]	5.05 ± 0.50[a]	71.00 ± 10.98[a]
37 and above	6.37 ± 0.55[a]	1.50 ± 0.10[a]	4.93 ± 1.01[a]	55.33 ± 10.02[a]

CONCLUSION AND RECOMMENDATİON(S):

The outcome of this study has shown that the nutrient composition of the breast milk of nursing mothers who live in the artisanal community was of low quality when compared to WHO reference range. Since this study is the first of this nature in Nigeria we recommend the result of this study be considered in policy advocacy to assist the government and health organizations to promulgate policies that will help to tackle the menace and side effects of artisanal refinery.

REFERENCES

1. Ballard, O.; Morrow, A.L. (2013). Human milk composition: Nutrients and bioactive factors. Pediatric Clinics, 60:49–74. .
2. Naanen, B., & Tolani, P. (2014). Private gain, public disaster: social context of illegal oil bunkering and artisanal refining in the Niger Delta. Port Harcourt: Niger Delta and Environmental Relief Foundation Publication.
3. Nowotny, A. (1979). Protein Determination by the Biuret Method. In: Basic Exercises in Immunochemistry. Springer, Berlin, Heidelberg.
4. Kumar D, Banerjee D. (2017). Methods of albumin estimation in clinical biochemistry: Past, present, and future. Clinica Chimica Acta. 469:150-160.

OI12

Appropriate Complementary Feeding Practices and Associated Factors Among Mothers with Children 6-23 Months in Umuahia North L.G.A. of Abia State.

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KEYWORDS: Complementary feeding, Minimum dietary diversity, WHO.

HIGHLIGHTS:

- Appropriate complementary feeding was attained by only 43.1% of the children
- Minimum dietary diversity was 75%
- Appropriate complementary feeding was significantly associated with age, birth weight, EBF status, age of introduction of complementary foods, household income and mother's employment status
- Appropriate complementary feeding was significantly associated with maternal and child characteristics.

BACKGROUND AND OBJECTIVES:
In many developing countries, inappropriate feeding practices remain an impediment affecting a large number of children thereby impeding their growth and development [1]. Ensuring appropriate feeding serves as a panacea to promote adequate nutrition, growth and development and reduces the risk of mortality among children. The use of validated composite index to explore appropriate complementary feeding practices has been advocated. This study aimed to determine appropriate complementary feeding practices and associated factors among mothers with children 6-23 months in Abia State, Nigeria.

MATERIALS AND METHODS:
A cross sectional study involving 320 mothers with children aged 6-23months was conducted in Umuahia North LGA using multistage sampling technique. Household socio-demographic characteristics and complementary feeding practices were obtained using a structured, validated and pretested questionnaire. Appropriate complementary feeding indices was assessed using the 2008 WHO recommendations. Multiple logistic regression analysis was used to identify factors associated with appropriate complementary feeding practices at $p<0.05$.

RESULTS AND DISCUSSION:
More than half (51.9%) of the infants were females, 29.4% live in urban areas, 31.9% were first born and 57.3% had mothers with tertiary level of education. Slightly less than two thirds (63.1%) of children had timely introduction to complementary foods, 75% had minimum dietary diversity, 90.6% had minimum milk feeding frequency, while all the children (100%) met the minimum feeding frequency. Generally, appropriate complementary feeding was attained by only 43.1% of the children, contrary to lower values reported from studies in Nigeria children [2]. Appropriate complementary feeding was significantly associated with age, birth weight, exclusive breastfeeding status, age of introduction of complementary foods, household income and mother's employment status.

CONCLUSION AND RECOMMENDATION:
Appropriate complementary feeding practices was associated with both maternal and child characteristics, emphasizing the need to focus on these factors to improve child feeding practices and reduce malnutrition at this phase of the lifecycle.

Table 1: Association between appropriate complementary feeding practice and maternal and child characteristics

Variables	Univariate analysis		Multivariate analysis	
	OR (95% CI)	P value	AOR (95% CI)	P value
Sex of child				
Male	0.80 (0.51 – 1.24)	0.314	1.26 (0.58 – 2.71)	0.559
Female				
Age group of child				
6-11 months	0.57 (0.33 - 0.98)	0.041*	0.21 (0.08 - 0.51)	0.000*
12-18 months				
Birth weight				
<2.5kg	4.29 (0.50 – 36.61)	0.184	0.77 (0.04 – 13.52)	0.857
2.5 – 3.4	0.71 (0.45 – 1.11)	0.132	0.46 (0.21 – 0.99)	0.046*
3.5 and above				
Exclusive breastfeeding				
Yes	0.05 (0.02 – 0.09)	0.000*	0.03 (0.01 – 0.08)	0.000*
No				
Age of introduction of complimentary				
<6 months	7.89 (4.62 – 13.48)	0.000*	5.07 (2.07 – 12.45)	0.000*
>6 months				
Household income				
< N50,000	3.48 (1.66 – 7.29)	0.001*	17.74 (4.99 – 63.06)	0.000*
>N50,000				
Mother's age				
≤ 20 years	0.42 (0.11 – 1.52)	0.185	1.69 (0.17 – 16.63)	0.655
21- 35 years	1.27 (0.57 – 2.84)	0.560	4.90 (1.18 – 20.27)	0.028*
≥ 36 years				
Mother's occupation				
Unemployed	0.37 (0.17 – 0.81)	0.013*	0.07 (0.01 – 0.42)	0.003*
Employed				

REFERENCES

1. World Health Organization (2010). Indicators for assessing infant and young child feeding practices.
2. National Population Commission (NPC), (Nigeria) and ICF International, Nigeria Demographic and Health Survey 2013. 2014, National Population Commission and ICF International Abuja, Nigeria, and Rockville, Maryland, USA: NPC and ICF International

OI15

Prevalence of Postpartum depression among breastfeeding mothers in Ibadan, Oyo State.

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KEYWORDS: Postpartum depression, Breastfeeding, Breastfeeding Practices, Household Support

ABSTRACT
BACKGROUND AND OBJECTIVES:
Postpartum depression is a perinatal depressive disorder, it is a mood disorder condition that affects women who have just given birth (Guintivano et al., 2018). This study assessed the prevalence of postpartum depression among breastfeeding mothers in Egbeda and Ibadan North Local Government areas, Ibadan, Oyo State.
Materials and Method: A total of 360 mothers who had children between the ages of 0-12 weeks were selected for the study using a multistage random sampling procedure. Structured questionnaires were used to collect data on breastfeeding practices, and the Edinburgh Postpartum Depression Scale was used to determine postpartum depression. IBM SPSS version 27.0 was used for analysis.

RESULTS AND DISCUSSION
The result showed that the mean age of mothers was 28.91±0.576, 90.3% were married, and 61.9% had one under-five child. The majority (86.7%) had fewer than three children, and 56.9% of the respondents' children were younger than six weeks. The majority (99.4%) of the respondents were still breastfeeding. It shows that 45.8% intend to stop breastfeeding when the child is between 12 to 18 months old. The mean duration of the first breastfeeding episode was 1.86 ±0.72. About two-thirds (71.1%)of the mothers have been able to laugh and see the funny sides of things as much as they could: more than half (68.6%) of the respondents have been able to look forward with enjoyment to things as much as ever; some (6.7%) have been so unhappy that they have difficulty sleeping. Only (66.7%) percent have not felt sad or miserable; most of the respondents (83.6%) have never thought of harming themselves. However, only 18.6% of the respondents are depressed. There is, however, a significant association between the duration of the second breastfeeding episode and postpartum depression.

Result of the chi-square test analysis showing the relationship between postpartum depression and selected breastfeeding practices.

	Not Depressed (Freq 180)	%	Depressed (Freq 180)	%	P-value
Duration for second breastfeeding episode					
<=10	147	40.83	23	6.38	
11-20	79	21.94	31	8.61	
21+	66	18.33	13	3.61	0.008

Table: Postpartum depression scale for respondents

Variable	Frequency (360)	(%)
I have been able to laugh and see the funny side of things		
As much as I always could	258	71.7
Not quite so much now	52	14.4
Definitely not so much now	36	10
Not at all	14	3.9
I have looked forward with enjoyment to things		
As much as I ever did	247	68.6
Rather less than I used to	57	15.8
Definitely less than I used to	46	12.8
Hardly at all	10	2.8
I have blamed myself unnecessarily when things went wrong		
Yes, most of the time	56	15.6
Yes, some of the time	78	21.7
No, not at all	151	41.9
No, never	75	20.8
I have been anxious or worried for no good reason		
No, not at all	166	46.1
Hardly ever	51	14.2
Yes, sometimes	105	29.2
Yes, very often	38	10.6
I have felt scared or panicky for no good reason		
Yes, quite a lot	40	11.1
Yes, sometimes	81	22.5
No, not much	76	21.1
No, not at all	163	45.3
Things have been getting to me		
Yes, most of the time I haven't been able to cope at all	43	11.9
Yes, sometimes I haven't been coping as well as usual	131	36.4
No, I most of the time I hoped coped quite well	75	20.8
No, I have been coping as well as ever	111	30.8
I have been so unhappy that I have had difficulty sleeping		
Yes, most of the time	35	9.7
Yes, sometimes	99	27.5
No, not very often	52	14.4
No, not at all	174	48.3
I have felt sad or miserable		
Yes, most of the time	16	4.4
Yes, quite often	30	8.3
Not very often	74	20.6
No, not at all	240	66.7
I have been so unhappy that I have been crying		
Yes, most of the time	24	6.7
Yes, quite often	30	8.3
Only occasionally	61	16.9
No, never	245	68.1
The thought of harming myself has occurred to me		
Yes, quite often	9	2.5
Sometimes	35	9.7
Hardly ever	15	4.2
Never	301	83.6

CONCLUSION AND RECOMMENDATION:
It is concluded that one out of five breastfeeding mothers is depressed, and this significantly affects the duration of first breastfeeding episode. It is recommended that mothers get support during breastfeeding

REFERENCES

1) Guinitivano J, Manuck T, Meltzer-Brody S(2018). Predictors of postpartum depression: a comprehensive review of the last decade of evidence. Clinical obstetrics and gynecology, Sep;61(3):591.
2) Shorey , Shefaly, Cornelia Yin Ing Chee, Esperanza Debby Ng, Yiong Huak Chan, Wilson Wai San Tam, and Yap Seng Chong.(2018) "Prevalence and incidence of postpartum depression among healthy mothers: a systematic review and meta-analysis." Journal of psychiatric research 104 235-248.

OI16

Nutritional Status of Urban Households: The case of Adolescents in South Eastern Nigeria

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KEYWORDS: Households, adolescents, nutritional status and nutrient intake.

HIGHLIGHTS
- There was coexistence of undernutrition, overnutrition and micronutrient deficiency among adolescents.
- The prevalence of stunting, thinness and overweight were 40.2%, 14.3%, and 10.7% respectively among adolescents and more than 50% were micronutrient deficiency.
- Adequate nutrition is very crucial to minimize/prevent malnutrition in adolescents.

BACKGROUND:
Adolescence is a unique, critical period of growth and development and they undergo through the second growth spurt. It is very crucial that they receive the required nutrients. They are the key to break the cycle of intergenerational cycle of malnutrition, poverty food insecurity and their undernutrition affects the economic development of the society (Berhe et al. (1). Damie et al. (3) indicated that adolescence is the second most critical period of physical growth in life cycle after first year of infancy. Studies on adolescent´s malnutrition are limited much attention has not been given to their nutrient deficiencies like the under five children despite their increased nutritional vulnerability Calista et al. (2). This study seeks to assess the nutritional status of adolescents in urban households of South Eastern Nigeria.

MATERIALS AND METHODS:
The study adopted a cross-sectional descriptive survey research design and was carried out in randomly selected urban areas of South Eastern Nigeria. Multi-stage sampling techniques was employed to select 244 adolescents from the households. A semi structured questionnaire containing demographic and socio-economics characteristics, anthropometric measurement (height-for-age and BMI-for-age) and food consumption pattern was used to elicit information. Weighed food intake of 10% sub-sample size was used to determine the nutrients intake. Data was analyzed using descriptive statistics which include: percentage, mean and standard deviation.

RESULT:
The participants were between the ages 11-18 years, with mean age of 15.1±2.06. Female respondents were (26.2%) more than male respondents. Findings showed that four in ten (40.2%) adolescents were stunted, of which 12.3% and 27.9% were severely stunted and stunted respectively. BMI-for-Age showed that 73.8% ,14.3%, 10.7% and 1.2% of the adolescents were normal, thinness, overweight and obese respectively. Majority 70.8%, 75.0%, 66.7%, 75.0%, 70.8% and 58.3% of the respondents were deficient on Carbohydrate, energy,

vitamin A, iodine, iron, calcium and zinc respectively.

CONCLUSION:

There is high prevalence of stunting and thinness among the adolescents. Majority of the respondents do not meet the recommended nutrient intake (RNI). There is a coexistence of undernutrition, overnutrition and micronutrient deficiency among adolescents in the household. Therefore, nutrition education and food availability even through home garden in the households is the key in preventing adolescents' malnutrition in the short term and diet-related diseases in the long term.

Table 1 : Anthropometric indices (height-foe-age and BMI-for-age) of the adolescent 11-18 years according to sex (n=244)

Variables		Male	Female	Total
		F (%)	F(%)	F(%)
Height-for-Age/stunting				
	Severe (-3SD)	9 (10.0)	21(13.6)	30 (12.3)
	Moderate(-2SD)	22 (24.4)	46 (27.3)	68 27.3
	Normal	59 (65.6)	91 (59.1)	146 (27.9)
	Total	**90 (100)**	**154 (100)**	**244(100)**
BMI- for-age/thinness	Severe (-3SD)	3(3.3)	9 (5.8)	12 (4.9)
	Moderate(-2SD)	7 (7.8)	16 (10.4)	23 (9.4)
	Normal	69 (76.7)	111 (72.4)	189 (73.9)
	Overweight (+2SD)	10 (11.1)	16 (10.4)	26 (10.7)
	Obese (+3SD)	1 (1.1)	2 (1.3)	3 (1.2)
	Total	**90 (100)**	**154 (100)**	**244 (100)**

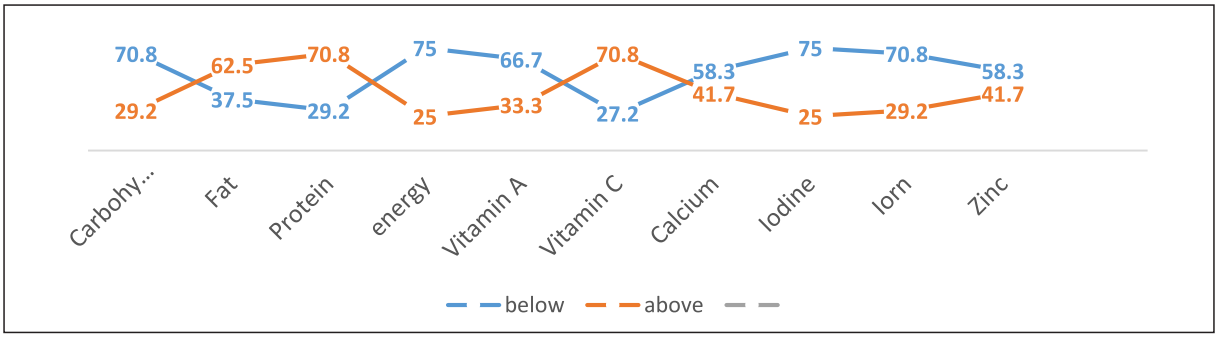

Figure 2: Percentage of children (aged 11 - 18years) below and above the recommended nutrient and energy intakes (n=42).

REFERENCES:

1. Berhe, K., Kidanemariam, A. and Gebeneruariam, G. (2019). Prevalence and associated factors of adolescent undernutrition in Ethiopia: A Systematic review and Metaanalysis. BMC Nutrition, 4: 49.
2. Calista, N., Haikael, M., Neema, K. and Athanasia, M. (2020). Dietary Prectices, Nutrient Adequacy and Nutritional Status among adolescents in Boarding High Schools in the Kilimanjaro Region, Tanzania. Journal of Nutrition and Metabolism. Article ID 3592813, Pp 4.
3. Damie, M., Kbebew, M. and Teklehaijmanot, L. (2015). Nutritional status and associated factors among school adolesents in Chino Town, West Hara'rge, Ethiopia: Gaziantep. Medicinal Journal, 21(1):32.

PI19

Challenges of Exclusive Breastfeeding Among Working Class Mothers in Kaduna Metropolis.

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ABSTRACT
BACKGROUND AND OBJECTIVE:
Despite the many benefits of breastfeeding, it has been shown that there are barriers to the practice of exclusive breastfeeding. World Health Organization (WHO) recommends that mothers worldwide should exclusively breastfeed infants for the first six months to achieve optimal growth, development, and health (1). Breastfeeding has benefits both for the mother and the baby. Kaduna state is in the forefront of promoting exclusive breastfeeding and other appropriate infant and young child feeding practices (2). This study was aimed at investigating the challenges of exclusive breastfeeding among working class women in Kaduna metropolis

MATERIALS AND METHODS:
A structured interviewer-administered questionnaire was used to collect data as well as document compliance of exclusive breastfeeding among working-class mothers within Kaduna metropolis. The study was carried out at Barau Dikko Teaching Hospital, Kaduna State University, Kaduna and Yusuf Dantsoho Memorial Hospital Tudun Wada Kaduna. The study involved 52 working-class (government work, business, farm work and private companies) mothers (Table 5) with infants aged 0-6 months, who were attending using frequency distributions antenatal clinics at Barau Dikko Teaching Hospital and Yusuf Dantsoho Memorial Hospital with a two-weeks period. The study utilized a structured questionnaire and face-to-face interview method for collecting data. Descriptive statistic using frequency distributions tables and inferential statistics on samples for generalization was carried out. The collected data was analyzed using Statistical Package for Social Sciences (SPSS) (version 20.0).

RESULTS:
The finding of the study showed that socio-demographic characteristics (Table 1 and 2) and level of education (Table 3) positively influence exclusive breastfeeding among working class mothers in Kaduna metropolis. The study showed that 88% of working-class mothers practiced exclusive breastfeeding, while 12% did not (Table 4), 65% go on 90 days maternity leave while 35% do not, 94% indicated that their employers allowed breaks to breastfeed their babies while 6% do not (Table 6). Ninety-six percent of working-class mothers do not have crèche while only 4% have crèche in their work place (Table 7). While 4% continued with exclusive breastfeeding after their maternity leave is over, 35% expressed breast milk, 42% introduced breastmilk substitutes within the six months of breastfeeding and 19% wait until they are back from work before breastfeeding their infants (Table 8).

Table 1: Marital Status of the Breastfeeding Mothers

Variable	Frequency	Percentage (%)
Married	48	92
Single-mothers	4	8
Total	52	100

Table 2: Age of breastfeeding Mothers

Age (years)	Frequency	Percentage (%)
< 18 years	0	0
18 – 25 years	8	15
26 – 30 years	32	62
> 30 years	12	23
Total	**52**	**100**

Table 3: Level of Education of the Breastfeeding Mothers

Level of Education	Frequency	Percentage (%)
None	0	0
Primary incomplete	0	0
Primary complete	9	18
Secondary incomplete	14	24
Secondary Complete	29	58
Total	**52**	**100**

Table 4: Breastfeeding Options

Options	Frequency	Percentage
Exclusive (only) Breastfeeding	46	88
Breastfeeding and artificial feeding	6	12
Total	**52**	**100**

Table 5: Employment of the Breastfeeding Mothers

Employment Status	Frequency	Percentage (%)
Office Work	13	26
Business	21	38
Farm work	7	14
Private business	11	22
Total	**52**	**100**

Table 6: Challenges of working and Exclusive Breastfeeding

Variables	Maternity leave		Working and breastfeeding	
	Frequency	Percentage	Frequency	Percentage
Yes	34	65	49	94
No	18	35	3	6
Total	52	100	52	100

Table 7: Presence of Creche in Work Places

Presence of Creche in Work Places	Frequency	Percentage
Yes	2	4
No	50	96
Total	52	100

Table 8: Strategies Adopted When Maternal Leave is off before Six months of exclusive breastfeeding period

Strategies Adopted by lactating mothers after Maternal Leave before six	Frequency	Percentage
Continue exclusive breastfeeding	2	4
Express breast milk and kept for the baby	18	35
wait till back from work	10	19
use complementary feeding	22	42
others	0	0
Total	**52**	**100**

It was also observed that 88% of the respondents admitted practicing exclusive breastfeeding, while the remaining 12% respondents indicated that they practiced both Breastfeeding and artificial feed on their babies (Table 4). This result shows that the level of exclusive breastfeeding practices was higher than that reported by Abdulkadir (3). Ninety-four percentage of working-class mothers reported that maternity leave is insufficient to cope with the challenges of their work and exclusive breastfeeding after their three months leave. From the result on whether respondents are able to work and breastfeed their babies, 86% indicated that they are able to work and breast feed their babies, while the remaining 14% indicated that they are unable to work and breast feed their babies at the same time (Table 6). The major challenge expressed by the breastfeeding mothers is the lack of crèches at work place when their maternity leave is over. However, 96% of the respondents reported that exclusive breastfeeding has made mothers developed more love and closeness with their babies while 4% were indifferent. This is in agreement with report of WHO, UNICEF (4).

CONCLUSION:

Challenges of exclusive breastfeeding among working-class mothers in Kaduna metropolis has greatly improved. The initiative of extending maternity leave of female civil servants in the state to six months by Kaduna State government will certainly enhance infants (0-6 months) get adequate cared, well-fed and received all the nutrients needed within the first six months of their lives. Exclusive breastfeeding will be greatly enhanced in Kaduna State if government fully implement the six months maternity leave.

Keywords: Challenges, Exclusive Breastfeeding, Working-class mothers, Maternity leave

REFERENCE:

1. WHO (2011). Exclusive breastfeeding for six months best for babies everywhere; Available from: http://www.who/statements/2011/breastfeedi.ng. Retrieved January 15th, 2011.
2. Punch (2019). Kaduna Government Extends Maternity to Six Months, May 29, 2019.
3. Abdulkadir, I.; Hassan, L.; Ishaku, H.; Moroof S. and Ogala, W.N. (2016). Motivators and disincentives to exclusive breastfeeding among mothers in Zaria, Northwestern Nigeria. Sub-Sahara African Journal of Medicine, 3(2):91-95
4. World Health Organization, UNICEF (2018). Protecting, promoting, and supporting breastfeeding in facilities providing maternity and newborn services: the revised Baby-friendly Hospital Initiative. Implementation guidance. Available from: https://apps.who.int/iris/bitstream/handle/10665/272943/9789241513807-eng.pdf?ua=1

OI21

Breastfeeding challenges and coping strategies amongst lactating mothers: the need for improvement in breastfeeding skills

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KEYWORDS – Breastfeeding, challenges, duration, exclusive breastfeeding.
HIGHLIGHTS

BACKGROUND AND OBJECTIVES: Infants are expected to be breastfed exclusively for six months and a duration of 24 months as recommended by WHO. This study assessed the influence of breastfeeding challenges on breastfeeding duration among mothers in Ibadan North-East and Ido Local Government Area of Ibadan, Oyo State.

MATERIALS AND METHOD: It was a Cross-sectional study design and a sample size of 360 mothers with children between the ages of 0-24 months were selected using multistage sampling technique. Questionnaires were used to obtain information on the socio-economic characteristics, breastfeeding practices and breastfeeding challenges (all grouped into household, maternal personal and workplace challenges). IBM SPSS version 26.0 was used for analysis. Chi-square was used to analyze the hypotheses.

RESULTS AND DISCUSSION: The result of the study showed that the mean age of correspondents was 29.65±4.90and the mean formal year of education of mothers was 16.09±2.70. The mean number of children was 2.45±1.39 while the mean number of under-five childrenfor breastfeeding was 1.39±0.54, and 39.2% amongst them are civil servants. All the respondents breastfed their babies, while more than one-third (43.1%) initiated breastfeeding immediately postpartum. Exclusive breastfeeding was practiced by 28.9% and 47.2% expressed breastmilk. More than three-quarter (75.6%) of the mothers were still breastfeeding and 5.8% had stopped breastfeeding between 13-18 months of child's age. The mean result of the challenges showed that maternal personal breastfeeding challenges was highest among the three groups of challenges.

CONCLUSION AND RECOMMENDATION: The test results showed that there is a significant relationship between the breastfeeding challenges and breastfeeding duration while there is no significant relationship between breastfeeding challenges and exclusive breastfeeding It was therefore recommended that prompt and adequate attention should be given to breastfeeding challenges during antenatal clinics.

Table 1: Socio-economic characteristics of mothers.Socio-demographic characteristicsFreq. (360)Percentage (%)

Socio-demographic characteristics	Freq. (360)	Percentage (%)
Age of mothers		
Mean±SD =29.65±4.90		
Number of children		
Mean±SD = 2.45±1.39		
Number of under-five children		
Mean±SD = 1.39±0.54		
Years of formal education		
Mean±SD = 16.09±2.70		
Occupation of mother		
Not working	25	6.9
Civil servants	141	39.2
Business	140	38.9
Artisans	29	8.1
Others	09	2.5

Source: Field survey, 2021

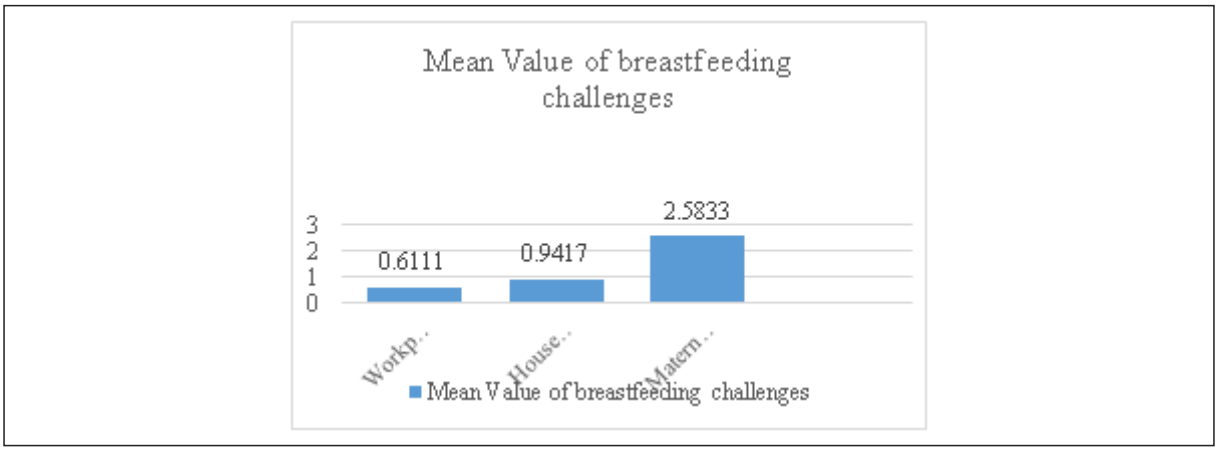

Fig. 1: Mean results of the breastfeeding challenges

PI22

Assessment of Dietary Pattern and Nutritional status of Undergraduate Students in Ondo City, Ondo State, Nigeria

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KEYWORDS: Dietary pattern, Undergraduates, Nutritional status
HIGHLIGHTS:

- Nutritional knowledge of undergraduate
- Dietary patterns of adolescents in relation to their food choice
- The factors responsible for food choices among students

BACKGROUND AND OBJECTIVES
Dietary pattern refers to the food consumption habit within a group or population. The choice of food may be critical adjustment for undergraduate students who is independent. This can lead to low-quality diets, deficient in vital nutrients and/or undesirable weight gain. Students' poor food habits may have long-term health effects, such as an increased risk for cardiovascular disease, diabetes, hypertension, and/or obesity (1). It is therefore imperative to explore the relationship between the nutritional knowledge of food choices, eating patterns and the nutritional status of Wesley University, Ondo and University of Medical Sciences Ondo students.

METHODOLOGY
The study was a cross-sectional, descriptive study design conducted and randomly selected 278 students at Wesley University Ondo and UNIMED, Ondo city, Ondo state. A structured self-administered questionnaire consists of socio demographic characteristics, dietary habits to collect data. Data were analyzed using SPSS version 23.0 both descriptive and inferential statistics at level of significant set at $p<0.05$.

RESULTS:
The mean age of the respondents was 23.34±4.64 years. The snacks pattern of respondents showed thatmost of the respondents (77.10%) consumed snacks while others did not (22.90%). The mean BMI of respondents who did not skip meals was higher (24.22±0.00 kg/m2) than those who skipped meals (22.25±4.77 kg/m2). Figure 1 shows factor that affected dietary pattern of respondents. The mean BMI of respondents who did not

take snacks (19.97±5.77 kg/m2) was lower than those who took snacks (22.78±4.34 kg/m2) according to the findings. In conclusion, the results showed that different feeding habits, campus lifestyle and time contributed to the nutritional status of students.

REFERENCES:
Tanton, J., Dodd, L.J., Woodfield, L. and Mabhala, M. (2015) 'Eating Behaviours of British University Students: A Cluster Analysis on a Neglected Issue', Adv Prev. Med, p. 639239.Available at: https://doi.org/10.1155/2015/639239.

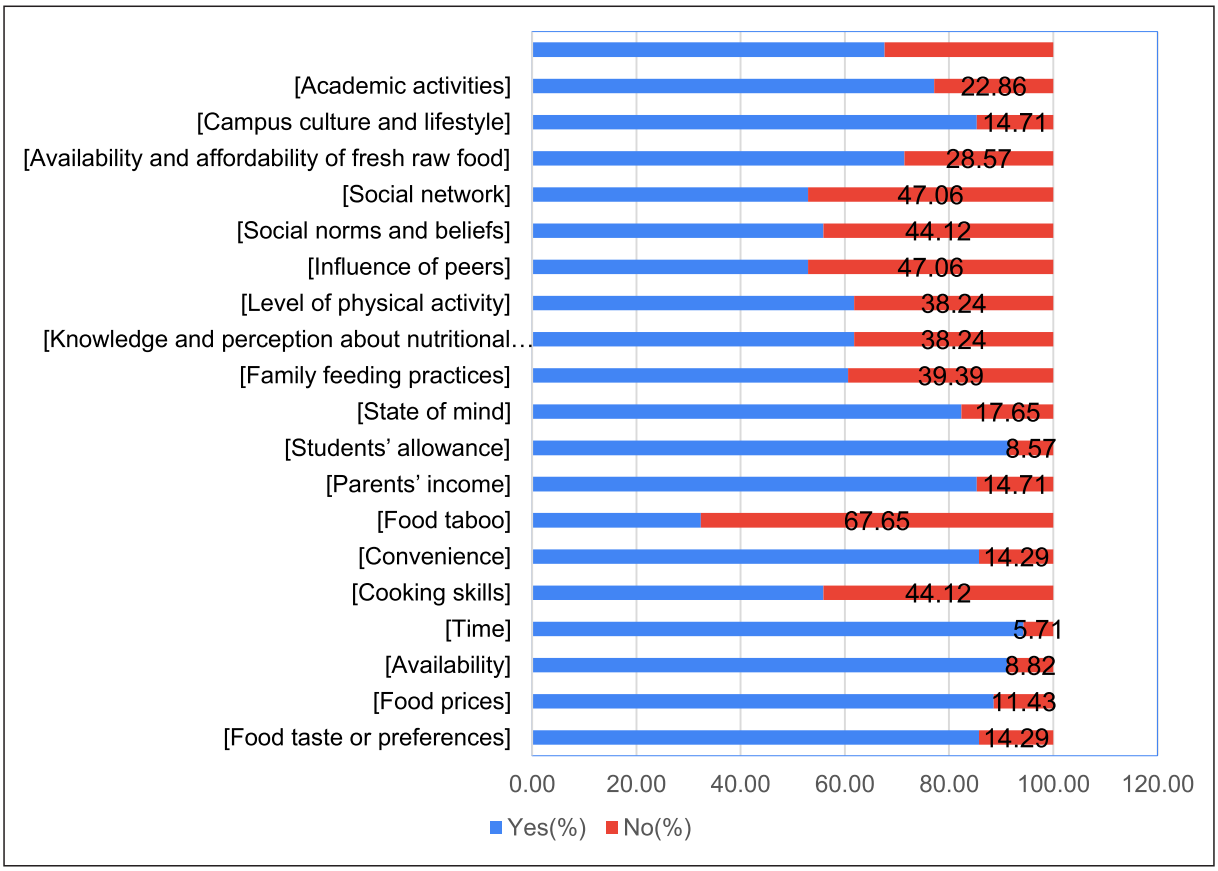

Fig. 1 Factors influencing the dietary patterns of respondents.

OI23

Assessment of the co-existence of maternal overweight, obesity and child malnutrition among mothers of toddlers in Oluyole local government, area Ibadan

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KEYWORDS: malnutrition, co-existence, mother and child
HIGHLIGHTS:
- 13.3% of obese mothers had underweight toddlers.
- 19.1% of overweight mothers had stunted toddlers.

· 27.8% of overweight mothers had wasted toddlers.

BACKGROUND AND OBJECTIVES:

Malnutrition is the result of nutritional deficiencies or excesses in an individualandmalnutrition, in every form, presents significant threats to human health (1).In developing countries such as Nigeria, malnutrition has been associated with up to 54% of all child morbidity and mortality (2) and 17% of Nigerian women are overweight and 8% are obese (3). The objective of this study is to determine the co-existence of maternal overweight, obesity, and child malnutrition among mothers of toddlers in Oluyole LGA, Ibadan.

METHODS:

A total of 265 mother-child pair resident in 3 wards in Oluyole LGA were selected using a 4-stage sampling method. An interviewer-administered questionnaire was used to obtain information on the socio-demographic, and nutritional characteristics of the respondents. Data were analysed using SPSS V23.0.

RESULTS AND DISCUSSION:

A majority of the mothers were aged 21-30 years of age (48.7%) with toddlers 2-3 years old (52.5%) majority of whom were the second child (34.0%) and were females (60.4%). The prevalence of overweight and obesity among mothers was 9.4% and 25.7%, respectively. Among the toddlers, the prevalence of underweight, wasting, and stunting was 9.4%, 16.7%, and 31.3%, respectively.There was no statistically significant co-existence of maternal overweight and obesity with child malnutrition ($p>0.05$).

Table 1: Mothers and toddlers characteristics

Characteristics		Frequency (%)
Mother's age (31.97±6.51)	≤ 20 years	4 (1.5)
	21 – 30 years	129 (48.7)
	31 – 40 years	105 (39.6)
	> 40 years	27 (10.2)
Marital status	Married	244 (92.1)
	Separated	15 (5.7)
	Divorced	6 (2.3)
Child's Age (24.14±5.33)	12 – 23 months	126 (47.5)
	≥ 24 months	139 (52.5)
Position among siblings	1st	79 (29.8)
	2nd	90 (34.0)
	3rd	53 (20.0)
	4th	28 (10.6)
	≥ 5th	15 (5.6)

Table 2: Prevalence of maternal and child malnutrition

Variable		Mother's Body Mass Index			
		Underweight n (%)	Overweight n (%)	Obese n (%)	p-value
Weight-for-height	Wasting	7 (19.4)	10 (27.8)	3 (8.3)	0.055
	Overweight	1 (2.8)	14 (38.9)	1 (2.8)	
Height-for-age	Stunted	7 (6.1)	22 (19.1)	6 (5.2)	0.864
	Normal	18 (15.7)	46 (40.0)	16 (13.9)	
Weight-for-age	Underweight	7 (46.7)	4 (26.7)	2 (13.3)	0.117
	Overweight	0 (0.0)	2 (13.3)	0 (0.0)	

CONCLUSION AND RECOMMENDATIONS

Although this study showed that the co-existence of maternal overweight and obesity with child malnutrition existed, it was not statistically significant. Nevertheless, advocacies and interventions to prevent the double burden of malnutrition within the household is pertinent to curb the prevalence of associated chronic diseases later in life. There remains a need for composite and evidence-based nutritional interventions that addresses

double burden of malnutrition especially among women and their under-five children.

REFERENCES
1. Jude, C. K., Chukwunedum, A. U., & Egbuna, K. O. (2019). Under-five malnutrition in a South-Eastern Nigeria metropolitan city. African health sciences, 19(4), 3078-3084.
2. Bain, L. E., Awah, P. K., Geraldine, N., Kindong, N. P., Siga, Y., Bernard, N., &Tanjeko, A. T. (2013). Malnutrition in Sub–Saharan Africa: burden, causes and prospects. Pan African Medical Journal, 15(1).
3. National Population Commission. (2013). Nigeria demographic and health survey 2013. National Population Commission, ICF International

OI24

Dietary Diversity and Practice of Food Taboos Among Pregnant Women Attending Antenatal Clinic in a Tertiary Health Facility in Ebonyi State, Nigeria

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KEYWORDS: Pregnancy, Dietary diversity, Food taboos, Nutrition

HIGHLIGHTS

Quality of food consumed compared to preconception was increased in more than half of the respondents.
Majority of the pregnant women do not practice any form of cultural restriction.

BACKGROUND AND OBJECTIVES:
Physiological changes during pregnancy and the demand for the growth of the foetuslead to increased dietary needs and failure to meet these needs results in dietary inadequacies[1]. Studies have revealed that pregnant women in different parts of Nigeria avoid certain foods and beverages due to cultural or religious beliefs [2-4]. These food restrictions and avoidances could have a negative impact on pregnancy because of the tendency to limit the foods available for pregnant women as well as a decrease in dietary diversity [4]. This study aimed to assess the dietary diversity and the practice of food and cultural taboos among pregnant women attending antenatal clinics in a tertiary health facility in Ebonyi State, Nigeria.

MATERIALS AND METHODS:
A cross-sectional survey design was used, and respondents (142) were sampled using a convenience sampling technique. Data collected included socio-demographic characteristics, beliefs, and cultural values related to nutrition in pregnancy. The data were analysedusing IBM SPSS version 22, and descriptive statistics were employed for data analysis.

RESULTS AND DISCUSSION:
The low incidence of teenage pregnancy (1.4%) observed in this study was lower than studies conducted in South-eastern states. Improved nutrition has been correlated to higher educational qualification. This is true for the present study as more than half (87.3%) of the respondent attained 12 or more years of schooling and attained the minimum dietary diversity (67.67%). Practice of cultural food restrictions was low among the respondents,foods such as bushmeat, and cassava foo-foo were avoided due to fear of difficult labour and delivery.Culturally approved practices that negatively impact pregnancy include ingestion of palm wine (45%) and the use of kola nut (29%).

CONCLUSION AND RECOMMENDATION(S):
Most of the pregnant women attending antenatal clinic in Alex Ekwueme Federal University Teaching Hospital met the medium dietary diversity. Although there was minimal practice of cultural food restrictions, harmful

practices impacting pregnancy nutrition were identified.Maternal nutrition education focusing on adverse practices should be strengthened in antenatal clinics.

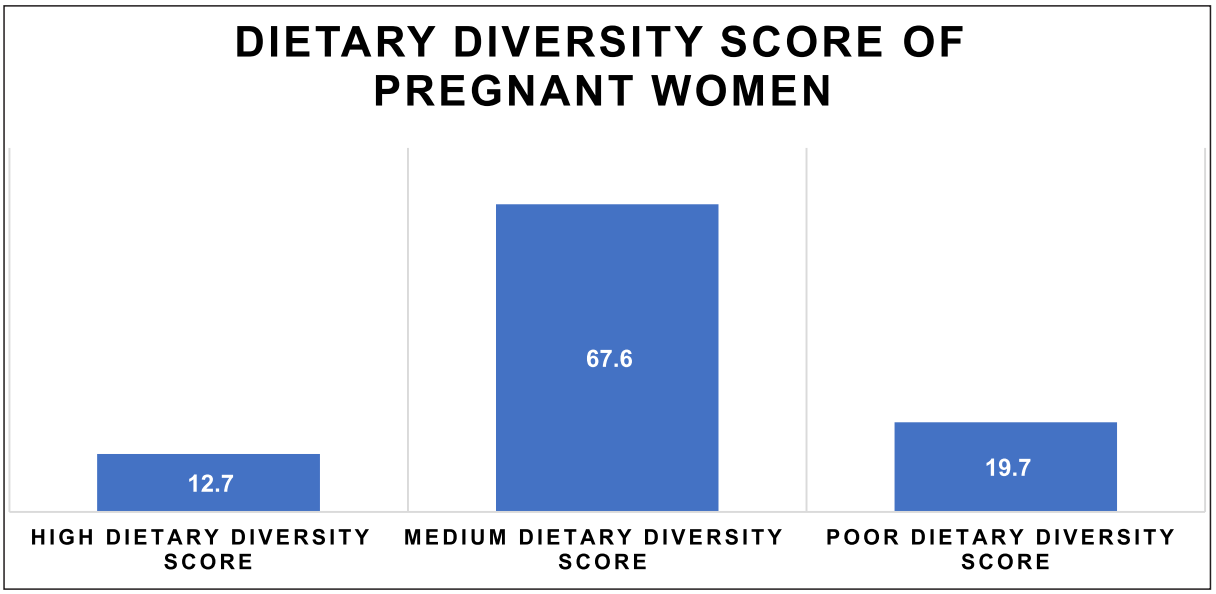

Figure 1: Dietary Diversity Score of the Pregnant Women

SELECTED REFERENCES

[1] Cetin, I., Bianchi, C., & Laoreti, A. (2023). Eating Habits During Pregnancy. Eating Disorders, 37.
[2] Ezeh, C., Maduforo, A., Nwamarah, J., Chikwendu, J., & Okoro, C. (2020). Nutrition knowledge and practice among pregnant women in Igbo-Eze South local government area, Enugu state. Nigerian Journal of Nutritional Sciences, 41(1).
[3] Wollelaw, G., Aycheh, W., & Taddele, T. (2018). Determinants of Food Taboos in the Pregnant Women of the Awabel District, East Gojjam Zone, Amhara Regional State in Ethiopia. Advances in Public Health, 2018, 6. https://doi.org/doi.org/10.1155/2018/9198076
[4] Sharifa, S.A., Nilan, P., & Germov, J. (2012). Food restrictions during pregnancy among Indigenous Temiar women in peninsular Malaysia. Malaysian Journal of Nutrition, 18(2).

PI25

Breastfeeding practices, level of awareness and consumption of Galactagogues among lactating mothers from selected LGA of Abia State

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KEYWORDS: Breastfeeding, Lactating, Galactagogues, Breast milk

HIGHLIGHTS

- Breastfeeding practices in the study area was suboptimal
- Most mothers reported that foods, drinks and spices can enhance breast milk production

- The most consumed galactogogues were Pepper with Uda(Spice) and Palm wine

ABSTRACT

BACKGROUND AND OBJECTİVES:

Breast feeding challenge such as insufficient breastmilk production is one factor that can hamper optimal breastfeeding. Galactagogues are substances reported to improve the production of breast milk (1). This study determined breastfeeding practices, level of awareness and consumption of galactagogues among lactating mothers from selectedLGA in of Abia state.

MATERIALS AND METHODS:

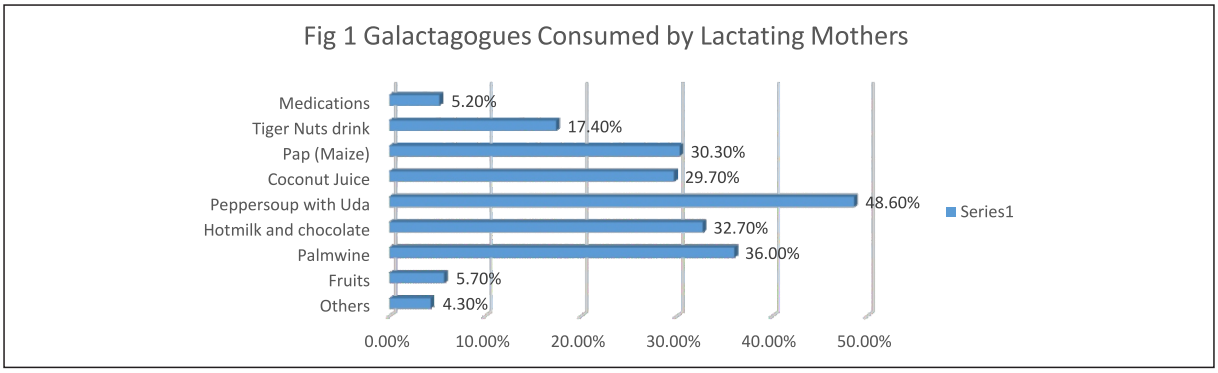
The study was a cross sectional survey where 700 consenting mothers were requited from selected LGA. A structure questionnaire containing socio-demographics, breastfeeding practice questions, questions on awareness and use, and typesof galactagogues was used to elicit information.A descriptive statistics was used to determine frequency, percentage and mean

RESULTS

The result showed that the mean age of mothers was 34.4+2.3. Early breastfeeding initiation 43.4%. Majority (89.1%) of the mothers gave their babies colostrum and 36.6% practiced exclusive breastfeeding. More than half the mothers reported that their breast milk production was sufficient for their babies two third reported that consuming herbs, food or drinks could improve breast milk production. The most consumed galactogogues reported in this study was Pepper soup and Uda closely followed by Palm wine

Table 1: Breastfeeding practices among lactating mothers

Variables	Frequency	Percentage (%)
Breastfeeding initiation		
First one hour	304	43.4
First 2 hours	177	25.4
After 24 hours	203	29
Others	16	2.3
Colostrum feeding practice		
Yes	623	89.1
No	77	10.9
Frequency of breast feeding		
Feeding on demand	488	69.7
Specific intervals	164	23.4
When breast is full	48	6.9
Introduction of water and food		
Immediately after birth	276	39.4
3 months after birth	158	22.6
6 months after birth	256	36.6
Others	10	1.4
Frequency of consumption of galactogogues		
Daily	542	77.4
Weekly	58	8.3
Never	2	0.3
Others	98	14.0



CONCLUSION:
Results from the survey shows that galactogogues consumption was common. There is need for further research to determine the efficacy of these substances which may promote optimal breastfeeding.

REFERENCE

1. Özalkaya E, Aslandoğdu Z, Özkoral A, Topcuoğlu S, Karatekin G. Effect of a galactagogue herbal tea on breast milk production and prolactin secretion by mothers of preterm babies. Nigerian journal of clinical practice2018 Jan;21(1):38-42. doi: 10.4103/1119-3077.224788. PMID: 29411721.

PI26

Knowledge of Risk factors of Uterine Fibroid among Women of Childbearing Age attending Federal Medical Center, Abeokuta

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KEYWORDS: Anthropometric status, Risk factors, Uterine Fibroid, Women

BACKGROUND AND OBJECTIVES:
Uterine Fibroid also known as uterine leiomyomas are the most common benign tumors in women of reproductive age. It is one of the major health issues of women worldwide with health, socio-economic consequences and unknown pathogenesis. This study investigated the knowledge of risk factors of uterine fibroid among women of childbearing age at Federal Medical Centre, Abeokuta, Ogun State.
METHODS: A cross-sectional descriptive study involving 150 willing out-patient women of childbearing age attending Federal Medical Centre (FMC), Abeokuta, Ogun State. Semi-structured interviewer administered questionnaire was used to obtain relevant information on the knowledge of risk factors of uterine fibroid among the respondents.

RESULTS AND DISCUSSION: The mean age of the women was 34.20± 6.9 years ranging from 20-49years. This mean age and age range is almost similar to that observed in the study among women of reproductive age in Jos, Plateau (1). Majority (83.3%) of the women were married and 48.7% reported being diagnosed with the disease. Most women (80%) of study claimed no family history of the disease which is contrary in other studies where women reported that fibroid run in their family and have relatives having the disease (2, 3). The level of knowledge exhibited by the women of study on the predisposing risk factors of uterine fibroid varied in relation to the study of Adegbesan-Omilabu *et al* (4) where majority believed being black, being nulliparous or having positive family history predisposes women to having uterine fibroid. Most women of study had good knowledge

Table 1: Knowledge of risk factors of Uterine Fibroid among the Respondents

Variables	Yes		No	
	N	(%)	N	(%)
Have you ever been diagnosed of Uterine Fibroid?	73	48.7	77	51.3
Family history of the disease?	30	20.0	120	80.0
Risk factors of Uterine Fibroid				
Obesity	59	39.3	91	60.7
Women who never had a child	99	66	51	34.0
Black Women	87	58.0	63	42.0
People with family history of uterine Fibroids	67	44.7	83	55.3
Age	60	40.0	90	60.0
High Blood Pressure	69	46.0	81	54.0
Diet	70	46.7	80	53.3
Postmenopausal State	110	73.3	40	26.7
Time since last childbirth	52	34.7	98	65.3
Knowledge on warning signs of Uterine Fibroid				
Enlargement of the Abdomen	120	80.0	30	20.0
Pain during intercourse	100	66.7	50	33.3
Increase menstrual cramp	102	68.0	48	32.0
Irregular periods	81	54.0	69	46.0
Pelvic pressure	88	58.7	62	41.3
General abdominal pain	97	64.7	53	35.3
Constipation/bloating/diarrhea	59	39.3	91	60.7
Difficulty having a bowel movement	79	52.7	71	47.3

on the warning signs of uterine fibroid which include enlargement of the abdomen (80%), increased menstrual cramp (68%) and pelvic pressure (58.7%).

CONCLUSION AND RECOMMENDATION:

It can be concluded that the women of study had suboptimal knowledge about the various risk factors of uterine fibroid though familiar with the danger signs associated with it, however, there is the need for intensive enlightenment of women on the etiology and the predisposing factors of uterine fibroid so as to avoid misconceptions about the condition among women.

REFERENCES

1. Ukaonu CB, Ibinaiye PO, Owoeye SC, Birma MR, Angbalaga A and Ogbu AE (2022). Prevalence and Sonographic patterns of uterine fibroid among women of reproductive age in Jos, Plateau State, Nigeria. *Journal of Radiation Medicine in the Tropics* 3(2): 50-56 doi:10.4103/jrmt_6_21.
2. Campbell, S. and Minga, A. (2000). Benign disease of the uterus and cervix in Textbook of Gynaecology by Ten Teachers, Stuart, C. and Monga, A. Eds. Arnold Publication, London, UK, 7th Edition: 113-119.
3. Memarzadeh, M. (2003). Benign disorder of the uterine corpus in Current Obstetric and Gynaecologic Diagnosis and Treatment, Decherney, A.H. and Nathan, L. Eds. McGraw Hill, New York, NY, USA, 9th Edition: 693-707.
4. Adegbesan-Omilabu MA, Okunade KS and Gbadegesin A. (2014). Knowledge of, perception of, and attitude towards Uterine fibroids among women with fibroids in Lagos Nigeria. Scientifica Cairo: 809536 doi:10.1155/2014/809536

OI27

Complementary feeding indicators and stunting in children under 5 years of age

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KEYWORDS: Complementary Feeding, Stunting

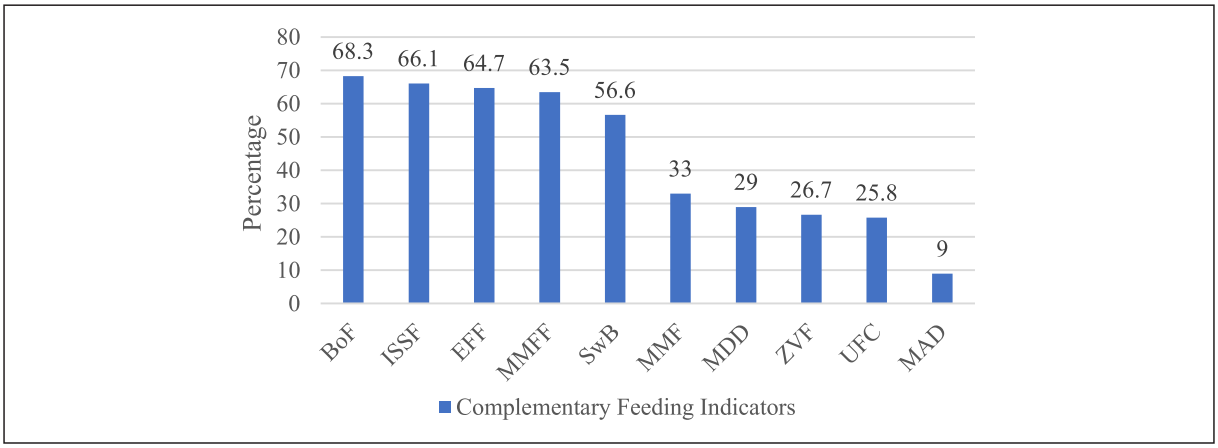
Highlights

- 2 out 5 children are stunted in this study
- 9 of out 10 children did not meet up with the required Minimum Adequate Diet (MAD)

BACKGROUND AND OBJECTIVES: Complementary feeding marks a significant milestone in infant development as it involves introducing additional sources of nutrition alongside breast milk. To facilitate the implementation of strategic measures and to contribute to monitoring the progress of Infant and Young Child Feeding (IYCF), indicators for assessing complementary feeding were developed by the World Health Organization and the United Nation's Children Fund [1]. This study assessed complementary feeding indicators and stunting in children under 5 years of age in Akinyele and Ibadan South East Local Government Area of Ibadan, Oyo State.

MATERIALS AND METHOD: The research utilised a cross-sectional survey design. Mothers (221) with children aged 6-24 months were selected using a multistage sampling technique. Questionnaires were used to gather information on socio-economic characteristics, child characteristics, breastfeeding and complementary feeding practices. IBM SPSS version 26.0 was used for analysis.

RESULT AND DISCUSSION: The result of the study showed that 52.9% of the respondents were between 21-30 years of age and the mean number of children was 2.21 ± 1.32. Half (50.2%) of the respondents had secondary school education, 65.6% earned between 10,000 to 50,000 and 67.4% are traders/business women. In the study, 49.8% of the children are males and 50.2% are females. Most (61.1%) of the children are between 6 to 12 months and 38.9% are between 13 to 24 months. Among the children, 46.2% of the children are stunted, 10% are wasted and 22.6% are underweight. Figure 1 shows the percentage of children and complementary feeding indicators. As shown in Table 1, there is no significant association between the complementary feeding indicators and stunting except for Introduction to solid, semi-solid and soft food (ISSF) and Minimum Adequate Diet (MAD) with the p-value of 0.017 and 0.014 respectively.



KEY: BoF – Bottle Feeding
ISSF – Introduction of solid, semisolid or soft foods
EFF - Egg and/or Flesh Food Consumption
MMFF – Minimum Milk Feeding Frequency
SwB – Sweet Beverage Consumption
MMF – Minimum Meal Frequency

ZVF – Zero Vegetable and Fruit Consumption
UFC – Unhealthy Food Consumption
MAD – Minimum Adequate Diet

Figure 1: Complementary Feeding Indicators

Table 1: Result of the chi-square test analysis showing the association between complementary feeding indicators and stunting

Complementary Feeding Indicators	Stunted		Not stunted		
	Frequency (102)	Percentage (%)	Frequency (119)	Percentage (%)	p value
Introduction to solid, semi-solid and soft food	59	57.8	87	73.1	
Meet up	43	42.2	32	26.9	0.017*
Did not meet up					
Minimum dietary diversity					
Meet up	28	27.5	36	30.3	0.647
Did not meet up	74	72.5	83	69.7	
Minimum meal frequency					
Meet up	28	27.5	45	37.8	0.102
Did not meet up	74	72.5	74	62.2	
Minimum adequate diet					
Meet up	4	3.9	16	13.4	0.014*
Did not meet up	98	96.1	103	86.6	
Egg and/or flesh food consumption					
Meet up	66	64.7	77	64.7	1.000
Did not meet up	36	35.3	42	35.3	
Unhealthy food consumption					
Meet up	27	26.5	30	25.2	0.831
Did not meet up	75	73.5	89	74.8	
Zero vegetable or fruit consumption					
Meet up	23	22.5	36	30.3	0.197
Did not meet up	79	77.5	83	69.7	
Sweet beverage consumption					
Meet up	61	59.8	64	53.8	0.368
Did not meet up	41	40.2	55	46.2	
Bottle Feeding					
Meet up	66	64.7	85	71.4	0.284
Did not meet up	36	35.3	34	28.6	
Minimum milk feeding frequency (for non-breastfed children)	**Frequency (21)**	**Percentage (%)**	**Frequency (31)**	**Percentage (%)**	**p value**
Meet up	10	47.6	23	74.2	
Did not meet up	11	52.4	4	25.8	0.051

CONCLUSION AND RECOMMENDATION

It was concluded that 2 out of 5 children are stunted and low percentage of the children met up with the key complementary feeding indicators. It is recommended that mothers are educated on the appropriate complementary feeding practices.

REFERENCE

1. WHO and UNICEF (2021). Indicators for assessing infant and young child feeding practices: definitions and measurement methods. Geneva: World Health Organization and the United Nations Children's Fund (UNICEF); 2021. Licence: CC BY-NC-SA 3.0 IGO.

OI28

A church-based approach to Improve Breastfeeding Knowledge and Intention of Female Young Adults in Ogbomoso, Oyo State

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KEYWORDS: Breastfeeding, Young Adults, Education, Church.

Highlight:

- This study implemented a Church-based intervention to promoting optimal breastfeeding
- Post-intervention, all the respondents in intervention group had good breastfeeding knowledge
- Post-intervention, all the respondents in the intervention group intended to breastfeed optimally.

BACKGROUND AND OBJECTIVE: Despite the numerous benefits of breastfeeding to both the mother and the child, breastfeeding remains suboptimum in Nigeria (1). Breastfeeding education interventions have the potential to improve optimal breastfeeding knowledge and intention, yet breastfeeding knowledge and intention of female young adults who are on the verge of stepping into motherhood are generally suboptimal (2). This study aimed to improve breastfeeding knowledge, attitude, and intention of female young adults through a church-based breastfeeding education intervention.

METHODS/APPROACH: This study which employed a quasi-experimental study design. A multi-stage sampling technique was used to select 26 female young adults between 19 and 24years at Ogbomoso Baptist Conference. Participants were assigned to either the intervention group or control group. The intervention was a 2-day breastfeeding education workshop with emphasis on Biblical perspectives to breastfeeding. Pre- and Post-intervention assessments of the breastfeeding knowledge and intention of the participants were assessed using pretested and validated questionnaire, with responses scored and scaled as poor or good for both knowledge and intention.

RESULTS: The study revealed that proportion of the participants with adequate breastfeeding knowledge in the intervention group increased from 11.1% before the intervention to 100.0% post-intervention, while no significant increase on the proportion with adequate knowledge was recorded in the control group. Similarly, proportion of the participants with good breastfeeding intention in intervention group significantly increased from 44.4% at baseline to 100.0% post-intervention, while no significant improvement was observed in the control group. There was a significant relationship between the knowledge and intention of the participants. This finding is in line with the studies of Hala et al. and Leshi et al. (1, 3).

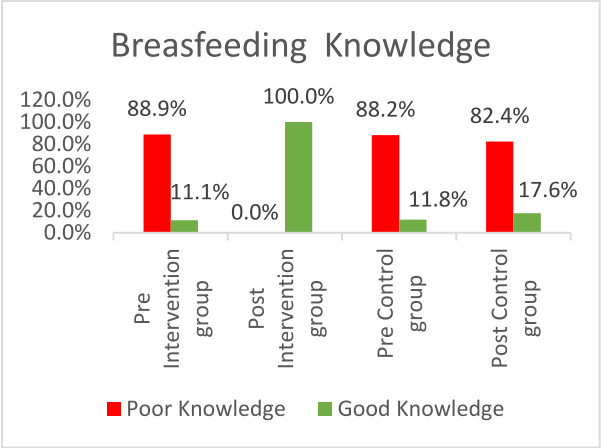

Figure 1. Representation of knowledge category before and after the intervention

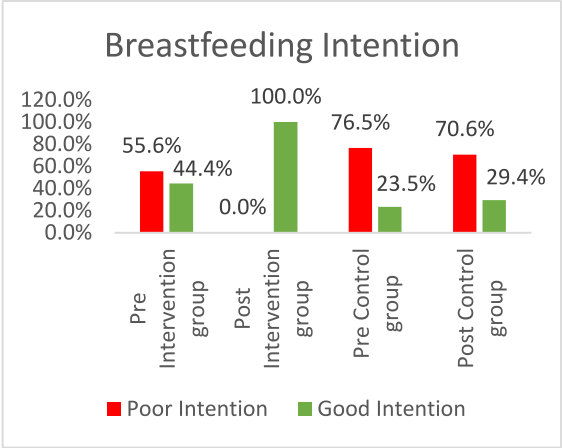

Figure 2. Representation of intention category before and after the intervention

CONCLUSIONS AND RECOMMENDATIONS: The study suggests that a targeted breastfeeding knowledge and intention intervention delivered in a Church-based setting can be an effective approach to improving optimal breastfeeding rates among female young adults. Optimal breastfeeding can be achieved in Nigeria by early intervention among female young adult before they step into motherhood.
Conflict of interest Disclosure: The authors declare no conflict of interest.

REFERENCES

1. Leshi, O.O., Samuel, F.O. and Ajakaye, M. (2016). Breastfeeding Knowledge, Attitude and Intention among Female Young Adults in Ibadan, Nigeria. *Open Journal of Nursing* 06(01):11-23.
2. National Population Commission (NPC) and ICF International. (2014). Nigeria Demographic and Health Survey 2018. Abuja, Nigeria, and Rockville, Maryland, USA: NPC and ICF International
3. Hala, S., Afaf, M., Afnan, S. and Wadaa, A.A. (2013) Breastfeeding Knowledge, Attitude and Barriers among Saudi Women in Riyadh. *Journal of Natural Sciences Research*, 3, 6-14.

OI29

Assessment of nutritional status of children aged (6-59 months) in Umaru Sanda General Hospital, Bida, Niger State. (Innovations to improve nutrition across the life-span and in special populations)

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INTRODUCTION
Adequate nutrition is essential for a normal child's growth and development (1). Adequate nutrition during infancy and early childhood is essential for the growth and development to attain their full potential (1). Poor nutrition is responsible for one-third of the estimated 9.5 million deaths, increasing the risk of illness in children under 5 years of age (2). Inadequate nutrition can also lead to childhood obesity which could be linked to health problems in many countries (2). Long-term impairment in growth and health are development associated with an early nutritional deficit (3). Therefore, this study tends to assess the nutritional status of children (6-59 months) in Umaru Sanda General Hospital, Bida, Niger state.

RESEARCH METHODOLOGY

STUDY DESIGN: Descriptive and cross-sectional study was conducted among children under five years of age and their mothers/caregivers in Umaru Sanda General Hospital, Bida.

SAMPLING TECHNIQUE: Children under five years of age and their mothers/caregivers, were selected using multistage sampling (stratified and simple random) techniques in the respondent's selection. Glen formula was used to determine the sample size of 133 respondents.

DATA ANALYSIS: Data was analyzed using frequency percentage, mean, and standard deviation.

RESULTS AND DISCUSSION

Table 1: Anthropometric indices (Determination of BMI using Z-scores).

6-59 months n=133	SAM <-3	MAM >-3 to <-2	Normal >-2 to <+2	Overweight >+2 to<+3	Obesity >+3
Male	-	9 (15.79%)	40 (70.18%)	6 (10.53%)	2 (3.51%)
Female	-	7 (9.21%)	58 (76.32%)	9 (11.84%)	2 (2.63%)
Total	-	16 (12.03%)	98 (73.68%)	15 (11.28%)	4 (3.01%)

KEY: SAM= Severe Acute Malnutrition, MAM= Moderate Acute Malnutrition

Table 1 shows the anthropometric indices (Determination of Body mass index using Z-score), The table below shows the anthropometric assessment/prevalence of different categories among children between the age range of 6-59 months. From the results, it was revealed that none of the children was severely malnourished, 12.03% were moderately malnourished, 73.68%were inthe normal range, 11.28% were overweight and 3.01% were obese.

Table 2: Prevalence of malnutrition based on MUAC reading for children between ages6-59 months.

Variables	Frequency n=133	Percentage (%)
Severely malnourished (red)	8	6
Moderately malnourished	22	17
Normal (Green)	103	77

KEY: Red: Less than 110mm, Yellow: 125-135mm, Green: over 135mm.

Table 2: Shows the prevalence of malnutrition based on MUAC reading for children between the age range of 6-59 months. The table below shows the prevalence of malnutrition among those between the age of 6-59 months. The results revealed that 6% were severely malnourished, 22% were moderately malnourished, and 77% of the children are well nourished. This finding is discordance with a study carried out in Borno state where the severely malnourished is 9.0%, moderately malnourished is 5.9% and mildly malnourished is 3.1% respectively (4).

CONCLUSION

The malnutrition status recorded in this study ranged from severe (6%) to moderately (17%) malnutrition, this might be attributed to nutritional knowledge, attitude and practice of the caregivers and probably the caregiver's socio demographic status.

REFERENCES

1. Kalu, M. O and. Ibe, S.N.O (2021). Knowledge, Attitude and Practice of Infant and Young Child Feeding Among Mothers with Children (0-24 Months) In Umuahia South L.G.A. International Journal of Scientific and Research Publications, 11(12)48 – 55
2. Black RE, Victora CG, Walker SP, Bhutta ZA, Christian P, and de Onis M, (2018). Maternal and child undernutrition and overweight in low-income and middle-income countries. The Lancet. 382(9890):427-51.
3. World Health Organization. (2007). Exclusive breastfeeding. Available at ww.whoint/child-adolescent-he. Accessed on 2 February 2017.

PI33

Nutrient Composition, Sensory Evaluation and Effeciency of Absnutp in the management of Malnutrition in under-five children in Abia State

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KEYWORDS: ABSNUTP, cereal-legume blend, under five, malnourished children.

BACKGROUND AND OBJECTIVES:
ABSNUTP is a high protein, high energy cereal-legume based food formulated by the Nutrition Unit of Abia State Primary Health Care Development Agency. It is used as a complementary food and also in the management of malnutrition in children under the age of five years.This work aimed at developing a cereal-legume blend that will meet the growing needs of children 6 – 59 months and as well help to arrest malnutrition in under – 5 children. It thus assessed the nutrient composition, organoleptic properties and efficiency of the product in helping children whose Mid Upper Arm Circumference (MUAC) reading was yellow and red to return to green.

MATERIALS AND METHODS: Sprouted cereals (yellow maize and brown sorghum), dried by pan roasting, were mixed with boiled and hot-pan dried soyabean and roasted groundnut and milled together. The mixture was sifted to get the ABSNUTP. The nutrient content of the product was evaluated using standard methods. Sensory/organoleptic properties of ABSNUTP prepared in 3 different ways were also conducted using *Cerelac* Infant Cereal as the Control. Analysis of the sensory evaluation was done using Analysis of variance. Duncan New Multiple Range Test (DNMRT) was used to compare the mean score of the different parameters scored.

RESULTS AND DISCUSSION: Chemical analysis conducted showed that ABSNUTP nutrient composition was adequate. It has high protein 17.63% and high energy (385.71 kcal) values which compares favourably with the recommended daily protein and energy requirement of children during complementary feeding. The result of the sensory evaluation showed there was no significant difference ($p>0.05$) in acceptability between sample "C" – ABSNUTP prepared with milk and sugar and sample "D" – the control. Sample C even scored higher than the others – A, B, & D. 15 sachets of ABSNUTP was given to a caregiver whose 15 months old son was yellow on MUAC strap to add to his daily feed. By the second week during follow up visit, the child's MUAC changed to green.

CONCLUSION: This study shows that this cereal-legume blend – ABSNUTP is adequate in nutrients to support adequate growth in under five children and can also help check or stop malnutrition in moderately malnourished children.

Provide at least one result table or figure
The proximate composition of *ABSNUTP* is as shown in table 1 below.

Table 1. Nutrient Composition of *ABSNUTP* compared with Cerelac infant Cereal

Nutrient composition/100g	ABSNUTP	Cerelac Infant cereal
Moisture content (%)	9.12	
Protein	17.63	15
Fat	6.05	10
Crude Fibre	0.46	2.8
Ash	1.56	
Carbohydrates	63.7	68
Energy value (Kcal)	385.71	411

Also provide not more than five References

1. Asma MA., Elfalil EB., Eltinay, A.H. (2006). Development of Weaning Food From Sorghum Supplemented with Legumes and Oil Seeds. Food Nutr Bull 24: 1-10.
2. Ekerette EU., and Olukemi K.A. 2016. Complementary feeding practices among mothers and

nutritional status of infants in akpabuyo Area, cross river state Nigeria. Springplus 5(1):2073. Doi: 10.1186/s40064-016-3751-7. https://www.ncbi.nlm.nih.gov/pmc/article/PMC5138178.
3. Ikemefuna C., Obizoba J., Atii, JV. (1991). Effects of Soaking, Sprouting, Fermentation, and Cooking on Nutrient Composition and Some Antinutritional Factors of Sorghum (guinesia) Seeds. Plant Foods for Human Nutrition 41:203-212.
4. National Nutrition and Health Survey. 2018. https://www.unicef.org/nigeria/media/2181/file/nigeria-nnhs-2018.pdf
5. World Health Organization, (2003). World Health Organization: Guiding Principles for Complementary Feeding of the Breastfed Child. Google scholar.

OI34

Adolescent physical activity levels and their relationship with anthropometric measures

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KEYWORDS: Physical activity, adolescents, anthropometry, IPAQ-A.HIGHLIGHTS

- Levels of physical activity among the adolescents is relatively low compared to standard
- Males were significantly more physically active compared to females (<0.05)
- The major barrier to physical activity participation reported was stress

ABSTRACT
BACKGROUND AND OBJECTIVES: Adolescence, a phase marked by significant biological, psychological, and social changes [1], is crucial for establishing habits that can influence lifelong health. However, unhealthy lifestyle patterns, including poor nutrition and reduced physical activity, are prevalent, particularly among sedentary adolescents [1]. Early-life risk factors play a role in chronic non-communicable diseases (NCDs), making interventions during adolescence vital in preventing such diseases later in life. In Nigeria, physical activity levels have significantly declined, with a substantial proportion of adolescents (50% to 75%) being sedentary or inactive, and only 37% meeting the recommended international activity guidelines of 60 minutes per day, five days a week [2]. This study assessed physical activity levels in relation to anthropometric measures among a sample of adolescents in Abia State, Nigeria.

MATERIALS AND METHODS: A cross sectional study involving 277 adolescents' boys and girls (10-19 years) randomly selected from three public secondary schools in Umuahia metropolis Abia state, Nigeria was conducted. Height and weight were measured, while Height-for-age and BMI-for-age Z-scores were calculated using WHO standards. Physical Activity Questionnaire for adolescents (PAQ-A) was used for the physical activity score, with a score of 1 indicating low physical activity (PA), whereas a score of 5 indicates the highest level of PA. A 2.75 cut off point was used which is equivalent to >60 minutes moderate and vigorous physical activity recommended by WHO for adolescents. Inferential statistics was performed with the Student's t test, Pearson's correlation and Chi Square test for qualitative variables.

RESULTS AND DISCUSSION: Stunting and obesity prevalence among adolescents was 14.8% and 9%, respectively. Stunting was significantly (P=<0.05) higher in boys (25.0%) than in girls (3.8%). Boys displayed greater physical activity (composite score: 2.50) compared to girls (2.22; p<0.05). The adolescents' physical activity level (composite score: 2.37) was relatively low, falling short of the recommended cutoff (2.75) [2]. This aligns with a previous Nigerian study reporting that only 37% of adolescents met the recommended activity level [2]. Similar to prior research [2], there was gender differences in physical activity, with girls being less active than boys. Stress emerged as a significant barrier to physical activity, reported by 68.1% of adolescents. This is consistent with studies indicating that high stress levels deter physical activity engagement. Furthermore, there was also a significant negative correlation (P=<0.05 and <0.01) between Height-for-Age Z score and physical

activity (r=-0.132), indicating less physical activity among stunted children compared to non-stunted peers.
CONCLUSION AND RECOMMENDATION: Results suggest the need to promote physical activity among adolescents in Nigeria, particularly among girls. This can be achieved through targeted interventions that encourage participation in physical activity during spare time, such as promoting dancing or other activities that girls enjoy.

Table 1: Means ± SDs of PAQ-A items and composite score on each occasion of measurement

Item No:	Summary score	Male (N=145)	Female (N=193)	Total	p-value
1	Spare time activity	2.43 ± 0.65	2.28 ± 0.71	2.36 ± 0.69	0.063
2	During PE classes	1.94 ± 1.25	1.51 ± 0.97	1.73 ± 1.15	0.002*
3	Lunch time	2.41 ± 1.25	1.89 ± 1.18	2.16 ± 1.24	0.000*
4	After school	2.78 ± 1.24	2.30 ± 1.33	2.55 ± 1.30	0.002*
5	Evening	2.74 ± 1.20	2.50 ± 1.35	2.63 ± 1.28	0.120
6	Weekend	2.90 ± 1.21	2.66 ± 1.27	2.78 ± 1.24	0.118
7	Exertion, free time	2.28 ± 0.95	2.22 ± 1.08	2.25 ± 1.01	0.586
8	Frequency each day	2.54 ± 0.91	2.41 ± 0.85	2.48 ± 0.88	0.243
	Composite score	2.50 ± 0.54	2.22 ± 0.57	2.37 ± 0.57	0.000*

Table 2: Pearson's correlation between anthropometry, body composition and physical activity

Weight (kg)	Height (cm)	Body fat (%)	Visceral fat	Skeleton muscles (%)	Resting metabolic rate (KCAL)	HAZ	Formatted Table	Physical activity
-.036	-.122*	.022	.033	.002	.068	-.132*	.044	1

*Correlation significant at 0.05

REFERENCES

1. Lizandra, J. and Gregori-Font, M. (2021). Study of eating habits, physical activity, socioeconomic status and sedentary lifestyle in adolescents in the city of Valencia. Revista. Espanola de Nutricion. Humanay Dietetica. 25:199–211.
2. Oyeyemi, A. L., Ishaku, C. M., Oyekola, J., Wakawa, H. D., Lawan, A., Yakubu, S. and Oyeyemi, A. Y. (2016). Patterns and Associated Factors of Physical Activity among Adolescents in Nigeria. PloS one, *11*(2):0150142.

OI40

Exclusive Breastfeeding practice, Iron and Folic acid Use among Reproductive-age Women in Selected Clinics in Abuja-Municipal-Area-Council, Federal-Capital-Territory, Abuja

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KEYWORDS: Exclusive breastfeeding, Reproductive-age-women, iron and folic acid supplements, Abuja Municipal Area Council

BACKGROUND AND OBJECTIVE:
Low Exclusive breastfeeding (EBF) has been reported in Nigeria. Few studies exist on iron and folic acid use among reproductive-age women (RAW) (15-49 years). The study assessed EBF practice and iron and folic acid use among RAW in selected Clinics in Abuja-Municipal-Area-Council, Federal-Capital-Territory, Abuja.

MATERIALS AND METHOD:
A cross-sectional study was carried out among RAW (15-49 years) in two Clinics (Air-force-Base Medical Centre

and the University of Abuja out-patient Clinic (n=351). A pre-tested-interviewer-administered-questionnaire was used to collect respondents' information on socio-demographic characteristics, EBF practice and iron and folic acid use. Data were analysed at $p<0.05$.

RESULTS AND DISCUSSION:
The mean age of respondents was 28.96±6.683 years. Marital status was never married (12.8%) and ever married (87.2%). Never pregnant were 6.6%, Currently pregnant (45.9%) and has been pregnant before (47.5%). RAW currently using folic acid tablets was 43.3 % while those who use iron always were 33.6%. Pregnant women who use folic acid and iron supplements always were 73.9% and 49.7% respectively. Only 23.4% were currently doing EBF lower than the national percentage of 29.0% (NDHS, 2018). There is significant association between pregnancy status and willingness to take iron and folic acid supplements in future; pregnancy status and those currently using iron and folic acid supplements ($p<0.05$).

CONCLUSION AND RECOMMENDATION:
EBF practice and use of iron and folic acid supplements were low among respondents. Mass campaigns and awareness creation are important among this study population and for stakeholders in charge of iron and folic acid supplementation in Nigeria.

Table 2: Iron and folic acid supplementation usage among the respondents

	Pregnancy Status					
	Never Pregnant (%)	Has Been Pregnant Before (%)	Currently Pregnant (%)	Total (%) N=351	χ^2	p-value
Variables	n=23	n= 167	n=161			
Do you normally collect iron tablet when you come to hospital?						
Yes	10(43.5)	84(50.3)	103(64.0)	197(56.1)	7.825	0.020
No	13(56.5)	83(49.7)	58(36.0)	154(43.9)		
I don't know	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)		
Do you normally collect folic acid tablet when you come to hospital?						
Yes	14(60.9)	105(62.9)	124(77.0)	243(69.2)	9.585	0.143
No	5(21.7)	39(23.4)	20(12.4)	64(18.2)		
I don't know	4(17.3)	23(13.8)	17(10.6)	44(12.5)		
I use folic acid supplement						
Always	11(47.8)	90(53.9)	119(73.9)	220(62.7)	5.796	0.215
Usually	9 (39.1)	63(37.7)	32(19.9)	104 (29.6)		
Rarely	3 (13.0)	14 (8.4)	10 (6.2)	27 (7.7)		
Will you take folic acid supplement in future						
Will take	17(73.9)	88(52.7)	68(42.2)	173(49.3)	18.499	0.001
Will not take	6(26.1)	70(41.9)	92(57.1)	168(47.9)		
Undecided	0(0.0)	9(5.4)	1(0.6)	10 (2.8)		
Are you taking folic acid supplement now?						
Yes	5(21.7)	56(33.5)	91(56.5)	152(43.3)	23.523	0.001
No	17(73.9)	108(64.7)	69(42.9)	194(55.3)		
I don't know	1(4.3)	3(1.8)	1(0.6)	5 (1.4)		
I use iron supplement						
Always	5(21.7)	33(19.8)	80(49.7)	118(33.6)	34.868	0.001
Usually	17(73.9)	125(74.9)	75(46.6)	217(61.8)		
Rarely	1(4.3)	7(4.2)	5 (3.1)	13 (3.7)		
Never	0(0.0)	2(1.2)	1 (0.6)	3 (0.9)		
Have you used iron supplement before?						
Always	4(17.4)	36(21.6)	81(50.3)	121(34.5)	34.743	0.001
Usually	16(69.6)	119(71.3)	69(42.9)	204(58.1)		
Rarely	3(13.0)	12(7.2)	11 (6.8)	26(7.4)		
Will you take iron supplement when you are pregnant?						
Will take	16(69.6)	118(70.7)	91(56.5)	225(64.1)		
Will not take	4(17.4)	25(15.0)	50(31.1)	79(22.5)	12.615	0.013
Undecided	3(13.0)	24(14.4)	20(12.4)	47(13.4)		

REFERENCES

Nigerian Demographic and Health Survey, 2018.

PI41

Nutritional status of adolescents in Ijebu- Ode, Ogun State

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KEYWORDS: Nutritional status, adolescents

HIGHLIGHT

- The prevalence of being underweight among adolescents was high
- Energy and some of the nutrient intake were low when compared with RDA

BACKGROUND AND OBJECTIVES:
Poor nutrition in adolescence increases the risk of adolescent malnutrition, and poor performances in school and affect their health in general. For female adolescents, pregnancy and birth complications can also be experienced. Therefore, this study examined the Body Mass Indices (BMI) and dietary intake of adolescents in Ijebu Ode Metropolis, Ogun State

MATERIALS AND METHODS:
A validated structured questionnaire was used in collecting demographic data. Standard instruments andz procedures were used in taking weight and height measurements. A 24-hour dietary recall was used in collecting information on the dietary intake of the respondents and was analyzed using the adapted Total Diet Assessment software (TDA). BMI-for-Age was calculated and categorized as BMI-for-Age < 5th percentile = Underweight; between 5th and 85th percentile = Normal Weight; ≥ 85th but < 95th percentile = Overweight and > 95th = Obese. Chi-square (X2) statistics were used to test the stated hypotheses

RESULTS AND DISCUSSION:
The prevalence of underweight, normal, overweight and obesity were 25.0%, 52.5%, 21.5% and 1%, respectively. Results from the table below show that the daily intake of energy (male intake), calcium and vitamin C were lower than the RDA. The World Food Programme (WFP) (2019) reported that adolescents need to consume a healthy balanced diet that would make them to be able to maintain a healthy weight Also a significant difference in the protein intake of male and female respondents was established, p ≤ -.473.

Table 1: Nutrients and energy intake of the respondents

					Recommended Dietary Allowance	
Variable	**Male**	**Female**	**Total**	**p-value**	**Male**	**Female**
					2000	1800
Calories (Kcal)	1923.04 ± 899.06	1927.81 ± 966.82	1925.40 ± 930.87	0.910	3200Kcal	2400Kcal
Protein (g)	75.52 ± 99.71	94.52 ± 275.16	83.14 ± 205.92	**-.473**	52g/d	46g/d
Carbohydrate (g)	239.54 ± 97.19	264.10 ± 120.78	251.69 ± 109.92	.123	130g/d	130g/d
Fat (g)	36.78 ± 21.18	35.69 ± 27.12	36.24 ± 24.25	.714	25-35%	25-35%
Cholesterol (mg)	232.43 ± 199.83	235.39 ± 169.32	233.89 ± 184.90	.936	<300g/d	<300mg/d
Vitamin A (ug)	6668.53 ± 11739.76	6125.72 ± 9940.33	6399.84 ± 10862.72	.866	900ug/d	700ug/d
Vitamin B1 (mg)	1.56 ± 1.17	1.53 ± 1.20	1.54 ± 1.18	.822	1.2mg/d	1.0mg/d
Vitamin B2 (mg)	1.41 ± 1.50	1.45 ± 1.25	1.43 ± 1.38	.727	1.3mg/d	1.0mg/d
Vitamin B6 (mg)	1.47 ± 1.58	1.43 ± 1.01	1.45 ± 1.32	.808	1.3mg/d	1.2mg/d
Vitamin B12 (ug)	12.86 ± 22.81	11.58 ± 21.28	12.22 ± 22.02	.658	2.4ug/d	2.4ug/d
Calcium (mg)	238.74 ± 178.49	225.83 ± 113.10	232.35 ± 149.50	.584	1300mg	1300mg/d
Iron (mg)	14.97 ± 7.90	16.79 ± 8.28	15.87 ± 8.12	.141	11mg/d	18mg/d
Vitamin C (mg)	29.48 ± 28.56	26.78 ± 24.43	28.14 ± 26.57	.364	75mg/d	65mg/d

Summary: no significant difference between total food intake and RDA. Chi-square: p-value = .233
Note: Boldened p-value figures shows significant difference. Daily intakes are expressed as mean ± SD.

CONCLUSION AND RECOMMENDATION

The prevalence of underweight among the adolescents was high and they did not meet up with some of their recommended nutrient intake. The study therefore recommend that, more attention should be focused on adolescents' nutrient intake in order to improve their learning ability

REFERENCES

- World Food Programme (WFP) (2019). The State of Food Security and Nutrition in the World: Safeguarding against economic slowdowns and downturns. Rome, Italy.

OI42

Relationship between appropriate complementary feeding practice, psychosocial stimulation and anthropometric status of children aged 6-24 months in Abia state.

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KEYWORDS: Complementary feeding, psychosocial stimulation, anthropometry and children.

HIGHLIGHTS

- Majority of the children did not receive age-appropriate complementary feeding.
- Psychosocial stimulation was significantly associated with appropriate complementary feeding.
- Psychosocial stimulation was associated with anthropometry.

BACKGROUND AND OBJECTIVES

Optimal infant and young child feeding practices rank among the most effective interventions to improve child health (1). In the acute stage of malnutrition, severely malnourished children have poor levels of mental development and they continue to have low intelligence levels, behaviour problems and poor school achievement in later childhood. However, marked improvements in development can occur if severely undernourished children are adopted and exposed to more nurturing environments and nutrition and psychosocial stimulation programs have been shown to have a significant impact on the mental development of severely malnourished children.

This study aimed to determine the relationship between appropriate complementary feeding practice, psychosocial stimulation and anthropometric status of children (6 – 24 months) in Abia State.

This study was a descriptive cross-sectional study. A total of 330 children were assessed in three Local Government Areas in Abia state (Aba North, Ikwuano and Umuahia North). Appropriate complementary feeding practice was determined using the eight infant and young child feeding recommendations (1). Psychosocial stimulation was measured using the Home Observation for Measurement of the Environment (Infant-Toddler version for children ages 0-3 years) developed in 2003 by Caldwel and Bradley (2). Z scores of anthropometric status indicators for weight for length (WLZ), length for age (LAZ), weight for age (WAZ) and BMI for age (BMIAZ) were determined from their weight (kg) and length (cm) measurements using the WHO Anthro software 3.2.2. The data obtained were coded and analysed using IBM (SPSS) software (version 23). Pearson's (Point Biserial for dichotomous variables) correlation analysis was used to determine the relationship between appropriate complementary feeding practice, psychosocial stimulation, and the anthropometric status of the children.

An approximately equal number of male (50.3%) and female (49.7%) children aged mostly (67.9%) 12 – 24 months were studied. The result from this study showed that only 3.9% of the children received appropriate complementary feeding while 50.6% attained the recommended psychosocial stimulation (>=27 scores). The prevalence of general stunting and overweight/obesity was also found to be quite high (44.9% and 30.5%

respectively).
Table 1 showed a significant and positive relationship (r = 0.196, P<0.01) between appropriate complementary feeding practice and psychosocial stimulation, which implied that children who received more psychosocial stimulation were fed more appropriately than those who did not. Responsive feeding, which is a more active feeding style that applies the principles of psychosocial stimulation/care, can improve dietary intake (1). The result further showed a significant (P<0.01) but negative relationship between psychosocial stimulation and WHZ (r = -0.147) and BMIAZ (r = -0.150) but a positive relationship with LAZ (r= 0.123, P<0.05). This result indicates that children are more predisposed to overweight/obesity if they do not receive adequate psychosocial stimulation. Psychology, culture and environment have been associated with the quality of complementary feeding received by children (3) and forms one of the three aspects that must be considered to improve the quality of life in young children (4). However, no significant relationship was established between appropriate complementary feeding and all the anthropometric indicators. The relationships established in this study were irrespective of the age and sex of the children.

CONCLUSION AND RECOMMENDATION

Poor complementary feeding practices among young children persist in society. Psychosocial stimulation is a very important aspect of young child feeding associated with appropriate complementary feeding practices and the growth of children. Caregivers should therefore be educated on appropriate complementary feeding practices and effective psychosocial stimulation techniques for children.

Table 1: Correlation between appropriate complementary feeding, psychosocial stimulation and anthropometric indicators of the children

Variables	Appropriate complementary feeding	Psychosocial stimulation	WLZ	LAZ	WAZ	BMIAZ
Sex (male)	-0.001	0.071	0.008	-0.070	-0.060	0.007
	(0.983)	(0.203)	(0.884)	(0.205)	(0.279)	(0.894)
Age (months)	0.006	0.007	-0.016	-0.024	0.084	0.118*
	(0.916)	(0.905)	(0.769)	(0.666)	(0.124)	(0.032)
Appropriate		0.196**	-0.043	0.062	0.014	-0.045
complementary		(0.000)	(0.432)	(0.265)	(0.795)	(0.413)
feeding						
Psychosocial			-0.147**	0.123*	-0.038	-0.150**
stimulation			(0.008)	(0.027)	(0.500)	(0.007)

Values are Pearson's correlation coefficient (P value)
* Significant relationship exits at P<0.05
** Significant relationship exits at P<0.01

Table 2: Complementary feeding and psychosocial stimulation status of the children

Variables	Percentage (%)
Gender	
Male	50.3
Female	49.7
Total	100.0
Complementary feeding pattern	
Appropriate	3.9
Inappropriate	96.1
Total	100.0
Psychosocial stimulation attainment	
Attained	50.6
Unattained	49.4
Total	100.0
Anthropometric status	
Stunted	44.9
Overweight/obese	30.5

REFERENCE

1. World Health Organization (WHO) (2009). Infant and Young Child Feeding: Model Chapter for Textbooks for Medical Students and Allied Health Professionals.
2. Caldwell, B.M. and Bradley, R.H. (2003). Home Observation for Measurement of the Environment: Administration Manual. Family and Human Dynamics Research Institute, Arizona State University.
3. Ogunba, B.O. (2010). Psychosocial care in complementary feeding of children: A comparative study of the urban and rural communities of osun state. *Nigeria early child development and care*, 180(3): 279-288.
4. Oktarina, W., Ali, K., Neti, H. and Faisal, A. (2012). Relationship between nutritional status, psychosocial stimulation and cognitive development in preschool children in Indonesia. *Nutrition research and practices*, 6(5): 457.

PI43

Infant and Young Child Feeding Knowledge and Practice of Mothers and Anthropometric Indices of their children (0-24 Months) in Nsukka Local Government Area of Enugu State, Nigeria

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KEYWORDS: *Breastfeeding, Complementary feeding, Stunting*

HIGHLIGHTS

- Socioeconomic status of mothers was associated with feeding practices of their children
- There was a significant positive correlation between gender of child and weight for age

BACKGROUND AND OBJECTIVES: Optimal infant and young child feeding (IYCF) is vital to ensuring a healthy start to life. Studies reveal that exclusive breastfeeding rate in Nigeria is at 29% which is low and translates to

poor nutritional status of children. The objective of the study was to determine the association of IYCF knowledge and practices and nutritional status of children (0-24 months) in Nsukka Local Government Area.

MATERIALS AND METHOD A cross sectional survey design was adopted for the study with a total of 434 mother and child pairs selected using a multi-stage random sampling. Data were collected with a validated questionnaire on socio-demographic characteristics, breastfeeding and complementary feeding knowledge and practices. Anthropometric indices of the children were assessed based on WHO growth standards. Chi-square test and Pearson correlation were carried out to determine the relationship between IYCF practices of mothers and the anthropometric indices of their children. Analysis was done using SPSS.

RESULTS AND DISCUSSION: A high prevalence of stunting (61%), underweight (19.1%) and wasting indicated by MUAC (19.9%) was observed. There was a significant weak positive correlation between practice of infant and young child feeding and height-for-age ($r = 0.096$; $p = 0.045$).

Table 1: Anthropometric Indices of the Children

Variable	Frequency	Percent
WHZ Class		
Normal	218	54.8
Moderate Wasting	20	5.0
Severe Wasting	19	4.8
Total	398	100.0
HAZ Class		
Normal	164	38.3
Moderate stunting	63	14.7
Severe Stunting	201	47.0
Total	428	100.0
WAZ Class		
Severe Overweight	5	1.2
Moderate Overweight	4	0.9
Normal	269	62.0
Moderate Underweight	73	16.8
Severe Underweight	83	19.1
Total	434	100.0

The findings of this study showed a high (61%) overall prevalence of stunting among the children of the mothers used for the study. This implies an emergency nutrition situation in Nsukka, especially as nutritional status of children under 5 years is used as an index for the nutritional status of a population. The figure was however lower than 65% reported by Onoja-Alexander et al. [1] in Kaduna State but higher than 18.1% reported by Galgallo [2].

CONCLUSION: The study revealed that poor nutritional status of the children was associated with inadequate infant feeding practices of mothers. It is recommended that supplementary feeding programs should be stepped up in Nsukka to address the high stunting rate observed in this study.

REFERENCES

1. Onoja-Alexander, M.O., Idris, S.H., Gobir, A.A., Onoja, A.D., Igboanusi, A.A., Olorukoba, A.A., Aliyu, A.A., & Ejembi, C.L. (2017). Integrated nutritional intervention among under-5 children in two rural communities of Kaduna state, Nigeria: its effects on maternal practice of exclusive breast feeding and children's nutritional status. *Archives of Medicine and Surgery*, 2(2), 60-66.
2. Galgallo, S.O. (2017). *Factors associated with nutritional status of children aged 6-59 months in*

Malkona ward of Marsabit County, Kenya. A dissertation submitted in partial fulfillment of the requirements for the award of the degree of Master of Science in Applied Human Nutrition of the University of Nairobi, Department of Food Science, Nutrition and Technology. http://erepository.uonbi.ac.ke/bitstream/handle/11295/103352/Galgallo_Factors%20Associated%20With%20Nutritional%20Status%20Of%20Children%20Aged%206-59%20Months%20In%20Maikona%20Ward%20Of%20Marsabit%20County%2C%20Kenya.pdf?sequence=1

SUB-THEME J: PROMOTING MULTI-SECTORAL COORDINATION FOR EFFECTIVE IMPLEMENTATION OF NUTRITION POLICIES AND PROGRAMS.

OJ1

Multi-Sectoral Partnership for Effective Exclusive Breastfeeding (EBF) in Kachia Local Government Area of Kaduna State.

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KEYWORDS: Multi-Sectoral, Exclusive, Breastfeeding, Kaduna
HIGHLIGHTS:

- mothers who are exclusively breastfeeding in rural areas get the most support from health care centres.
- Little attention is given to psychological reasons for a mother's non-compliance with exclusive breastfeeding.

BACKGROUND AND OBJECTIVES: Multi-sectoral partnership actions such as Health worker training, Hospital policies and National policies are required for successful EBF[1] The objective of this survey is to document the key partners that support successful exclusive breastfeeding mothers in Gumel, Bishin, and Ankwa wards of Kachia Local Government area of Kaduna State.

MATERIALS/METHODS: A total of 420 mothers who successfully executed EBF of their infants were selected for the survey by convenience sampling. Interviews and structured questionnaires were administered and results were analyzed using SPSS 24 Version statistical tool.

RESULT/DISCUSSION: Majority of the mothers received EBF support from health care workers during Post-natal clinics (63%), with only 8% subset accessing support for Post-Traumatic Stress Disorders, 17% from Spouses and family members, 9% received support from rural focal persons at grass root sensitization sessions while the remainder of the respondents had no external support whatsoever.

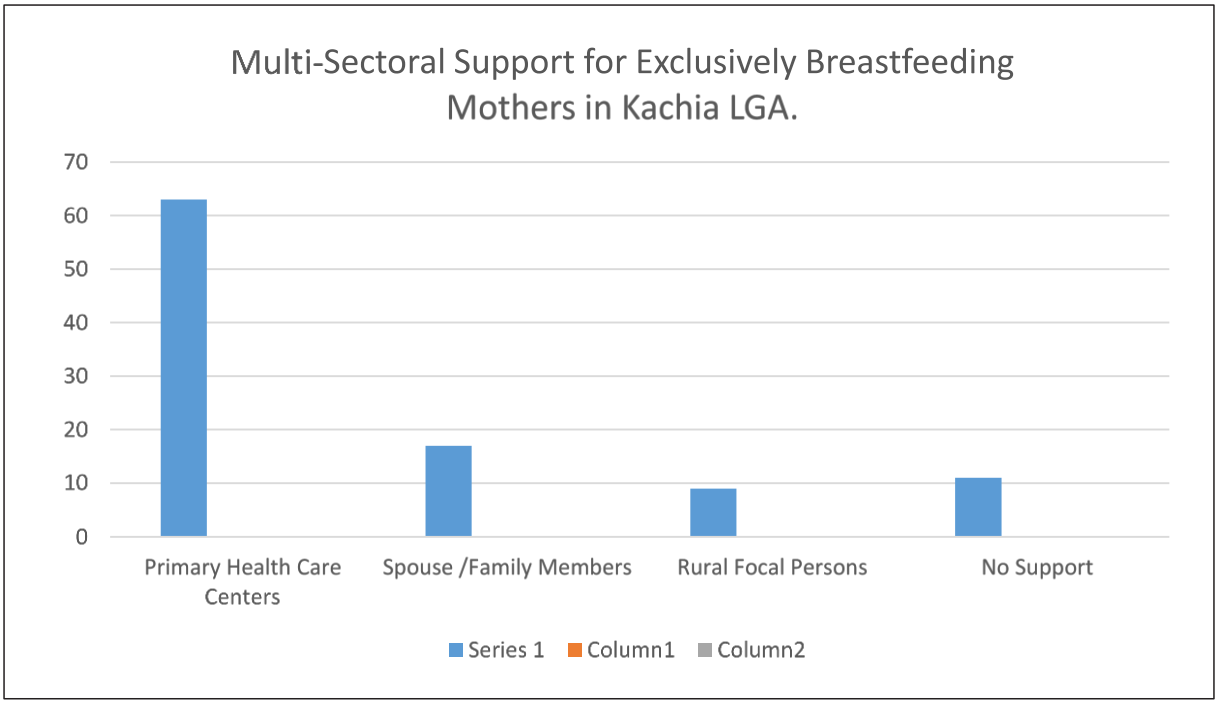

Figure 1: Key Partners that support exclusively breastfeeding mothers in Kachia Local Government of Kaduna State.

CONCLUSION/RECOMMENDATION: Exclusive breastfeeding requires more engagement from stakeholders of Government and Non-Government agencies for successful partnerships that result in improved nutrition status in all infants so as to meet the SDGs 2030, especially for those residing in rural areas. Breastfeeding mothers in rural areas who have no access to primary health care facilities risk low compliance as a result of inadequate options of multi sectoral partnerships, therefore an improvement in advocacy and political will is suggested to improve on already existing support for exclusively breastfeeding mothers[2].

REFERENCES:

1. Aisling W, Pieternella P, Nita M, Ellen C, Maria C, Chimwemwe M, Ciara K, Anne M, 2023, Imoroving breast feeding support through the implementation of the baby friendly hospital and community initiatives: A scoping review, International Breast feeding Journal,18,article no:22.
2. Chantell W, Rafael P, 2022, Gearing up to improve exclusive breastfeeding practices in South Africa, Journal PONE,17:3

PJ2

Opportunities and Challenges to Promoting Adequate Care Practices and Optimal Nutrition in Old People's Care Services in Ibadan, Nigeria

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KEYWORDS: Caregivers, old people's care home, elderly, policy
HIGHLIGHTS:

- Poor availability of human and material resources characterises the old people's homes
- Lack of regulatory framework and monitoring of the old people's homes services.
- Poor prioritization of nutrition services characterises the old people's homes services

BACKGROUND AND OBJECTIVES:
Old people's home is becoming popular in Nigeria, and this is expected to rise as many young people work far away from home. The debilitating effect of malnutrition in old age is well known, yet, institutionalised elderly exhibit a high burden of malnutrition [1]. Presently, there is a paucity of information on nutrition services in these care homes. Therefore, this study was designed to assess the resources and services available in old people's care homes and identify opportunities and challenges to promoting adequate care practices and optimal nutrition.

MATERIAL AND METHODOLOGY
This descriptive cross-sectional study adopted a mixed-method approach. Nine registered care homes in Ibadan were purposively sampled including eight home managers, thirty-five caregivers and health staff. Information on socio-demographic characteristics, services offered, training and competencies of staff were collected using semi-structured questionnaires and a checklist which was analysed using SPSS. In-depth interviews were conducted to explore the opportunities and challenges to promoting adequate care practices and optimal nutrition, transcribed verbatim and analysed thematically.
RESULTS

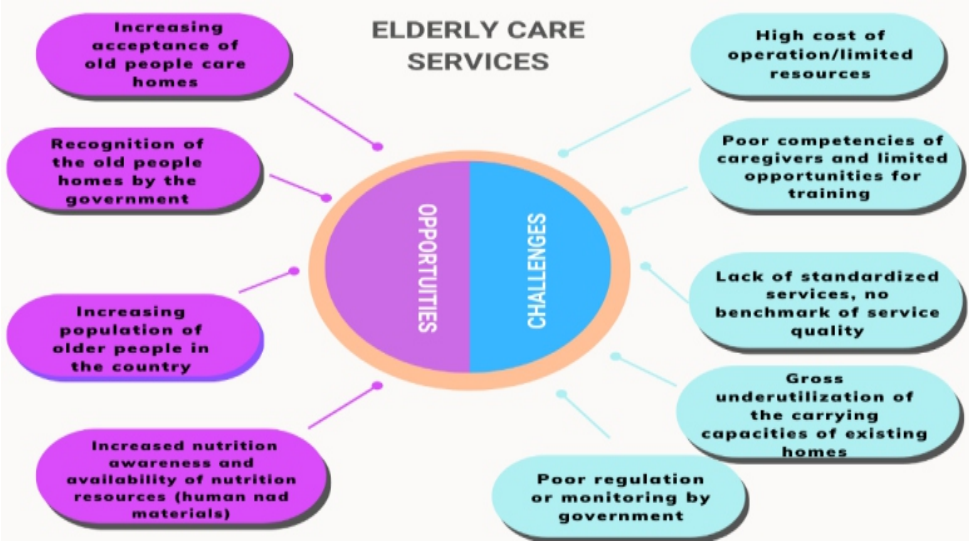
Table 1: Characteristics of Old people's care homes

Aspect	Managers	Caregivers	Health Professionals
Mean age ± SD (year)	49.8±15.7	33.9±11.1	30.3±9.9
Gender	Largely Female	Largely Female	Largely Female
Basic characteristics of care homes			
Carrying Capacity	12-30 older people		
Full Capacity	None		
Operation			
Caregiver Training	Limited		
Nutritionist/Dietitian	None		
Staff			
Material Resources			
Measuring Cups/Spoons	55.6%		
Exercise Equipment	44.4%		
MUAC Tape	33.3%		
Food Models and Food Scales	22.2%		
Nutrition Education Chart	11.1%		
Personal Alert System	None		

Key challenges are 1. High cost of operation/limited resources 2. Poor competencies of caregivers and limited opportunities for training 3. Poor regulation or monitoring by the government 4. Lack of standardised services, no benchmark of service quality while opportunities include 1. Increasing acceptance of old people's care homes 2. Recognition of the old people's care home by the government 3. Increased nutrition awareness and availability of nutrition resources (human and materials). This finding is consistent with the reports of largely unmet care and support needs of the older population [2] This study also identified that due to the staffing structure of care homes, healthcare services, which should ideally be delivered by competent health professionals, are not as readily available given their insufficient expertise in a variety of specialities including nutrition, physiotherapy, and mental health care, this raises questions about the ability of caregivers to provide

care to older Nigerians. In order to assure higher quality care in care homes, it is crucial to set uniform certification programmes. The proposed National Ageing Policy has not been put into practice in Nigeria, which indicates a lack of constitutional protection for the rights and health of elderly people receiving non-residential care or living in care facilities [3]. The urgent need for policymakers to intervene through law and policy reform is therefore important and this has been articulated by earlier studies too [3,4]

Figure 1: Challenges and Opportunities in Promoting Optimal Nutrition and Health



CONCLUSION

Old people's care homes in Ibadan are largely characterised by poor availability of competent human and essential material resources and poor nutrition services. Existing challenges include the high cost of operation despite limited resources, limited training opportunities for staff, underutilization of existing homes and lack of regulatory framework.

REFERENCES:

1. Okoye, C., Ogunyemi, A. and Abosede, O. (2019) Care practices and nutritional status of the elderly in old people's homes in Lagos State, Nigeria. *Nigeria Journal of Nutritional Sciences*. 40: 91–98.
2. Abdi, S., Spann, A., Borilovic, J, de Witte, L. and Hawley, M. (2019) Understanding the care and support needs of older people: a scoping review and categorisation using the WHO international classification of functioning, disability and health framework (ICF). *BMC Geriatr*. 19:195
3. Araomi, M.A. (2015) Protecting the Rights of Old People in Nigeria: Towards a Legal Reform. *Journal of Law, Policy and Globalization*. 40:131-143
   Seid, A.M. and Fentahun, N. (2022) Prevalence of malnutrition among old people in Africa: systematic review and meta-analysis. *BMJ Open* 12:e065197.

OJ3

Prevalence of Eating Disorder and Undernutrition among Students of Health Institutions in Zaria

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KEYWORDS: Eating disorders; Malnutrition; Health institutions; Zaria

HIGHLIGHTS

- Positive score which indicates presence of eating disorders was higher among the male students (17.6%) compared to the females (15.1%).
- 36.4% of the students were undernourished (Underweight).
- Significant ($p \leq 0.05$) association between eating disorder, nutritional status with gender and sponsor's occupation.

BACKGROUND AND OBJECTIVES: Eating disorders are mental disorders characterized by abnormal eating habits that negatively affect a person's physical and mental health [1]. Disturbed nutritional status and eating disorder among adolescents are of serious public health concern owing to their high prevalence and adverse influence on physical health [2]. The nutritional and health status of tertiary institution students has now become a major public health concern and limited study highlights eating attitudes and its association with nutritional status among students in health institutions in Zaria metropolis. This study assessed eating disorders and undernutrition among students of health institutions in Zaria metropolis, Nigeria.

MATERIALS AND METHODS: The research was a cross-sectional study design which involved 195 students sampled from five accredited health institutions. A semi-structured socio-demographic questionnaire and Eating Attitude Test, 26 item version (EAT-26) was administered to the randomly selected consented student after which their height and weight were measured using standard height meter and weighing scale to the nearest (0.1m) and (0.1kg) respectively.

RESULTS AND DISCUSSION: In this study, 17.6% of the male students and 15.1% of the female students had positive scores which indicates presence of eating disorders using EAT-26, this shows that eating disorders are rare conditions. Undergraduates in various Nigerian Tertiary Institutions are not exempted from the exhibition of various eating behaviors, some of which may result in eating disorder. Studies have shown that most Tertiary Institution students skip breakfast, some consume greasy and fat-based foods, sugary foods and alcohol, while others resort to inadequate meals [3]. Apart from keeping shape to look like models, financial problems have been acknowledged as a contributory factor to eating disorder in some students. There is increasing issues of disordered eating habits among the young population (especially women of reproductive age) which is very alarming and will negatively affect attainment of the SDGs.

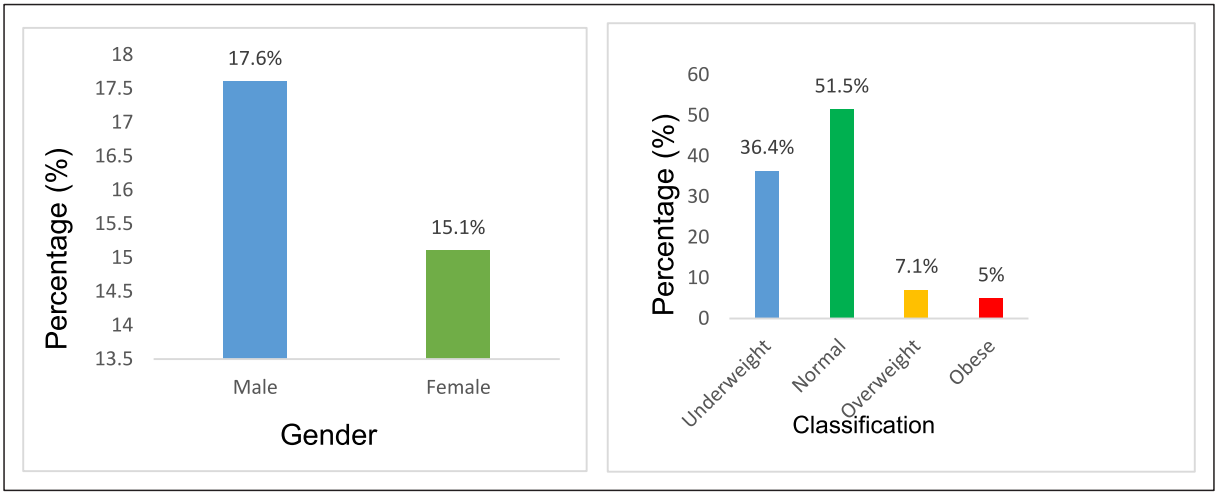

Figure 1: Percentage Distribution of Scores on EAT-26 and Nutritional Status of Students in Health Institutions, Zaria Metropolis, Nigeria.

CONCLUSION AND RECOMMENDATION

The study showed that prevalence of eating disorder among the students was 32.7% and 36.4% of the students were undernourished (underweight). It is recommended that similar study should be carried out in a larger population and wider socio-cultural background in the country so as to pick up at risk cases and furthermore, diagnostic instruments can also be used to make definitive diagnoses for necessary therapeutic intervention.

REFERENCES

1. Solmi F; Hatch SL; Hotopf M; Treasure J; Micali N. (2015). Validation of the SCOFF questionnaire for eating disorders in a multiethnic general population sample. International Journal of Eating Disorders, 48:312-316.
2. Zipfel S., Owe B.L., Reas D.L., Deter H. and Herzog W. (2000) "Long term prognosis in anorexia nervosa: lessons from a 21-year follow up study", The Lancet, 355:721-722.
3. Okoli I. (2009). Parental Influence on eating Behavior: Conception to Adolescence. J Law Med Ethics, 35: 22-34.

OJ4

Physical Activity Level and Nutritional Status of Academic Staff of Federal Polytechnic Kaduna Nigeria.

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INTRODUCTION

A transition from communicable diseases to non-communicable illnesses is currently taking place as a result of changes in the healthcare system, way of life, physical activity, nutrition, and industrialization, among other things. NCDs cause premature death every two seconds (4). Excessive high-calorie intake in adverse proportion to energy expenditure and sedentary behaviours are all associated with overnutrition, which has been found to shorten lifespan, increase absence from work, diminish productivity, and cause chronic illnesses (3) .

METHODOLOGY

Study Design and Study Area: The study is descriptive and cross-sectional in design. This study selects respondents within the Federal Polytechnic, Kaduna, Kaduna State.

Sample Size: The sample size was determined using the Fisher formula to select 100 respondents.

SAMPLE TECHNIQUE: The respondents were selected using a multi-stage sampling method

STAGE ONE: Stratification of the polytechnic according to the Colleges. Stage Two: Selection of departments from each of the Colleges in the Polytechnic, using a simple sampling technique.

Stage three: Selection of the lecturers from the selected departments, using a simple sampling technique.

DATA COLLECTION: A semi-structured questionnaire was used to obtain all necessary information from the respondents.

DATA ANALYSIS: Descriptive statistical analysis was employed to describe the findings. The results obtained are presented in figures.

RESULTS AND DISCUSSION

Figure 1 shows the physical activity level of the selected academic staff where 76.1% of the staff were mainly sedentary, while 32.4% predominantly walked at one level without heavy lifting and 19.7% walked uphill and climbed stairs. The results revealed that a high number of academic staff do not engage in physical activities due to the sedentary lifestyle they live. This is in line with Patience et al., (1), which state that the majority of the academic staff in Nigeria do not engage in physical activities.

Figure 2 shows the nutritional status of Academic Staff with 7% underweight, 39% normal, 21% overweight, and 33% obese. This is similar to Cyril et al. (2), who found 35.1% of University of Nigeria staff at Nsukka Campus to be overweight, higher than 21% among Kaduna Polytechnic Staff. However, 6.6% of the University of Nigeria Staff at Nsukka Campus were obese, lower than 33% found at Kaduna Polytechnic.

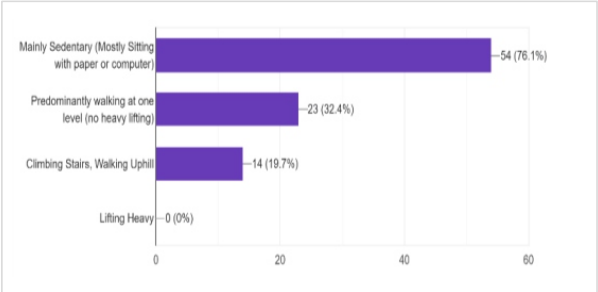

Figure 1: Physical activity level of selected Academic Staff

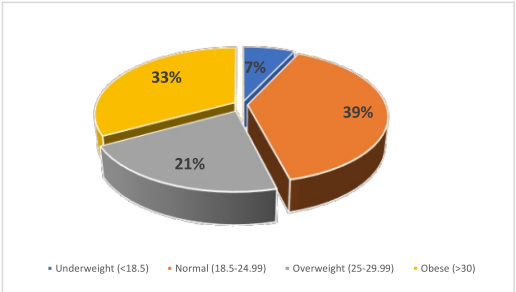

Figure 2: Nutritional status of selected Academic Staff

CONCLUSION

It can be deduced that most respondents were over-nourished, which might be associated with their poor physical activity level resulting in positive energy balance (When energy intake exceeds energy expenditure, which leads to weight gain). Hence, it is recommended that physical activities should be encouraged among the Academic Staff of Kaduna Polytechnic.

REFERENCE

1. Cyril O. Anoshirike, Bernadette N. Eme, Vivienne N. Ibeanu, V. Uzodinma Makuochi (2019), Prevalence of overweight and obesity among the staff (25-70 years) of the University of Nigeria, Nsukka Campus Nigerian Journal of Nutritional Sciences Journal Nigerian Journal of Nutritional Sciences Vol. 40 No. 2
2. Haas, J. D. and Brownlie, T. (2001). Iron deficiency and reduced work capacity: a critical review of the research to determine a causal relationship. The Journal of Nutrition, 131(2), 676S-690S.
3. Patience E. Samson-Akpan, Mary BN. Eyo and Akon M. Joshua (2013), Physical Activity for Quality Living Among Academic Staff in Nigerian Universities Department of Nursing Science, Faculty of Allied Medical Sciences, University of Calabar, Calabar, Cross River State, Nigeria.
   World Health Organization. Noncommunicable diseases country profiles 2018 external

OJ5

Inauguration of Local Government Committee on Food and Nutrition in Bauchi State

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KEYWORDS: Collaboration for nutrition, nutrition actions, multi-level approach

BACKGROUND AND OBJECTIVES:

In Nigeria, the provision for the national, state, local government and ward Committees on Food and Nutrition ensures equity in the spread and access to nutrition interventions. Activating the Local Government Committee on Food and Nutrition (LGCFN) provides opportunities to foster an institutional framework and mobilize diverse stakeholders for increased geographical coverage of nutrition actions across 774 additional platforms for

improved nutrition. Furthermore, it helps decentralize assessment, planning, and implementation of nutrition interventions in a context-specific approach such as agroecological, infrastructural, economic, and sociocultural conditions; complements the commitments of Nigeria's Governors Forum and enhances budgetary spending on nutrition (Pelletier et al. 1995; Browne et al., 2016; Rana et al., 2021). USAID Advancing Nutrition supported Bauchi State's Ministries of Budget and Economic Planning, Local Government and Chieftaincy Affairs and Health to scale up nutrition activities at the grassroots. This report documents the process, the output, and the way forward.

MATERIALS AND METHOD:

The process adopted for the constitution and inauguration of the local government committee on food and nutrition in Bauchi state is shown in Figure 1 below. Actions performed by the SCFN and USAID Advancing Nutrition team are represented in gold boxes, actions performed by the Ministry of Local Government and chieftaincy affairs are represented in blue boxes, the already conducted activities by the Local Government Areas (LGAs) are represented in orange boxes and the activities that were jointly implemented or proposed for implementation by all the entities are represented in yellow boxes.

RESULTS

Six LGCFNs of 18 members each were inaugurated across six LGAs (Tafawa-Balewa, Kirfi, Dambam, Darazo, Zaki and Katagum) with poor nutrition indices. At inauguration, turnout was impressive, ranging from 78 percent in Tafawa Balewa LGA to 94 percent in Zaki LGA. Enthusiasm and level of preparedness across the LGAs reflect hope in using the local government platforms to fast-track improvement in nutrition. The Terms of Reference (ToR), units' roles and responsibilities were explained and various platforms for the delivery of LGCFN activities were identified to include the health system, community, school system, media, and social safety net programmes. The LGCFN members expressed total commitment and inaugural meeting have been held in two of the six LGAs. Chairmen expressed commitment to inaugurate the Ward Committee on Food and Nutrition within three months. Support materials provided per LGA included the National and Bauchi State Food and Nutrition Policies and Multi-sectoral Plan of Action of Food and Nutrition, five photo Recipe (Hausa), four copies of photo Recipe Manual (Hausa language), three Manual Recipe Book (English), one Manual Recipe Book (Hausa), soft copies of Bauchi Advocacy Briefs, CS-SUN's Advocacy and Leadership Manual, and Key sermon advocacy text guide messages (Islamic and Christian Perspectives).

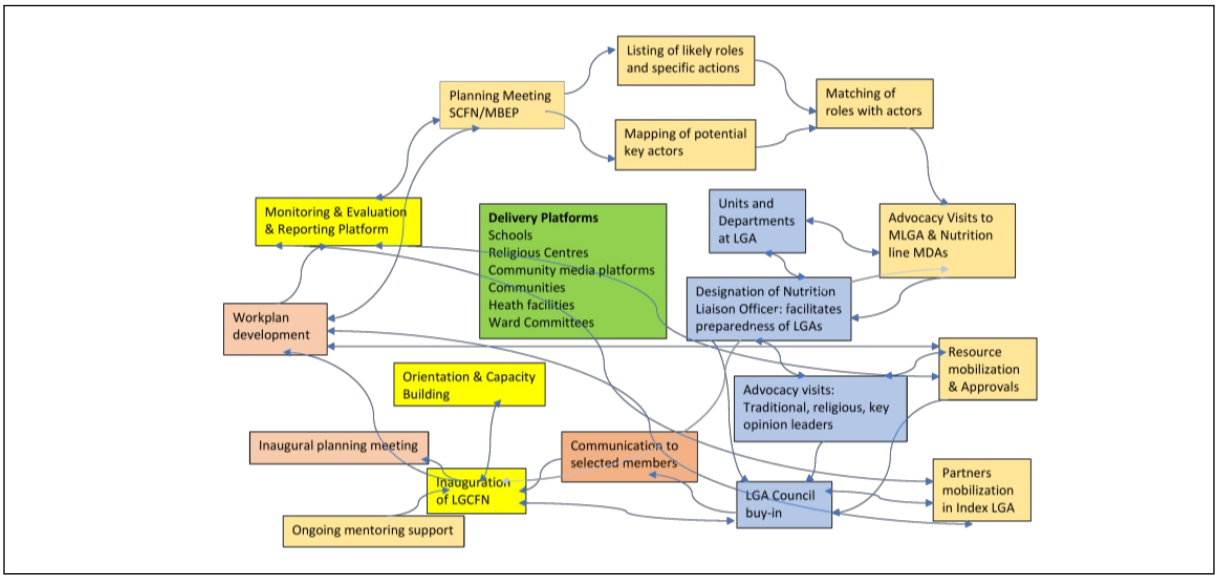

Figure 1: Framework for the inauguration of the Local Government Committee on Food and Nutrition: Bauchi Case Study

CONCLUSION AND RECOMMENDATION(S):

The collaboration of the Ministries of Local Government and Chieftaincy Affairs, Budget and Economic Planning and Health in inaugurating the Local Government Committee on Food and Nutrition was successful. There is a critical need for technical and financial support for optimal performance.

REFERENCE

1. Rana, Y., Dongo, G., Snead, C., Agi, G., Sadik, O., Heidkamp, R., & Abdulwahab, A. (2021).

Developing effective data visualization tools for nutrition: Reflections on the design of a Nutrition Scorecard in Nigeria. *Gates Open Research*, *5*.
2. Pelletier, D. L., Deneke, K., Kidane, Y., Haile, B., & Negussie, F. (1995). The food-first bias and nutrition policy: lessons from Ethiopia. *Food Policy*, *20*(4), 279-298.
Browne G, Davern M & Giles-Corti B (2016) An analysis of local government health policy against state priorities and a social determinants framework. Aust N Z J Public Health 40, 126–131.

SUB-THEME K: APPLICATIONS OF FOOD COMPOSITION AND DIETARY ASSESMENT DATA

PK1

Edible Insects a sustainable diet

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KEYWORDS: Insects; sustainability; diet; nutrition
HIGHLIGHTS:

- Animal protein diets are often supplemented with edible insect protein.
- The most commonly eaten insects are grasshoppers, crickets, cicadas, leaf plant hoppers, scale insects, true bugs, termites, dragonflies, and flies.
- To transform our existing food system to become more resilient and sustainable, we need to reduce the environmental footprint of our food products without losing nutrients.

BACKGROUND AND OBJECTİVES:
The conflict pandemic and limited global food production have forced people to look for alternative protein sources. Insect, on the other hand, has been part of the diet for time immemorial in Thailand, China, Latin America, Japan, and Africa. According to [1], entomophagy is practiced regularly by at least 2 billion people worldwide. Many animals, such as spiders, lizards, and birds, are entomophagous. The most commonly eaten insect groups are beetles, caterpillars, bees, wasps, ants, grasshoppers, locusts, crickets, cicadas, leaf and plant hoppers, scale insects and true bugs, termites, dragonflies, and flies [2]. The study aimed to reduce the high consideration of Grasshoppers as pests, encouraging entomophagy and accepting Grasshopper as an alternative source of protein as a global strategy to achieve food security.

MATERIALS AND METHOD:
Proximate analysis (moisture, ash, crude protein, fat, carbohydrate, and Energy percentage (Kcal/100g)) was carried out according to the method described by the Association of Official Analytical Chemists AOAC (2010). Sensory analysis was carried out based on a 9-point hedonic scale. Panelists have enough experience in the sensory attributes of fried Grasshoppers. Sample (dried), sample B (fried) and sample C (control)

RESULTS AND DISCUSSION:
Food colloids are responsible for the structure, texture, and mouth-feel characteristics of many food products and, therefore, will affect the final attributes and consumer acceptance. Some authors have correlated the protein structure changes with various colloidal properties [3]. The ANOVA tests of the overall liking hedonic rating for samples are illustrated in Table 1. Sample A was crispier and crunchier than samples B and C. There was no significant difference in bristliness between samples. The fresh Grasshopper's protein percentage was higher, 64.41 %, than the fried grasshopper, 62.03 % protein. This reduction could be attributed to the processing method; thus, the hydrophobicity of most amino acids was found to reduce with increasing temperature.

Table 1: Sensory attributes and proximate composition of Grasshopper

Samples	Sensory attributes				Proximate profile				
	Crispiness	Crunchiness	Brittleness	Overall	Protein (%)	Fat (%)	Ash (%)	Moisture (%)	Carbohydrate (%)
A	7.6000±1.04630^{a}	7.3500±1.26803^{a}	7.4500±0.75915^{a}	8.4500±0.68633^{a}	64.41±1.18^{c}	21.60±0.36^{c}	2.80±0.21^{c}	4.09±0.31^{c}	7.09±0.95^{c}
B	5.8000±0.69585^{c}	6.5000±0.68825^{b}	7.2500±0.91047^{a}	7.7500±1.06992^{b}	62.04±0.89^{c}	22.97±0.35^{c}	3.99±0.03^{c}	2.22±0.12^{d}	8.40±0.37^{c}
C	6.8500±0.87509^{b}	7.2500±0.78640^{a}	7.4500±0.75915^{a}	7.8500±0.74516^{ab}	60.21±0.21^{e}	20.26±0.32^{e}	3.90±0.02^{c}	5.21±0.12^{e}	11.32±0.12^{d}

Means in the same column with different superscript are significantly different ($P<0.05$).

CONCLUSION AND RECOMMENDATİON(S):
The study's findings show how edible insects, like Grasshoppers, can be used as an alternate source of protein. As part of the significance of the study is to encourage entomophagy, the findings show grasshoppers' low feed, water, and land requirements as sustainable food.

REFERENCES:

1] van Huis A. (2016) Edible insects are the future?, Proc. Nutr. Soc. 75:294305. https://doi.org/10.1017/S0029665116000069.

[2] Borges M.M, Da Costa D.V, Trombete F.M, and Câmara A.K.F.I (2022). Edible insects as a sustainable alternative to food products: an insight into quality aspects of reformulated bakery and meat products, Curr. Opin. Food Sci. 46:100864. https://doi.org/10.1016/j.cofs.2022.100864.

[3] Queiroz L.S, Nogueira Silva N.F, Jessen F, Mohammadifar M.A, Stephani R, Fernandes de Carvalho A, Perrone Í.T, and Casanova F. (2023) Edible insect as an alternative protein source: a review on the chemistry and functionalities of proteins under different processing methods, Heliyon. 9: e14831. https://doi.org/10.1016/j.heliyon.2023.e14831.

OK2

Evaluation of Dietary Antioxidant Constituent in the Pulp of Vitellaria paradoxa fruit obtained from different Geopolitical Zones of Niger State, Nigeria

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BACKGROUND AND OBJECTIVES
Vitellaria paradoxa recently has gained importance as an economic crop because of the increasing demand for its butter, both domestically and internationally. Shea fruits serve as an important source of food for many organisms and other animals including birds, bats, elephants, sheep and pigs (Marnaz *et al.*, 2004; Fobil, 2010). The chemical contents and compositions in plants are generally influenced by environmental factors where they are grown. This study is therefore designed to investigate the influence of geographical locations on dietary antioxidant contents and quality of shea fruit from the three different geopolitical zones of Niger State, Nigeria.

MATERIALS AND METHODS:

Study Area: Three Local Government Areas was selected from each of the three geopolitical zones in Niger State. Namely, Zone A (Lapai, Bida and Mokwa), Zone B (Suleja, Kuta and Paiko) and Zone C (Wushishi, Kagara and Kontogora). The fresh fruits of the *V.paradoxa* were obtained from three different locations in each of the Local Government Areas and were used for the required analysis.

Source of Samples: *Vitellaria paradoxa* fruits were obtained from three Local Government Areas from each Zone in Niger State in Middle belt, Nigeria. The fruits were kept in sterile polythene bags and taken to the laboratory of Department of Biochemistry, Ibrahim Badamasi University, Lapai, Niger State.

Data Analysis: Data obtained was subjected to the Analysis of Variance (ANOVA) and mean values were separated using the Duncan's Multiple Range Test (DMRT). Significance will be tested at $P < 0.05$.

RESULT AND DISCUSSION

The result of the dietary antioxidants is presented in Table 1. The carotenoid content of the pulp obtained from zone A was significantly higher than those gotten from zone B and C respectively. Beta carotene and other carotenoids are also believed to provide antioxidant protection to lipid-rich tissues. Research suggests that beta carotene may work synergistically with vitamin E (Jacob, 1995; Sies and Stahl, 1995). The flavonoid and phenol contents from the pulp obtained from zone A were both significantly higher when compared to zone B and C respectively. Phenolic compounds are crucial for plants growth and reproduction, and are produced as a response to environmental factors (light, chilling, pollution etc) and to defend injured plants (Valentine et al., 2003). Phenolic acids and flavonoids also function as reducing agents, free radical scavengers, and quenchers of singlet oxygen formation. In addition, flavonoids and phenolic acids components play important roles in the control of cancer and other human disease (Ali and Neda, 2011) Moreso, vitamin C and β-carotene from zone C were both statistically higher in means when compared to those from the two other zones.

Table 1: Dietary antioxidants Constituent in the Pulp of *Vitellaria paradoxa* obtained from three geopolitical zones of Niger state

Dietary Antioxidants	Geopolitical zones		
	A	B	C
Carotenoid (mg/g)	4938.07 ± 128.80^{c}	2802.42 ± 167.84^{b}	666.75 ± 208.74^{a}
Chlorophyll (mg/g)	2.68 ± 1.45^{c}	1.70 ± 0.68^{b}	0.72 ± 0.08^{a}
Flavonoid (mg/100g)	74.25 ± 42.74^{b}	58.53 ± 20.32^{a}	42.72 ± 2.09^{a}
Lycopene (mg/g)	803.03 ± 193.39^{c}	444.81 ± 99.53^{b}	86.59 ± 6.69^{a}
Phenol (mg/100g)	220.37 ± 109.13^{c}	135.51 ± 48.38^{b}	50.65 ± 12.38^{a}
Tocopherol (μg /100g)	0.25 ± 0.12^{a}	2.18 ± 1.18^{b}	4.13 ± 2.25^{c}
Vitamin C (mg/100g)	33.72 ± 0.51^{a}	48.54 ± 0.90^{b}	63.35 ± 2.32^{c}
β-carotene (μg/100 g)	351.40 ± 71.04^{a}	1225.33 ± 581.05^{b}	2099.26 ± 1205.73^{c}

Means ± SEM with different superscripts across row are significantly different from each other $p < 0.05$

CONCLUSION: The study concludes that the dietary antioxidant in pulp fruits of *Vitellaria paradoxa* were most abundantly available from zone A, followed by zone B and zone C recorded the least contents of the antioxidant. Geographical location therefore influences nutrients accumulation in a particular fruits or crops.

REFERENCES

- Ali Ghasemzadeh and Neda Ghasemzadeh (2011). Flavonoids and phenolic acids: Role and biochemical activity in plants and human – Review. Journal of Medicinal Plants Research Vol. 5(31), 23: 6697-6703. Available online at http://www.academicjournals.org/JMPR.
- Jacob, R.A. (1995). The Integrated Antioxidant System. *Nutr Res* 1995;15(5):755-766.
- Sies, H. and Stahl, W. (1995). Vitamins E and C, beta carotene, and other carotenoids as antioxidants. *American Journal of Clinical Nutrition*; 62 (suppl):1315S-1321S.

OK4

Food Sources of Key Nutrients, Meal and Dietary Patterns among Children Aged 4–13 Years in Ibadan, Nigeria: Findings from the 2019 Kids Nutrition and Health Study

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KEYWORDS: Eating occasions; dietary patterns; food sources; nutrients

BACKGROUND AND OBJECTIVES:
Appropriate food intake is key for optimal nutrition in children and adolescents (1). This study examined the contribution of food to nutrient intake, meal and dietary patterns among children aged 4–8 and 9–13 years in the city of Ibadan, Nigeria.

MATERIALS AND METHOD:
Multi-stage sampling technique was used to identify 955 children (4–13 years) from five Local Government Areas in Ibadan city. Multi-pass 24-hour dietary recalls were used to assess dietary intake. Nutrient analysis was done using the ESHA Food Processor nutrition analysis software. Statistical Analysis System SAS® (version 9.4) was used to analyse the consumption of foods, frequency of consumption, and the contribution of foods to key nutrients. The top foods and beverages were defined by frequency and amount consumed. Meal patterns were described by the eating occasions and cluster analysis probed dietary pattern..

RESULTS AND DISCUSSION:
About 88% of children had at least three meals including breakfast (95%), lunch (85%), dinner (92%) and midmorning meals (48%), while about 80% ate snacks at least once daily. Sources of energy and key nutrients were limited (yam, cassava, rice, maize, bread and beans/peas/legumes). Table 1 shows the result of the amount consumed per consumer (disaggregated by age) of cassava products (192.2, 233.3 g), legumes (115.3, 150.7 g), corn/maize (160.4, 195.2), and rice (138.4, 182.3 g) which were high, while beef (15.2, 17.9 g), eggs (50.6, 49.2 g), fish (27.5, 30.6 g) and milk (24.2, 27.0 g) were low. The study found that doughnuts, sweet rolls and pastries, which were mainly consumed as snacks, were the third-highest contributors to energy intake and the highest contributors of fat intake in both age categories. Both dietary patterns discovered in this study are suboptimal in some nutrients. The "prudent dietary pattern" was characterized by a significantly higher intake of energy, protein, fiber, most vitamins and calcium than the "traditional Southwestern Nigerian dietary pattern", but a lower intake of iron, magnesium and zinc. These findings show a sufficiency of consumption of staples but inadequacy of micronutrient dense foods which is not new in the Nigerian diet (2).

CONCLUSION AND RECOMMENDATION(S):
The frequency of meals suggests a healthy pattern; however, the top foods could not provide adequate nutrient (especially micronutrient) intake, which is key to the development of the target population. Nutrition education is needed to promote nutrient-dense foods. Other nutrition interventions such as food fortification of commonly consumed foods could be scaled up nationally.

REFERENCES

1. Smolin, L.A.; Grosvenor, M.B. (2019). Nutrition: Science and Applications, 4th ed.; John Wiley & Sons: Mississauga, ON, Canada.
2. Ayogu, R. Energy and nutrient intakes of rural Nigerian schoolchildren: Relationship with dietary diversity. Food Nutr. Bull. 2019, 40, 241–253.

Table 1. Percent of respondents consuming and amounts (grams) consumed per day for top foods and beverages

Foods	All (4–13 Years)		4–8 Years (n = 509)		9–13 Years (n = 434)		p-Value *
	% Consuming	Per Consumer	% Consuming	Per Consumer	% Consuming	Per Consumer	
Pepper Stew	87.0	29.9	87.6	27.4	86.2	33.1	0.2035
Rice	75.5	157.2	77.8	138.4	72.8	182.3	0.9359
Biscuits	55.5	26.2	63.3	25.5	46.3	27.3	0.001
Beans/Peas	54.7	131.7	54.8	115.3	54.6	150.7	0.3007
Cassava & products	52.8	212.3	51.9	192.2	53.9	233.3	0.1491
Fish	52.3	28.9	52.1	27.5	52.5	30.6	0.2177
Leafy Vegetable Soup	49.7	56.4	51.9	52	47.7	61.9	0.7647
Yeast breads	44.5	133.2	46.4	118.3	42.4	151.3	0.7158
Eggs & omelets	32.6	50	34.4	50.6	30.4	49.2	0.4913
Pastries	30.8	53.8	30.7	47.6	30.9	61.2	0
Pasta/noodles/grains	29.4	96	30.5	89.4	28.1	103.9	0.4932
Yam & products	26.9	211.2	25.7	169.7	28.3	256	0.0014
Sugars and Honey	24.9	17.1	22.9	15.2	27.2	18.9	0.001
Milk, whole	24.8	25.2	28.7	24.2	20.3	27	0.8087
Beef, excludes ground	23.4	16.4	21.4	15.2	25.8	17.5	0.0143
Corn (Maize)	22.8	174.5	24.2	160.4	21.2	195.2	0.0056
Nutritional Beverages	19.9	17.4	24.4	17	14.8	17.9	0.7403
Rice mixed dishes	18.0	179.7	15.5	163.4	21	195.6	0.0545
Nuts and seeds	15.9	19	14.5	18.2	17.5	19.7	0.3773
Soft drinks	11.2	279.9	11.7	252.2	10.6	313.7	0.2958
Okra Soup	8.1	59.5	6.9	56.6	9.5	62.2	0.7632
Cowskin	7.1	28.8	6.7	27.9	7.6	29.7	0.6478
Plantain	6.9	51.9	7.3	53.9	6.5	49	0.0001
Melon soup	5.9	88.1	5.9	82.1	6	95	0.0158
Durum Wheat Flour	5.3	88.8	4.9	76.4	5.8	101.2	0.3283

* Student's t-test to compare the mean intake between 4–8- and 9–13-year groups.

OK5

Nutrient Intake Among Children 4 – 13 Years Old in Ibadan, Nigeria

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KEYWORDS: Eating occasions; dietary patterns; food sources; nutrients

BACKGROUND AND OBJECTIVES:
The paucity of adequate data on dietary and nutrient intakes of school-age children is a barrier to addressing malnutrition and associated risks in Nigeria. This study was designed to assess the nutrient intake of children aged 4 –13 years in Ibadan, Nigeria.

MATERIALS AND METHOD:
This study included 955 children aged 4–13 years from Ibadan, Nigeria, selected using a stratified random sampling design. Information on family socio-demographic characteristics was collected, dietary intake data were assessed using a multi-pass 24 hour dietary recall method; and 20% of subjects completed a second 24 h recall to estimate usual nutrient intakes. Analysis of food intake was performed using ESHA's Food Processor ® Nutrition Analysis software version 11.7.1. Mean and usual intake distributions of energy and nutrients, and prevalence of inadequacy were estimated using the macros developed by the National Cancer Institute (Dodd et al., 2006). Nutrient adequacy was assessed by comparing nutrient intakes to the dietary reference intakes (US IOM 2019). The prevalence of inadequacy was estimated as the proportion of individuals with usual intakes below the Estimated Average Requirement (EAR). Statistical analyses were performed using SAS® Life Science Analytics Framework (version 5.2.1). Fisher's exact test was used to compare the prevalence of nutrient inadequate intakes between 4–8 and 9–13-year-old groups.

RESULTS AND DISCUSSION: The distribution of usual nutrient intakes of the respondents is presented in Table 1. The usual energy intake (kcal/day) was 1345 and 1590 for younger (4–8 years) and older (9–13 years) age groups, respectively. The macronutrient intakes of most children did not conform to Adequate Macronutrient Distribution Ranges (AMDRs), which were characterized by a higher proportion of energy from carbohydrates, lower proportion from total fats and protein intake was largely within the AMDR. Compared to Estimated Average Requirement, over 60% of 4–8-year-old children had inadequate intakes of calcium, copper, iron, folate, and vitamins A, D, and E. There were more micronutrient inadequacies in the older children.

CONCLUSION AND RECOMMENDATION(S):
Undernutrition continues to be a public health concern among Nigerian school-age children, with older children being at higher risk. This study identifies nutrition gaps and thereby suggests future research and education to improve child nutrition in Nigeria. Nutrition education efforts could help families to identify and incorporate lower-cost nutrient dense foods into household meals.

Table 1. Distribution of usual nutrient intakes and percentage of inadequacy in 4–8-year-old Nigerian children.

Nutrient	Mean		Percentiles					EAR/AMDR	AI	UL/AMDR	% above or below EAR/AI/AMDR
			10th	25th	50th	75th	90th				
Energy (kcal)	1345	197	1099	1207	1335	1473	1604				
Carbohydrates (g)	223.6	38.1	176.5	196.7	221.1	247.9	273.8				
Energy from carbs (%E)	66.8	3.9	61.8	64.2	66.9	69.5	71.8	45		65	69% > AMDR
Energy from total sugars (%E)	5.0	2.6	2.2	3.1	4.5	6.3	8.4				
Fibers * (g)	8.1	2.5	5.0	6.3	7.9	9.7	11.5		18		0.1% > AI
Fats (g)	28.8	6.5	20.9	24.1	28.2	32.8	37.4				
Energy from fats (%E)	18.9	3.4	14.8	16.5	18.6	21.0	23.3	25		35	96% < AMDR
Protein (g)	43.7	6.6	35.4	39.0	43.3	48.0	52.4				
Energy from proteins (%E)	13.0	1.7	10.9	11.9	13.0	14.1	15.2	10		30	3% < AMDR
Calcium (mg)	296.7	108.8	169.1	217.8	282.8	360.8	442.1	800			99% < EAR
Copper (mg)	12.9	5.8	6.2	8.6	12.0	16.2	20.6	340			99% < EAR
Iodine (µg)	19.6	24.2	3.4	6.2	12.2	23.7	42.8	65			96% < EAR
Iron ** (mg)	9.4	2.2	6.6	7.8	9.2	10.7	12.3	11.2			62% < EAR
Selenium (µg)	43.8	22.3	18.4	927.4	40.2	56.3	73.8	23			17% < EAR
Zinc ** (mg)	9.3	3.3	5.5	7.0	8.9	11.3	13.7	9.3			44% < EAR
Folate (µg DFE)	137.9	39.4	91.1	109.6	133.5	161.5	190.2	160			74% < EAR
Vitamin A (µg RAE)	249.0	72.9	160.4	196.7	242.5	294.4	346.0	275			67% < EAR
Vitamin B12 (µg)	1.4	0.7	0.6	0.9	1.3	1.8	2.3	1			33% < EAR
Riboflavin (mg)	0.7	0.2	0.4	0.5	0.6	0.8	1.0	0.5			25% < EAR
Niacin (mg)	10.8	3.8	6.3	8.0	10.3	13.0	15.8	6			8% < EAR

Abbreviations used: Standard Deviation (SD); Estimated Average Requirement (EAR); Adequate Macronutrient Distribution Ranges (AMDR); Adequate Intake (AI); Saturated Fatty Acids (SFA); and Dietary Folate Equivalents (DFE). * Based on IOM recommendation of 14 g/1000 kcal of fibers and adjusted by the median energy of each age group; ** The recommended nutrient intakes of iron and zinc with low bioavailability from WHO and FAO.

REFERENCES

1. Dodd, K.W.; Guenther, P.M.; Freedman, L.S.; Subar, A.F.; Kipnis, V.; Midthune, D.; Tooze, J.A.; Krebs-Smith, S.M. Statistical Methods for Estimating Usual Intake of Nutrients and Foods: A Review of the Theory. J. Am. Diet. Assoc. 2006, 106, 1640–1650.
2. National Academies of Sciences, Engineering, Medicine. Dietary Reference Intakes for Sodium and Potassium; The National Academies Press: Washington, DC, USA, 2019; p. 594.

OK6

Nutritional, antinutritional, phytochemical contents and mineral interactions of home-made complementary food made from ofada rice, soya bean, crayfish and carrot flour blends.

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KEYWORDS: malnutrition, complementary meal, micronutrients, sensory properties

BACKGROUND AND OBJECTIVE: Malnutrition is a significant public health problem globally, with the highest prevalence in Sub-Saharan Africa, with a high prevalence of stunting and wasting among under-5 children [1]. There is a need to develop nutritionally adequate and diversified home-made complementary foods, using readily available and affordable local food crops that form the bulk of the regular family meal in order to reduce malnutrition in under-five children. This study evaluated the nutritional, antinutritional, phytochemical and mineral interactions of home-made complementary food made from ofada rice, soya bean, crayfish and carrot flour blends.

MATERIALS AND METHODS: A simplex lattice research design with two variables namely, ofada rice (OR: 60-100%) and soyabean (SB: 0-40%) to give a total of five (5) experimental runs (OR_{90}:SB_{10}, OR_{82}:SB_{17}, OR_{75}:SB_{25}, OR_{67}:SB_{50}, OR_{60}:SB_{40}). The food materials were sorted, winnowed, steeped, rinsed, sterilized, sprouted, dried, milled, sieved (500 µm sieve), and packaged as described by Ojokoh and Onasanya, and Arueye and Akande [2, 3]. The flour was formulated according to the experimental runs and used to prepare the complementary meal. Equal proportions of crayfish and carrot flour were added to each formulation. The proximate, micronutrient, antinutrient, and phytochemical contents of the flour and complementary food formulations were analyzed. About 100 nursing mothers were used to evaluate the colour, aroma, taste, texture and overall acceptability of the products using a 9-point hedonic rating. ANOVA was used to determine significant differences among variables, and the Tukey HSD test was used to separate means at $P<0.05$.

RESULTS: PROXIMATE AND MICRONUTRIENT CONTENTS OF COMPLEMENTARY MEAL
Sample OR_{75}:SB_{25} and OR_{90}:SB_{10} ranked highest in moisture content (73.00/100g) while OR_{60}:SB_{40} and OR_{67}:SB_{50} ranked the least (64.00/100g), sample OR_{67}:SB_{50} ranked highest in protein content (10.98/100g) while OR_{75}:SB_{25} ranked least (3.59/100g), sample OR_{75}:SB_{25} ranked highest in fat content (4.29/100g) while sample OR_{90}:SB_{10} ranked least (1.82/100g). Also, sample OR_{67}:SB_{50} ranked highest in fiber content (2.23/100g) while sample OR_{82}:SB_{17} ranked least (1.53/100g), sample OR_{67}:SB_{50} ranked highest in ash content (1.80/100g) while samples OR_{75}:SB_{25} and OR_{90}:SB_{10} ranked least (1.08/100g). Furthermore, sample OR_{90}:SB_{10} ranked highest in carbohydrate content (58.57/100g) and OR_{67}:SB_{50} ranked the least. Similarly, sample OR_{60}:SB_{40} ranked highest in calcium (164.38/100mg), magnesium (82.60/100mg), phosphorus (149.05/100mg) and iron (6.63/100mg) contents, sample OR_{67}:SB_{50} ranked the least(52.31/100mg), sample OR_{90}:SB_{10} ranked the least in magnesium (44.77/100mg), sample OR_{90}:SB_{10} ranked least in phosphorus (78.29/100mg), and sample OR_{75}:SB_{25} ranked least in iron (3.14/100mg). Fortification of ofada rice with soyabean flour is essential to improve the nutrient content [2]. However, increase in the proportion is of soyabean flour does not significantly improve the proximate content of the gruel, although formulations with higher soyabean contents had higher proximate values.

Table 1: Proximate and micronutrient composition of complementary food formulations in 100g

S/n	Formulations	Moisture	Protein	Crude fat	Crude fibre	Total ash	Carbohydrate	Calcium (mg)	Magne sium (mg)	Phospho rus (mg)	Iron (mg)	Zinc (mg)	β Carotene (µg)	Vit. C (mg)	Vit. E (mg)	Vit. A (mg)
	Flour															
A	OR60:SB40	9.10a±0.00	10.14d±0.13	11.95a±0.15	5.80c±0.06	3.40b±0.00	59.62c±0.13	380.74a±0.06	221.53b±0.06	375.86b±1.39	10.77b±0.02	2.82b±0.01	1.66b±0.00	5.18d±0.05	7.59d±0.27	0.14b±0.00
B	OF67:SB50	8.94ab±0.12	16.24b±0.09	6.04d±0.00	6.37a±0.04	3.07d±0.02	59.36c±0.09	219.43e±0.12	137.70d±0.11	200.14e±1.16	8.10d±0.03	1.97d±0.02	1.72a±0.01	25.50b±0.01	13.32b±0.34	0.14a±0.00
C	OF75:SB25	8.73b±0.10	6.96e±0.32	7.36c±0.02	5.79c±0.06	5.12a±0.01	66.18a±0.52	309.83b±0.78	347.12a±0.00	566.18a±0.22	14.03a±0.03	5.04a±0.02	1.51c±0.00	6.28c±0.03	9.20c±0.45	0.13c±0.00
D	OF82:SB17	9.22a±0.15	11.40c±0.14	9.25b±0.08	5.96b±0.02	3.21c±0.01	60.98b±0.22	289.04c±0.28	150.65c±0.06	287.20c±0.37	9.05c±0.04	2.13c±0.08	1.31e±0.00	30.06a±0.05	14.60a±0.26	0.11e±0.00
E	OF90:SB10	OF90:SB10	8.95ab±0.10	19.27a±0.20	4.84e±0.17	6.45a±0.02	1.96e±0.08	58.54d±0.03	130.91e±2.27	229.69d±0.44	8.20d±0.18	1.69e±0.02	1.42d±0.00	5.04e±0.04	7.12d±0.04	0.12d±0.00
	Complementary meal															
A	OR60:SB40	64.00a±7.00	9.00a±0.14	3.56ab±0.62	1.83a±0.86	1.70a±0.71	47.90a±12.32	164.38a±0.15	82.60a±0.10	149.05a±0.07	6.63a±0.03	1.15a±0.00	0.09e±0.00	1.00c±0.00	3.76e±0.04	0.01e±0.00
B	OF67:SB50	64.00a±9.00	10.98a±0.04	2.33bc±0.66	2.23a±0.01	1.80a±0.02	46.66a±13.83	52.31c±23.58	52.45ab±12.29	81.94b±22.63	4.53ab±1.24	0.75a±0.30	0.13b±0.00	0.87d±0.01	7.29b±0.06	0.01b±0.00
C	OF75:SB25	73.00a±0.00	3.59a±3.32	4.29a±0.28	1.07a±0.54	1.08a±0.35	62.96a±0.25	104.54b±20.32	55.73ab±20.28	93.72ab±3.48	3.14b±1.53	0.66a±0.24	0.13a±0.00	1.17b±0.00	4.52c±0.07	0.01a±0.00
D	OF82:SB17	69.00a±1.00	6.41a±3.95	3.22ab±0.29	1.53a±0.36	1.51a±0.04	56.32a±1.54	94.97bc±3.96	55.04ab±2.18	100.35ab±31.82	5.07ab±1.82	0.72a±0.02	0.09d±0.00	4.09a±0.01	7.52a±0.01	0.01d±0.00
E	OF90:SB10	73.00a±14.00	9.93a±4.28	1.82c±0.62	1.60a±0.07	1.08a±0.35	58.57a±20.48	70.42bc±21.34	44.77b±14.86	78.29b±26.14	4.59ab±0.14	0.70a±0.17	0.11c±0.00	0.83e±0.01	4.00d±0.06	0.01c±0.00

Values are presented with means ± Standard Deviation, MYM - Malted Yellow Maize, SB - Sprouted Beans. Column values of different superscripts are significantly different ($p < 0.05$).

Antinutrient, phytochemical and sensory properties of the complementary meal formulations
Sample OR_{67}:SB_{50} ranked highest in Tannin (12.64mg/100g), phytate (0.54mg/100g), and flavonoids (8.54mg/100g) contents while ranked least in tannin (8.24mg/100g), while OR_{60}:SB_{40} ranked least in phytate (0.41mg/100g), flavonoids (4.86mg/100g), and alkaloids (0.08mg/100g) contents. Sample OR_{75}:SB_{25} ranked highest in alkaloids (0.31mg/100g). Antinutrients have been shown to inhibit absorption of minerals in foods while phytochemicals have specific health benefits [4].
Similarly, sample OR_{90}:SB_{10} ranked least in aroma (5.87), sample OR_{75}:SB_{25} ranked highest in taste (6.89) while sample OR_{60}:SB_{40} ranked highest in colour (6.57) and overall acceptability (6.70) and ranked the least in taste (5.78), iron (5.24).

CONCLUSION AND RECOMMENDATION: The addition of soyabean, crayfish and carrot improved the micronutrient and phytochemical contents of the complementary meal. Also, the fermentation of the crops improved the nutrient contents of the product.

REFERENCES

1. Global Nutrition Report (2022). The state of global nutrition. Bristol, UK: Development Initiatives. Available at https://globalnutritionreport.org/resources/nutrition-profiles/africa/western-africa/nigeria/
2. Ojokoh, A. O. and Onasanya, T.T. (2017). Effect of fermentation and extrusion on the nutrient and anti-nutrient composition of soybeans (Glycine max, L) and Acha (Digitaria exilis Stapf). Microbiology Research Journal International, 21(1), 1-21
3. Arueya GL, and Akande O (2018) Development and characterization of dumpling dough with 'optimal' dietary fibre ratio using Ofada rice (Oryza Sativa L) and unripe plantain (Musa Paradisiaca AAB) fruit. Integr Food Nutr Metab 5]
4. Nath H., Samtiya M., and Dhewa T. (2022). Beneficial attributes and adverse effects of major plant-based foods anti-nutrients on health: A review, Human Nutrition & Metabolism (28): 200147, ISSN 2666-1497,

OK7

Effect of Guar Gum Incorporation on the Proximate Composition and Sensory Properties of Table Spread Produced from African elemi pear

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KEYWORDS: Table spread; African elemi; Guar gum

BACKGROUND AND OBJECTIVES
The consumption of trans-fats, which were common in many spread formulations in the past, has been linked to adverse health effects and earlier mortality. As a result, there is a growing trend towards the development of spreads from plant sources. However, the potential of African elemi, a valuable and readily available source of high-quality nutrients, has received little attention in Nigeria and is not commonly included in the diet. Therefore, there is need to explore the utilization of African elemi to develop a spread that can reduce the health challenges associated with traditional fat spreads. The objective of this study is to evaluate the proximate composition and sensory properties of table spread produced from African elemi.
METHODOLOGY
Fully ripe African elemi fruits (*Canarium schweinfurthii*) were collected from Obolo in Enugu State. The fruits were washed and manually deseeded to obtain the pulp. The pulp was then pulverized using a food blender. The pulp was mixed with sugar (5 g), salt (1 g), sodium benzoate as a preservative (1 g), ascorbic acid (1 g), and varying concentrations of guar gum (0.5, 1.0 and 1.5g, respectively). The mixture was homogenized using a hand mixer until a smooth paste was obtained. Vanilla essence (1 ml) and vinegar (4 ml) were added for flavor. The final product (spread) was stored in glass bottles for further analysis.
The proximate composition of the spreads were analyzed using the AOAC method [1] while carbohydrate was determined by difference. Sensory properties were evaluated using a 9-point hedonic scale as described by Iwe

[2]. The data were analyzed using ANOVA in SPSS version 20.0 software, performed in duplicate, and the Duncan Multiple Range Test was used to separate the means.

RESULTS AND DISCUSSION:

The Proximate Composition of Table Spreads Produced from African Elemi is presented in Table 1. The spreads had lower moisture content (51.69-54.25%) which is likely due to the ability of guar gum to increase the viscosity of the samples, thus indicating good shelf life. Fat content decreased significantly with higher guar gum concentration, reducing potential rancidity. Ash (2.48-2.60%) and protein content (1.75-2.84%) increased significantly ($p<0.05$) with guar gum. As shown in Table 2, the texture, flavor, and spreadability of the spreads were not significantly affected by increased guar gum concentration due to its odorless and flavor-neutral properties [3]. The improved texture and spreadability may be attributed to its thickening and viscosity effects.

Table 1: Proximate Composition of Table Spreads Produced from *African Elemi*

Samples	Moisture	Ash	Fat	Crude Protein	Crude fibre	Carbohydrate
0% GG	$54.25^{a}\pm1.65$	$2.48^{a}\pm0.41$	$10.80^{a}\pm0.00$	$1.75^{c}\pm0.00$	$9.57^{a}\pm0.41$	$21.24^{b}\pm0.47$
0.5% GG	$52.43^{b}\pm1.06$	$2.50^{a}\pm0.56$	$9.67^{ab}\pm0.41$	$3.50^{a}\pm0.00$	$9.60^{a}\pm0.00$	$22.31^{b}\pm1.37$
1.0% GG	$53.47^{c}\pm2.00$	$2.60^{a}\pm0.56$	$8.80^{bc}\pm0.86$	$2.84^{b}\pm0.31$	$9.54^{a}\pm0.57$	$22.76^{b}\pm1.49$
1.5% GG	$51.69^{d}\pm1.41$	$2.52^{a}\pm0.31$	$7.78^{c}\pm0.03$	$2.63^{b}\pm0.00$	$9.47^{a}\pm0.41$	$25.92^{a}\pm2.09$

Mean values within a column with different superscripts are significantly different at ($p<0.05$).

Table 2: Mean sensory scores of *African elemi* spread

Samples	Colour	Taste	Flavour	Texture	Spreadability	Overall Acceptability
0% GG	$6.35^{b}\pm2.00$	$5.80^{b}\pm1.94$	$6.55^{a}\pm1.54$	$6.30^{a}\pm2.00$	$6.90^{a}\pm1.29$	$6.38^{b}\pm1.08$
0.5% GG	$6.30^{b}\pm1.45$	$6.20^{ab}\pm1.51$	$6.50^{a}\pm1.79$	$6.65^{a}\pm1.66$	$7.00^{a}\pm1.81$	$6.53^{ab}\pm1.10$
1.0% GG	$7.80^{a}\pm1.10$	$7.35^{a}\pm1.04$	$6.95^{a}\pm1.82$	$7.10^{a}\pm1.02$	$7.45^{a}\pm1.28$	$7.33\ \pm0.77$
1.5% GG	$6.95^{ab}\pm1.82$	$6.00^{ab}\pm2.20$	$6.00^{a}\pm2.29$	$6.55^{a}\pm1.70$	$7.50^{a}\pm1.50$	$6.60^{ab}\pm1.35$

Mean values within a column with different superscripts are significantly different ($p<0.05$)

CONCLUSION AND RECOMMENDATIONS

Incorporation of guar gum in the preparation of African elemi spread decreased the moisture and fat content. The incorporation of guar gum also improved the colour, taste, texture, spreadability and overall acceptability of the samples. The consumption of African elemi spread is encouraged owing to its health benefits.

REFERENCES

[1] AOAC. (2012). Official Methods of Analysis of the Association of Official Analytical Chemists, 20th ed.

[2] Iwe, M. O. (2010). *Handbook of Sensory methods and analysis* (pp. 75-78). Enugu, Nigeria: Rejoint Communication Science Ltd.

[3] Fatherstone, S., (Ed.). (2015). Ingredients used in the preparation of canned foods. In a complete course in canning and related processes, Pp. 147-211. *United Kingdom: Woodhead publishing.*

OK9

Evaluation of Nutrient Composition and Safety of High Calorie-Protein Formulated Diets for Hospitalized Patients

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KEYWORDS: Nutrient composition, hospitalized patients, high-calorie-protein diets, Wesley Guild Hospital,

BACKGROUND AND OBJECTIVES: Nutritional deterioration is common during hospital stays in both previously well-nourished and nutritionally compromised patients. Many patients, especially those who are critically ill, do not eat enough due to illness, lack of appetite, drug side effects, depression, or psychological issues [1]. This leads to malnutrition, which delays the recuperation or healing of wounds. As a result, diets that allow for small serving sizes while still providing adequate nutrition are needed. This study evaluated the nutrient composition and safety of formulated high-calorie-high protein diets for hospitalized patients.

MATERIALS AND METHODS: Wesley Guild Diet (WGD) was obtained from the dietetics department of the Wesley Guild Hospital Unit at Ilesa, Osun State. Maize, beans, and groundnuts were purchased from a local market to make an Improved Wesley Guild Diet (IWGD). The maize, beans, and groundnuts were picked, sorted, soaked, sprouted, sundried, milled and packaged (Maize 60%, Beans 20% and groundnut 20%). The proximate, minerals, vitamin compositions and total bacteria count were determined using standard analytical procedures. Data generated were analyzed using the Statistical Software SPSS V. 21 (Statistical Product for Service Solution). Results were presented as means and standard deviation. Data obtained from the analysis were analyzed using a T-test at $p<0.05$.

RESULTS AND DISCUSSION: The result of proximate compositions of the WGD and IWGD is presented in Table 1. The result showed a statistically significant difference ($P<0.05$) in the proximate values of moisture, protein, fat, ash, crude fibre, and carbohydrate between the Wesley Guild Diet (WGD) and the Improved Wesley Guild Diet (IWGD). The values of the proximate composition for crude fibre, crude fat, crude protein, moisture and ash were higher in IWGD than in WGD except for the carbohydrate which was higher in WGD (78.73±0.06 g) than IWGD (70.16±0.16). The WGD contained in g/100g, crude protein (7.68 ± 0.10), ash (2.14 ± 0.02), and crude fat (3.61 ± 0.03), while the IWGD contained, crude protein (9.95 ± 0.20), ash 2.76 ± 0.02), and crude fat (4.09 ± 0.02). The mineral composition in mg/100g of the IWGD, Na (60±0.00), K (530 ± 0.00), Mg (170±0.00), P (430± 0.00) Fe (2.72± 0.03) were higher than in WGD Na (40±0.00), K (420± 0.00), Mg (160±0.00), P (320 ± 0.00) Fe (2.40±0.03). The result of the vitamin analysis revealed that the values of vitamin A (μg/100g) (123.71±0.03), Folate (μg/100g) (51.37±0.02), vitamin B_1 (mg/100g) (0.29±0.03), vitamin B_2 (mg/100g) (0.19±0.02) in IWGD were higher than vitamin A (112.35±0.02), Folate (32.21±0.03), vitamin B_1 (0.02±0.00), vitamin B_2 (0.02±0.03) in WGD. Both samples had total bacteria count levels lower than the recommended acceptable levels [2]. The result of the proximate analysis showed that germination increased the moisture and protein content in IWGD compared to WGD, which agrees with [1] study on the effect of processing methods on the proximate composition of cereal and legume flours. The iron content in IWGD per 100g provides about 34% of the recommended dietary allowance for adult males ages 19 and above, and women ages 51 and above [2]

Table 1 Proximate composition of the Wesley Guild diet and Improved Wesley Guild diet

Samples	Moisture (%)	Ash (%)	Fat (%)	Crude Fibre (%)	Protein (%)	Carbohydrate (%)	Energy (kcal)
WGD	6.19 ± 0.04	2.14 ± 0.02	3.61 ± 0.03	1.64 ± 0.03	7.68 ± 0.10	78.73 ± 0.06	378.13
IWGD	11.20 ± 0.03	2.76 ± 0.02	4.09 ± 0.02	1.84 ± 0.02	9.95 ± 0.20	70.16 ± 0.16	357.25

The data are the mean values of triplicate determinations ± standard deviation. An independent sample T-test was used to compare the mean between two independent groups. Differences were considered statistically significant at $p<0.05$.
WGD is the locally formulated diet by the dietetics unit of the Wesley Guild Hospital, IWGD is the newly locally formulated diet using the germination method.

CONCLUSION AND RECOMMENDATION
This study has shown that germination significantly improved the nutritional composition of the Wesley Guild Diet. The formulated diet could be used by the Dietetics Department in Hospitals to augment the diets given to patients on a high-protein/high-calorie diet. Further investigations on the anti-nutrient properties and sensory properties of both WGD and IWGD are required

REFERENCES

1. Abugroun, A., Nayyar, A., Abdel-Rahman, M. E., & Patel, P. (2021). Impact of Malnutrition on Hospitalisation Outcomes for Older Adults Admitted for Sepsis. The American Journal of Medicine, 134(2), 221-226.e1. https://doi.org/10.1016/j.amjmed.2020.06.044
2. Bardon, L., Corish, C. A., Lane, M., Bizzaro, M. G., Villarroel, K. L., Clarke, M. J., Power, L., Gibney, E. R., & Castro, P. (2021). Ageing rate of older adults affects the factors associated with, and the determinants of malnutrition in the community: a systematic review and narrative synthesis. BMC Geriatrics, 21(1). https://doi.org/10.1186/s12877-021-02583-2

OK10

Diet as a predictor of nutritional status of women of reproductive age in Ogun State, Nigeria.

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KEYWORDS: Diet, Nutritional status, Women of reproductive age

HIGHLIGHT
- Most of the women did not meet up with their recommended dietary allowance for protein, Vitamin C, folate and sodium

BACKGROUND AND OBJECTIVES:
Adequate nutritional needs are important for women of reproductive age, as this improved the health status of both mothers and their unborn children. State. This study, therefore assessed the nutritional status and dietary intake of women of reproductive age in Ososa, Ijebu Ode, Ogun State, Nigeria.

MATERIALS AND METHODS:
The study design was descriptive cross-sectional, and a total of 100 women of reproductive age were purposively selected for the study. A pre-tested, semi-structured interviewer-administered questionnaire was used to obtain information on the socio-demographic and socio-economic characteristics of the women. Anthropometric measurements and 24-hour dietary recall were also obtained for the assessment of nutritional status and dietary intake. Data were analyzed using SPSS version 21, and 24-h recall was analyzed using total dietary assessment software (TDA)

RESULTS AND DISCUSSION:
The prevalence of underweight, normal weight, overweight, and obesity were 19%, 58%, 18%, and 5%, respectively. Folate daily intake in this study was 246.3±145.6 μg and found lower than 400μg, the recommended dietary allowance (RDA) for women of reproductive age. This finding is comparable to a study carried out on women of reproductive age (WRA) in Kersa, Ethiopia, with a low folate intake of 170 μg (1). Folate

deficiency has been commonly cited as a significant risk factor for developing neural tube defects (NTD) in the fetus thereby affecting more than 300,000 babies worldwide (2). Daily intake of vitamin C (31.7±33.6 mg) was low when compared with RDA (75 mg/d). A low intake of micronutrients including vitamin C was also reported among WRA in a study carried out in Kyrgyzstan , Asia.(4)

Table 1: Energy and nutrient intake

Nutrients	Minimum – Maximum	Mean ± SD of daily intakes	Recommended Dietary Allowance (RDA)
Calories (Kcal)	249.9 – 5456.1	2476.9 ± 1430.8	2000Kcal/d
Proteins (g)	8.2 – 78.0	32.6 ± 18.6	46g/d
Carbohydrate (g)	31.4 0 - 864.0	282.4 ± 155.9	130g/d
Cholesterol (mg)	5 – 646.7	278.3 ± 201.2	200mg/d
Vitamin A (μg)	4.9 – 16625.2	1135.4 ± 2377.5	700ug/d
Vitamin C (mg)	.1 – 226.5	31.7 ± 33.6	75mg/d
Vitamin B12 (μg)	.0 – 54.8	6.0 ± 8.7	2.4ug/d
Folate (μg)	48.9 – 520.5	246.3 ± 145.6	400 mcg
Sodium (mg)	.7 – 2105.2	433.6 ± 340.6	1500 mg
Iron (mg)	2.5 – 520.5	45.5 ± 87.7	18mg

CONCLUSION AND RECOMMENDATION

The results of the finding showed that most of the women did not meet up with their recommended dietary allowance for protein and most of their micronutrients. Women should be educated on the consumption of foods that are rich in protein as well as fruits and vegetables to achieve an adequate nutritional status.

REFERENCES

1. Nega, A., Yasir Y. A., Aklilu, A, Elena, C., Hemler, I. M., Yadeta, D., Kedir, T. R. & Wafaie, W. F. (2021). Consumption of dietary folate estimates and its implication for reproductive outcome among women of reproductive age in Kersa: cross-sectional survey. BMC Nutrition,7: 69
2. Bitew ZW, Worku T, Alebel A, Alemu A. (2020). Magnitude and Associated Factors of Neural Tube Defects in Ethiopia: A Systematic Review and Meta-Analysis. Glob Pediatr Health.
3. Aiperi, O., Jamila, S. and Angelika P. (2022). Dietary Quality of Women of Reproductive Age in Low-Income Settings: A Cross-Sectional Study in Kyrgyzstan. Nutrients 2022, 14(2), 289

PK15

Consumption Pattern of Fruits among Out patients in selected Hospitals in Gombe (Cottage Hospital Hinna and Specialist Hospital Gombe State), Nigeria.

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BACKGROUND: Fruits provided high nutrients with lower energy (kilocalories). Meanwhile, previous research works had shown that low-income families were hit the hardest with nutritional inadequacy and caloric excess [1,2].

OBJECTIVE: This cross-sectional study assessed the consumption pattern of fruits among patients attending

selected Hospitals in Gombe *viz:* Cottage Hospital Hinna (CHH) and Specialist Hospital (SH).
METHODOLOGY: A simple random sampling technique was used to select two hundred and six (206) respondents from the two hospitals. Semi-structured question was used to elicit for information on socio demographic data, food consumption pattern of the respondents and Statistical Package for Social Sciences (SPSS v. 21) was used to analyze the data.

RESULTS AND DISCUSSIONS: Table 1 revealed that more than 50% of the respondents consumed fruits for 1-2 times per week. This does not meet the 5 days fruits and vegetable consumption recommendation, let alone recommended consumption of at least 2-3 servings of fruits a day [3]. The results in Table 2 revealed the association between the income and fruit consumption, which is similar to past work [4].

Table 1: Fruits Consumption Pattern of the Respondents

	COTTAGE HOSPITAL HINNA				SPECIALIST HOSPITAL GOMBE			
Variable	**None**	**1-2 times/week**	**3-4 times/week**	**5 or more/week**	**None**	**1-2 times/week**	**3-4 times/week**	**5 or more/week**
	F(%)	**F(%)**	**F(%)**	**F(%)**	**F(%)**	**F(%)**	**F(%)**	**F(%)**
Orange	3 (2.9%)	63 (61.2%)	21 (20.4%)	16 (15.5%)	2 (1.9%)	53 (51.5%)	30 (29.1%)	18 (17.5%)
Apple	6 (5.8%)	60 (58.3%)	17 (16.5%)	20 (19.4%)	17(16.5%)	52 (50.5%)	14 (13.6%)	20 (19.4%)
Banana	25(24.3%)	45 (43.7%)	4 (3.9%)	29 (28.2%)	9 (8.7%)	56 (54.4%)	8 (7.8%)	30 (29.1%)
W/melon	3 (2.9%)	50 (48.5%)	38 (36.9%)	12 (11.7%)	2 (1.9%)	49 (47.6%)	37 (35.9%)	15 (14.6%)
S/melon	11(15.5%)	47 (45.6%)	36 (35.0%)	4 (3.9%)	14 (13.6%)	32 (31.1%)	50 (48.5%)	7 (6.8%)
Pawpaw	2 (1.9%)	33 (32.0%)	64 (62.1%)	4 (3.9%)	2 (1.9%)	19 (18.4%)	79 (76.7%)	3 (2.9%)
Guava	19(18.4%)	55 (53.4%)	7 (6.8%)	22 (21.4%)	21(20.4%)	69 (67.0%)	11 (10.7%)	2 (1.9%)
Cashew	20 (19.4%)	44 (42.7%)	34 (33.0%)	5 (4.9%)	12(11.7%)	62 (60.2%)	24 (23.3%)	5 (4.9%)
Pineapple	45(43.7%)	51 (49.5%)	6 (5.8%)	1 (1.0%)	24(23.3%)	67 (65.0%)	10 (9.7%)	2 (1.9%)

Table 2: Relationship between Socio-demographic status (income) and Fruits consumption of Respondents

	COTTAGE HOSPITAL HINNA			SPECIALIST HOSPITAL GOMBE		
Variable	**X^2**	**Df**	**P-value**	**X^2**	**Df**	**P-value**
Apple	14.352	12	0.043*	21.664	12	0.041*
Sweet melon	23.422	12	0.024*	31.346	12	0.002*
Banana	20.654	12	0.056	20.145	12	0.004*
Guava	19.027	12	0.008*	35.289	12	0.000*
Pawpaw	22.053	12	0.037*	33.651	12	0.001*
Cashew	19.693	12	0.013*	30.727	12	0.002*
Pineapple	19.841	12	0.020*	64.837	12	0.000*
Cucumber	22. 017	12	0.037*	46.424	12	0.000*

CONCLUSION: The study concluded that a significant association ($p<0.05$) existed between income and fruits

(mango, date, apple, water melon, guava, cashew) consumption except for banana where p-value is P>0.05 (not significant) for respondents of the two hospitals. Interestingly, most of the respondents ate fruits for 1 to 2 times per week.

RECOMMENDATION: Enlightenment and home gardening to enhance daily consumption of fruits in our hospitals and homes is highly encouraged.

REFERENCES

1. Bhattacharya J, Currie J. (2001). Youths Nutritional Risk: Misnourished or Malnourished? In: Gruber J, ed. Risky Behaviour among Youths. Chicago, lll: University of Chicago. Press: 483-521.
2. Webb P, Stoardalen GA, Singh S, Wijesinha-Battoni R, Shetty P, Lartey A. (2018). Hunger and malnutrition in the 21st Century. BMJ. 361: k2238.10.1136
3. Center for Disease Control and Prevention (2022): morbidity and mortality weekly report. January 7, 71(1):1-9
4. Amanda L.M, Paul S.F, Ardith B and Yeong S.R. (2011). Few associations between income and fruit and vegetable consumption. PMID:22445812.DOI: 10.1016/j.jneb.10.003

OK16

Effect of Guar Gum Incorporation on the Proximate Composition and Sensory Properties of Table Spread Produced from African elemi pear

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KEYWORDS: Table spread; African elemi; Guar gum

HIGHLIGHTS

- Guar gum incorporation improves sensory properties of African elemi spread.
- Fat content of African elemi spread decreases upon incorporation with guar gum.
- Incorporation of guar gum decreases the moisture content of African elemi spread

BACKGROUND AND OBJECTIVES

The consumption of trans-fats, which were common in many spread formulations in the past, has been linked to adverse health effects and earlier mortality. As a result, there is a growing trend towards the development of spreads from plant sources. However, the potential of African elemi, a valuable and readily available source of high-quality nutrients, has received little attention in Nigeria and is not commonly included in the diet. Therefore, there is a need to explore the utilization of African elemi to develop a spread that can reduce health challenges associated with traditional fat spreads. The objective of this study is to evaluate the proximate composition and sensory properties of a table spread produced from African elemi.

METHODOLOGY

Fully ripe African elemi fruits (*Canarium schweinfurthii*) were collected from Obolo in Enugu State. The fruits were washed and manually deseeded to obtain the pulp. The pulp was then pulverized using a food blender. The pulp was mixed with sugar (5 g), salt (1 g), sodium benzoate as a preservative (1 g), ascorbic acid (1 g), and varying concentrations of guar gum (0.5, 1.0 and 1.5g, respectively). The mixture was homogenized using a hand mixer until a smooth paste was obtained. Vanilla essence (1 ml) and vinegar (4 ml) were added for flavour. The final product (spread) was stored in glass bottles for further analysis.

The proximate composition of the spreads was analyzed using the AOAC method [1] while carbohydrate was by difference. Sensory properties were evaluated using a 9-point Hedonic scale as described by Iwe [2]. The data was analyzed using ANOVA in SPSS version 20.0 software, performed in duplicate, and Duncan Multiple Range Test was used to separate the means.

RESULTS AND DISCUSSION

The spreads had lower moisture content (51.69-54.25%) which is likely due to the ability of guar gum to increase the viscosity of the samples, thus indicating good shelf life. Fat content decreased significantly with higher guar gum concentration, reducing potential rancidity. Ash (2.48-2.60%) and protein content (1.75-2.84%) increased significantly ($p<0.05$) with guar gum. The texture, flavour, and spreadability of the spreads were not significantly affected by increased guar gum concentration due to its odorless and flavor-neutral properties [3]. The improved texture and spreadability may be attributed to its thickening and viscosity effects.

Table 1: Proximate Composition of Table Spreads Produced from *African Elemi*

Samples	Moisture	Ash	Fat	Crude Protein	Crude fibre	Carbohydrate
0% GG	$54.25^{a}\pm1.65$	$2.48^{a}\pm0.41$	$10.80^{a}\pm0.00$	$1.75^{c}\pm0.00$	$9.57^{a}\pm0.41$	$21.24^{b}\pm0.47$
0.5% GG	$52.43^{b}\pm1.06$	$2.50^{a}\pm0.56$	$9.67^{ab}\pm0.41$	$3.50^{a}\pm0.00$	$9.60^{a}\pm0.00$	$22.31^{b}\pm1.37$
1.0% GG	$53.47^{c}\pm2.00$	$2.60^{a}\pm0.56$	$8.80^{bc}\pm0.86$	$2.84^{b}\pm0.31$	$9.54^{a}\pm0.57$	$22.76^{b}\pm1.49$
1.5% GG	$51.69^{d}\pm1.41$	$2.52^{a}\pm0.31$	$7.78^{c}\pm0.03$	$2.63^{b}\pm0.00$	$9.47^{a}\pm0.41$	$25.92^{a}\pm2.09$

Mean values within a column with different superscripts are significantly different at ($p<0.05$).

Table 2: Mean sensory scores of *African elemi* spread

Samples	Colour	Taste	Flavour	Texture	Spreadability	Overall Acceptability
0% GG	$6.35^{b}\pm2.00$	$5.80^{b}\pm1.94$	$6.55^{a}\pm1.54$	$6.30^{a}\pm2.00$	$6.90^{a}\pm1.29$	$6.38^{b}\pm1.08$
0.5% GG	$6.30^{b}\pm1.45$	$6.20^{ab}\pm1.51$	$6.50^{a}\pm1.79$	$6.65^{a}\pm1.66$	$7.00^{a}\pm1.81$	$6.53^{ab}\pm1.10$
1.0% GG	$7.80^{a}\pm1.10$	$7.35^{a}\pm1.04$	$6.95^{a}\pm1.82$	$7.10^{a}\pm1.02$	$7.45^{a}\pm1.28$	$7.33^{a}\pm0.77$
1.5% GG	$6.95^{ab}\pm1.82$	$6.00^{ab}\pm2.20$	$6.00^{a}\pm2.29$	$6.55^{a}\pm1.70$	$7.50^{a}\pm1.50$	$6.60^{ab}\pm1.35$

Mean values within a column with different superscripts are significantly different ($p<0.05$)

CONCLUSION AND RECOMMENDATIONS

Incorporation of guar gum in the preparation of African elemi spread decreased the moisture and fat content. The incorporation of guar gum also improved the colour, taste, texture, spreadability and overall acceptability of the samples. The consumption of African elemi spread is encouraged owing to its health benefits.

REFERENCES

[1] AOAC. (2012). Official Methods of Analysis of the Association of Official Analytical Chemists, 20th ed.

[2] Iwe, M. O. (2010). *Handbook of Sensory methods and analysis* (pp. 75-78). Enugu, Nigeria: Rejoint Communication Science Ltd.

[3] Fatherstone, S., (Ed.). (2015). Ingredients used in the preparation of canned foods. In a complete course in canning and related processes, Pp. 147-211. *United Kingdom: Woodhead publishing*.

OL2

Effect of Tree Spinach pulverized leaves (Cnidoscolus aconitifolius) and Bloodroot pulverized leaves (Justicia secunda) on the blood glucose level of alloxan-induced diabetic adult male Wistar albino rats.

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KEYWORDS: type 2 diabetes, rat study, *Cnidoscolus aconitifolius, Justicia secunda*.

BACKGROUND/OBJECTIVES: There is a renewed global interest in the traditional medical practices (the use of herbs) in the management of type 2 diabetes mellitus, derived from the fact that orthodox medicine is not being widely used among the poors in developing countries, so that management of type 2 diabetes mellitus is sustained through the use of traditional alternatives. *Cnidoscolus aconitifolius* and *Justicia secunda* commonly known as tree spinach and blood root respectively, have been reported to exhibit hypoglycemic properties (Adeniran *et al*., 2013),[1]. This study aimed to evaluate the effectiveness of *Cnidoscolus aconitifolius* and *Justicia secunda* leaves on the blood glucose level of alloxan- induced diabetic wistar albino rats.

MATERIALS AND METHODS: Thirty-five adult male wister rats, divided into 7 groups (A-F), of 5 rats each were studied for 28 days. Diabetes was induced using alloxan monohydrate in all the rat groups except group A. Group A: -ve control; B: +ve control (induced but not treated); & C: standard control, were fed 20g of control diet and C treated with standard drug (glibenclamide); group D&E fed on 20g of the diet enriched with 1% and 5% *Cnidosolus aconitifolius respectively*; group F&G fed on 20g of the diet enriched with 1% and 5% *Justicia secunda* respectively. Blood glucose levels were measured at 5 days interval using a glucometer. Statistical analysis was done and Duncan's multiple range test was used to separate and compare the means in each group

RESULTS AND DISCUSSION: Groups D, E, F and G showed decrease in blood glucose comparable with group C on standard diabetic drug with group E having the highest hypoglycemic effect with a decrease of 61.1% in blood glucose level on the last day of the feeding trial. Group A had a decrease with a percentage difference of 0.8% and the fasting blood glucose level of Group B increased with a percentage difference of -162.0%.

Table 1. Fasting Blood Glucose Level of the rats

Group	Baseline Blood Glucose Level (mg/dl) of the Rats (After the alloxan induction of diabetes)	Endline Blood Glucose Level (mg/dl) of the Rats (After experimental feeding trial)	Percentage difference (%)
Group A	$96.8^{a} \pm 9.2$	$96^{a} \pm 9.4$	0.8
Group B	$196.4^{b} \pm 5.7$	$514.6^{b} \pm 99.7$	-162.0
Group C	$215.4^{b} \pm 45.4$	$87.4^{a} \pm 5.2$	59.4
Group D	$189.2^{b} \pm 22.6$	$89.6^{a} \pm 9.5$	52.6
Group E	$220.8^{b} \pm 51.1$	$86^{a} \pm 17.7$	61.1
Group F	$217.8^{b} \pm 37.7$	$105.6^{a} \pm 10.3$	51.5
Group G	$215.2^{b} \pm 37.7$	$105.6^{a} \pm 14.6$	50.9

Values are expressed as mean ±SD of each rat group. Mean values at different superscripts are significant at P 0.05

In alloxan induced diabetic rats, 5% *Cnidoscolus aconitifolius* had the highest hypoglycemic effect on blood glucose level. In comparison with the standard control group on glibenclamide, it had a higher effect in lowering blood glucose levels. This is comparable to the findings of Iwuji, Nwafor, Egwurugwu & Chikezie [2] who reported that an effective dose of *Cnidoscolus aconitifolius* could be a viable alternative to antidiabetic pharmaceuticals like glibenclamide in the treatment of type 2 diabetes in rats.

CONCLUSION: *Cnidoscolus aconitifolius* possesses a significant hypoglycemic property and higher effect than *Justicia secunda* and standard drug in alloxan induced diabetic wister albino rats. Further studies are needed to extend the hypoglycemic property of this herb as alternative to standard drugs, in the management of patients with Type 2 diabetic mellitus.

REFERENCES

1. Adeniran, O.I., Olajide, O.O., Igewemmar, N.C. and Orishadipe, A.T. (2013). Phytochemical constituents, antimicrobial and antioxidant potentials of tree spinach [*Cnidoscolus acontitolius* (Miller) I.M. Johnston]. *Journal of Medical Plants Research*. 7(19) :1317-1322.s
2. Iwuji, S., Nwafor, A., Egwurugwu J. and Chikezie H. (2014). Antihyperglycemic efficacy of *Cnidoscolus aconitifolius* compared with Gilbenclamide in Alloxan- induced diabetic wistar rats. *Journal of Medical Sciences* 2(3): 1-4.

PL6

Nutritional Status, Blood pressure and Physical Activity level of consumers of franchised fast food in south western states in Nigeria

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KEYWORDS: Franchised Fast Food, Physical Activity, Nutritional Status, Blood pressure

BACKGROUND AND OBJECTIVE Fast food has developed into a notable component of diet and a prevalent eating pattern among people all over the world. Fast food has many harmful effects having long term and quick terms. The contents of the fat have an excessive cholesterol level. Excessive-calorie content material with sugar can lead to weight problems. Cholesterol and salt can increase blood pressure, stroke, and heart disorder (1). Cholesterol is a lipid used to help emulsify fats through bile salts and strengthen cell membranes. But when blood cholesterol reaches high levels, it sticks on artery walls and increases the risk of atherosclerosis, blood clots, heart, attack and stroke (2). The WHO member states agreed in 2013 to reduce physical inactivity by 10% by 2025. Physical inactivity is the fourth leading cause of mortality worldwide, and it has been on the rise with 1 in 3 adults not being very active. The risk of hypertension, CVDs, strokes, diabetes, depression, and several types of colon cancer is decreased by physical activity (3; 4).

MATERIALS AND METHOD: This cross-sectional study included data from healthy individual within the age range of 18 to 70 years old. Respondents were recruited from ten (10) purposively selected fast food outlets in Ikeja, Abeokuta and Ibadan cities, Nigeria. A multi-stage sampling technique was used for the study to draw out 300 samples. A well-structured and pre-tested questionnaire was used to collect data on fast food consumption and anthropometric indices. Global Physical Activity Questionnaire (GPAQ) was used to measure physical activity level. Data were analyzed using the statistical software in IBM SPSS version 20. Body mass index, blood pressure, blood glucose and lipid profile of the respondents were obtained using standard procedures. Descriptive statistics (mean, standard deviation, frequency, percentages) and inferential statistics (chi-square and Pearson correlation analysis) were done. The sample size was based on a 95% confidence interval and an error percentage of 5%. Variables were described as number and percentages. $P \leq 0.05$ was considered as statistically significant.

RESULTS AND DISCUSSION: Greater (56.7%) percentage of the respondents were females. Almost half (46.7%) of the respondents had first degree. Most people in the study preferred roasted and fried chicken to other franchised fast foods. Majority of the female population 52.9% had normal diastolic blood pressure, while 38.8% of female respondents were either hypertensive stage 1 or 2. Only (46.2%) of male participants observed in the study had normal systolic blood pressure and 49.2% had normal diastolic blood pressure.There are 49% of the respondents who were moderately active, just 19% of the respondent were sedentary, and 32% of the respondents were very active. Only (44.6%) of the male respondents had acceptable plasma level of high density lipoprotein (HDL). Majority (60.1%) of the female respondents had desirable low density lipoprotein (LDL). Most (91.8%) of the females respondents and 63.1% of males respondents had high risk of acquiring cardiovascular diseases. There are 32% and 48% of the respondents that were overweight and obese respectively in the study. A significant difference was observed between female respondents' physical activity and waist to hip ratio ($p=0.050$). Significant association was observed between body mass index and high density lipoprotein ($p=0.009$).

CONCLUSION AND RECOMMENDATION: The study showed high prevalence of abdominal obesity in both gender. It can be adduced to the population in the study that about half of the respondents were moderately active. In order to promote a healthy lifestyle, this study suggested that, it is imperative to make sure that a variety of healthy food menu alternatives are available in franchised fast food outlets that are not only high in calorie but also in essential micronutrients and dietary fiber.

REFERENCES:

1. Serazul Islam (2020) The impact of fast food on our life. Global journal of medical research, 20 (4): 1
2. Saghir A J., Muhammad Q., Khaleeq R., Muhammad S M., and Mahmood R (2015). "Serum lipid profile of college/university students taking home made food or market fast food" Pure Appl. Bio., 4 (1): 118-124.
3. Berge, J. M., Wall, M., Bauer, K. W., & Neumark-Sztainer, D. (2010). Parenting Charateristics in Home Environment and Adolescent Overweight: A Latent Class Analysis. Obesity, 18 (4): 818 - 825.
4. Vendavalli, S., Wedad, F. M (2014). A study of the prevalence of overweight and obesity in Adolescents and Early Adults Aged 19 to 24 years. And its Relationship to Lifestyle and Dietary Attributes. American Journal of Ethnomedicine, 1 (1): 030-035.

OL7

Assessing the modifiable risk behaviours and Impact of diabetes on the quality of life of Diabetes Patients in Makurdi, Benue State using Audit of Diabetes-Dependent Quality-of-Life

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KEYWORDS: Diabetes, lifestyle, dietary habit, overweight, quality-of-life

BACKGROUND AND OBJECTIVE: Unhealthy diet, sedentary lifestyle, alcohol intake, smoking and obesity have been shown to have adverse effect on diabetes, worsening the Quality-of-life (QoL) of patients [1]. Modification of these lifestyle behaviours have been shown to improve the QoL in diabetes patients [2]. Information on the modifiable risk behaviours among diabetes, and the impact of QoL on diabetes will provide useful information that will assist health professionals in the efficient management of DM and inform patients on the need for healthy lifestyle behaviour change. This study therefore aims to assess the modifiable risk behaviours and Impact of DM on QoL.
METHODOLOGY: A cross-sectional research design involving 571 diabetic out-patients was conducted. Smoking and alcohol drinking were assessed using semi-structured questionnaire. Physical activity (PA), dietary habit (DH), anthropometry, blood pressure, glycated hemoglobin and fasting blood glucose levels, were assessed using standard procedures. QoL was assessed using ADDQoL questionnaire. Ethical approval was obtained from Federal Medical Centre, Markurdi ethical review board and respondents' consents were taken. Pearson's Chi-square, t-test and analysis of variance were used to determine significant association and differences between variables at $p<0.05$.

RESULTS: Impact of Patients' Characteristics on their Quality of Life
Most (54.8%) of the patients were male, 79.9% were 50 years old and above, 63.0% were married, 29.2% had tertiary education, 28.0% were farmers and 72.5% had a sedentary nature of work. In addition, about 60.8% of the patients had no history of counselling, 78.5% had no diabetes self-management skills, 69.2% had no diabetes self-management barriers and 76.0% had no carbohydrate counting knowledge. Furthermore, 99.5% of the patients had no social support and 97.2% had history of screening for depression, anxiety and disordered eating. Patients' age (marital status ($p=0.00$), monthly income ($p=0.02$), history of counselling ($p=0.00$), diabetes self-management skill ($p=0.00$), diabetes self-management barriers ($p=0.00$) and carbohydrate counting knowledge ($p=0.00$) had significant impact on their QoL. Dietary habit had significant impact ($p=0.03$) on the QoL of male respondents, Physical activity level had significant impact ($p=0.00$) on the QoL of female patients. However, both dietary habit ($p=0.02$) and physical activity level (0.01) had significant impact on the QoL of the total respondents. Previous findings have linked poor dietary habits with poor glycemic control and obesity [1], as factors that could further reduce patients' QoL while high physical activity have been shown to improve insulin sensitivity, glycaemic control, weight control and also reduces the risk of T2DM [2].

IMPACT OF CLINICAL CHARACTERISTICS OF PATIENTS ON QUALITY OF LIFE
Almost all (98.5%) the patients had diabetes complication with hypertension being the most (74.8%) presented complication. Diet combined with Pharmacotherapy was the most (86.0%) used treatment option overall. Although, previous study have shown no significant association between QoL and treatment modalities especially those based on insulin therapy [3], however, other studies showed positive impact on diabetics QoL and treatment modalities [4]. The fasting blood glucose level of the respondents indicated that 97.4% had diabetes while the Hemoglobin A1C indicated that 93.7% of the respondents had diabetes. In addition, 19.3% and 79.2% patients had stage 1 and 2 hypertension, respectively based on their systolic pressure, while 7.4% and 92.5% had stage 1 and 2 hypertension, respectively based on the diastolic pressure . Treatment option ($p=0.01$) had significant impact on the QoL of patients, particularly females ($p=0.00$)

Table1: Impact of Clinical characteristics of patients on Quality of Life

Variables	Male			Female			Total		
	N (%)	AWI Score (SD)	P-value	N (%)	AWI Score (SD)	P-value	N (%)	AWI Score (SD)	P-value
Diabetes Complication									
None	14 (4.5)	-4.56 (1.37)	0.39	10 (3.9)	-3.88 (1.05)	0.45	24 (4.2)	-4.28 (1.27)	0.28
Hypertension	237 (75.7)	-5.07 (2.18)		190 (73.6)	-5.25 (2.02)		427 (74.8)	-5.15 (2.11)	
Retinopathy	6 (1.9)	-4.04 (2.87)		6 (2.3)	-5.88 (1.17)		12 (2.1)	-4.96 (2.3)	
Neuropathy	27 (8.6)	-5.11 (3.19)		17 (6.6)	-5.46 (2.8)		44 (7.7)	-5.25 (3.02)	
Nephropathy	3 (1.0)	-7.29 (1.06)		1 (0.4)	-4.73 (0)		4 (0.7)	-6.65 (1.54)	
Hypertension & Retinopathy	11 (3.5)	-5.81 (2.11)		17 (6.6)	-5.52 (1.86)		28 (4.9)	-5.64 (1.93)	
Hypertension & Neuropathy	15 (4.8)	-4.79 (1.96)		17 (6.6)	-5.47 (2.14)		32 (5.6)	-5.15 (2.06)	
Treatment Option									
Diet	8 (2.6)	-4.94 (2.29)	0.19	5 (1.9)	-4.9 (1.96)	0.02	13 (2.3)	-4.93 (2.09)	0.01
PA	4 (1.3)	-5.07 (2.59)		2 (0.8)	-6.31 (0.22)		6 (1.1)	-5.49 (2.1)	
BT	4 (1.3)	-4.15 (2.54)		0 (0.0)	0 (0.0)		4 (0.7)	-4.15 (2.54)	
PH	11 (3.5)	-3.78 (2.33)		6 (2.3)	-3.21 (1.62)		17 (3.0)	-3.58 (2.07)	
Metabolic Surgery	0 (0.0)	0 (0.0)		1 (0.4)	-5.31 (0)		1 (0.2)	-5.31 (0)	
Diet & PA	2 (0.6)	-2.55 (0.03)		3 (1.2)	-2.4 (1)		5 (0.9)	-2.46 (0.71)	
Diet, PA & BT	10 (3.2)	-5.29 (1.73)		10 (3.9)	-4.93 (2.66)		20 (3.5)	-5.11 (2.19)	
Diet & PH	270 (86.3)	-5.17 (2.24)		221 (85.7)	-5.3 (1.95)		491 (86.0)	-5.23 (2.11)	
Diet, PA & PH	4 (1.3)	-3.28 (2.65)		10 (3.9)	-6.59 (2.73)		14 (2.5)	-5.65 (3.03)	
Type of Diabetes Mellitus									
Type 1	235 (75.1)	-5.15 (2.34)	0.29	166 (64.3)	-5.3 (1.9)	0.63	401 (70.2)	-5.21 (2.16)	0.33
Type 2	78 (24.9)	-4.83 (1.97)		92 (35.7)	-5.17 (2.28)		170 (29.8)	-5.02 (2.14)	
Fasting Blood Sugar									
Normal	1 (0.3)	-4.52 (0.0)	0.97	2 (0.8)	-5.44 (0.7)	0.85	3 (0.5)	-5.14 (0.72)	0.95
Prediabetes	7 (2.2)	-5.09 (1.96)		5 (1.9)	-4.74 (1.2)		12 (2.1)	-4.95 (1.63)	
Diabetes	305 (97.4)	-5.07 (2.26)		251 (97.3)	-5.26 (2.06)		566 (97.4)	-5.16 (2.17)	
HbA1C Level									
Normal	1 (0.3)	-4.52 (0)	0.47	5 (1.9)	-4.65 (1)	0.28	6 (1.1)	-4.63 (0.9)	0.83
Prediabetes	13 (4.2)	-5.81 (2.17)		17 (6.6)	-4.57 (1.66)		30 (5.3)	-5.11 (1.97)	
Diabetes	299 (95.5)	-5.04 (2.26)		236 (91.5)	-5.32 (2.07)		535 (93.7)	-5.16 (2.18)	
Systolic Blood Pressure									
Elevated Stage1 Hypertension	8 (2.6)	-4.19 (2.2)	0.39	1 (0.4)	-4.05 (0)	0.60	9 (1.6)	-4.17 (2.05)	0.39
Stage2 Hypertension	55 (17.6)	-5.31 (2.21)		55 (21.3)	-5.06 (2.05)		110 (19.3)	-5.18 (2.13)	
	250 (79.9)	-5.04 (2.26)		202 (78.3)	-5.31 (2.04)		452 (79.2)	-5.16 (2.17)	
Diastolic Blood Pressure									
Normal Stage1 Hypertension	1 (0.3)	-7.05 (0)	0.18	0 (0.0)	0 (0)	0.94	1 (0.2)	-7.05 (0)	0.24
Stage2 Hypertension	29 (9.3)	-4.41 (2.09)		13 (5.0)	-5.29 (1.59)		42 (7.4)	-4.68 (1.97)	
	283 (90.4)	-5.13 (2.26)		245 (95.0)	-5.25 (2.06)		528 (92.5)	-5.19 (2.17)	

AWI score, average weighted impact score; PA-physical activity; PH-pharmacotherapy; BT-behaviour therapy

* P < 0.05, **p<0.01, ***p<0.001

QUALITY OF LIFE OF DIABETIC PATIENTS

DM had negatively impacted the health of 39.6% of the patients while 93.0% believed that their lives would have been much better if they had not had T2DM. The median average weighted impact score and 'present QoL' score for this population was -4.9 (SD = 2.2) and 4 (SD = 1.0), suggesting a mean response of 'bad' and 'neither good nor bad, respectively. Responses of patients on the domains of ADDQoL by the rank of the impact ratings are shown in Table 2. In general, DM had greatest negative impact (mean= -2.6, SD= 0.6) on 'freedom to eat, followed by 'financial situation'(mean = -2.3, SD = 1.0, while reactions of other people (mean = -1.1, SD = 1.1). After considering weighting, freedom to eat (mean = -7.1, SD = 2.2) was the most affected QoL domain, followed by financial situation (mean = -6.8, SD = 3.3) while reactions of other people (mean = -2.8, SD = 3.2) was the least. Similarly, "freedom to eat" (mean = 2.7, SD = 0.5), "living condition" (mean = 2.7, SD = 0.5) and "financial situation" (mean = 2.7, SD = 0.4) were rated most important while personal relationship (mean = 2.0, SD = 1.0) and sex life (mean = 2.0, SD = 1.1) were rated least important.

CONCLUSION AND RECOMMENDATION

High prevalence of alcohol drinking (higher in males), unhealthy weight and abdominal obesity (higher in females) are behavioural risk factors that requires modification in order to reduce the burden of diabetes in respondents. Improvement in the dietary habit and physical activity level of respondents might promote positive impact on their diabetics QoL. Similarly, combined therapy including diet therapy and pharmacotherapy might positively impact diabetics QoL in respondents. Lifestyle modification is therefore recommended to improve the QoL of diabetic patients.

REFERENCES

1. Olabiyi, F., & Oguntibeju, O. The Role of Nutrition in the Management of Diabetes Mellitus The Role of Nutrition in the Management of Diabetes Mellitus. *INTECH Open Science/Open Minds*, *October 2016*, 83–94. https://doi.org/10.5772/48782
2. Caydam, O. D., Dogan, E. S., Pakyuz, S. C., & Akkaya, A. Does nutritional status affect on quality of life among patients with Diabetes Mellitus? *Medical Science*; 2019. *23*(March), 221–226.

PL11

In Vitro Analysis of Zizyphus Jujuba Fruit and its Anti-Ulcer Potential in Ethanol Induced Ulcerated Albino Rats

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KEYWORDS: Phytochemical, Proximate, Anti-ulcer, *Ziziphus Jujuba*

HIGHLIGHTS

The findings of this study showed that Jujube fruits is

- rich in flavonoid phytochemicals
- possesses antioxidant potential
- and preventive anti- ulcer potential

BACKGROUND AND OBJECTIVES

Jujube fruits (*Ziziphus jujuba*) is an indigenous plant commonly found in the rural areas of Northern Nigeria (magariya). It is also distributed in the tropical and subtropical regions of Europe, Asia, and the Middle East. It contains many essential bioactive components which are beneficial to human health. Currently, the use of modern antiulcer drugs (pharmaceuticals) leads to some adverse effects, such as hypersensitivity, arrhythmia, impotence, gynecomastia, hematopoietic changes, and kidney disease. These drugs also result in significant drug-drug interactions that limit the potential use of these agents.[1] This study aimed to investigate the phytochemicals, proximate, antioxidant, anti-nutritional factors of jujube fruit and the anti-ulcer potential of jujube fruits in ethanol induced ulcerated albino rats.

MATERIALS AND METHOD

Dried *Zizyphus jujuba* fruit was bought from kurumi market in kano state. It was then air dried to remove available moisture to avoid contamination. Jujube fruits was dried and pounded, the drupe was separated from the powder, the powder jujube fruit was weighed together with the feed (standard feed given to experimental animals) into 15%,25%,50% of 200g feed proportion. Thirty-two (32) male albino rats (190g) were used in this study. The animals were grouped into six groups (n=6). Group 1 was the positive control fed with normal feed (not mixed with the jujube fruits powder) and uninduced, Group 2 was negative control fed with normal feed but induced with ethanol. Group 3 were given normal feed and a standard drug(cimetidine), Group 4 were fed with feed containing 50% of the jujube fruits, Group 5 were fed with feed containing 25% of the jujube fruits and lastly Group 6 were fed with feed containing 15% of the jujube fruits. Ulcer was induced in experimental rats using 70% ethanol (1ml/rat) in all group except negative control after pre-treatment with various proportion (15%,25%,50%) of jujube fruit diet and cimetidine for 21 days. The animals were sacrificed 4 hours after the induction with 70% ethanol on the 21st day and blood samples were collected for analysis. The antioxidants concentration was determined spectrophotometrically using 2,2-Diphenyl-1-picrylhydrazyl (DPPH) Free Radical Scavenging Assay and phosphomolybdenum assay method. The gastric tissue and content were examined to determine the gastrin level, stomach pH, histological examination, ulcer inhibition and ulcer index

RESULTS AND DISCUSSION

Spectrophotometric methods reveal Total antioxidant status determined by DPPH free radical scavenging assay and Phosphomolybdenum assay to be 0.5mg/ml and 39.7mgEAA/g respectively, proximate analysis of moisture, ash, fat, fibre, protein and carbohydrate was determined to be 6.35%, 9.4%, 5.05%, 40.4%, 6.13% and 32.67% respectively. High ash content (9.4%), indicates that the Jujube fruit contains nutritionally more important mineral elements [2]. Phytochemical analysis of Jujube fruit exhibited a detectable number of bioactive constituents; flavonoids, tannins, steroids, saponins and alkaloids to be 2.25, 1.25, 0.12, 006, and 0.15 mg/100g respectively and anti-nutritional factors; phytate 1.47mg/100g and oxalate 3.17mg/100g. Groups 4 and 6 exhibited significant ($p<0.05$) decrease in gastrin level, ulcer index and ulcer inhibition as compared to the control. The histological examination of group 4 and 6 was similar to that of the negative control. It was observed that groups 3 and 5 displayed moderate ulceration when compared with the control groups. Jujube diet helps strengthen the stomach lining and intestinal lining, protecting against ulcers, injury, and harmful bacteria such as *Helicobacter pylori* [3]

Table 1: Phytochemicals and antioxidant analysis of *Zizyphus Jujuba* Fruit

Parameters		Quantitative	Qualitative
Phytochemicals	Tannins	1.25 mg/100g	++
	Flavonoids	2.25 mg/100g	++
	Steroids	0.12 mg/100g	+
	Saponnins	0.06 mg/100g	+
	Alkaloids	0.15 mg/100g	+
Antioxidants	DPPH Free Radical Scavenging	0.5mg/ml	
	Phosphomolybdenum Assay	39.7 mg EAA/g	

Table 2: Gastrin and gastric pH levels in the stomach of the experimental rats.

Groups	Gastrin pmol/L	Gastric pH
normal diet(control)	27.80±.69	2.20±.05
Ulcer induced	41.50±.51^{a}	3.40±.05^{a}
standard drug (Cimetidine)	52.80±.69^{a,b}	4.70±.05^{a,b}
50%,of *Zizyphus jujube* fruit diet	70.90±.58^{a,b,c}	3.20±.05^{a,b,c}
25%of *Zizyphus jujube* fruit diet	28.80±.41^{b,c,d}	2.90±.05^{a,b,c,d}
5%,of *Zizyphus jujube* fruit diet	26.70±.17^{b,c,d,e}	6.30±.32^{a,b,c,d,e}

CONCLUSION

The results suggest that Zizyphus jujube fruit diet protect gastric mucosa damage by decreasing gastric juice, gastrin and increasing the gastric pH which can be concluded to possess significant and dose dependent antiulcer potential.

REFERENCES

1. Mekonnen, A.W., Atnafie, S.A., Mohammed, B.A., Wahab, A (2020). Evaluation of antiulcer activity of 80%methanol extract and solvent fraction of the root of croton macrostachyus Hocsht; Ex Del. (Euphorbiaceae) in Rodents", Evidence -*Based Complementary and alternative Medicine,* 2020.
2. Demeke, G., Fenta, A., & Dilnessa, T. (2021). Evaluation of wet mount and concentration techniques of stool examination for intestinal parasites identification at Debre Markos Comprehensive Specialized Hospital, Ethiopia. *Dove Press Journal*, *14*, 1357–1362.
3. Maret,G.T.,Garry,R.B and Richard,S.B.,(2019).The relationship between vitamin C status, the gut-liver axis and metabolic syndrome. *Redox biology*,21,101091.

PL13

Calcium assessment amongst adults working within a University community in Osun State, Nigeria

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KEY WORDS: Dietary Calcium intake, Adults, nutrient adequacy, dietary pattern

HIGHLIGHT

- A higher percentage of the adults had good knowledge on calcium
- Majority had inadequate calcium intake despite their good knowledge on calcium

BACKGROUND AND OBJECTIVES:

Calcium and vitamin D play essential roles in maintaining optimal health throughout the stages of life including adulthood. While calcium is primarily responsible for maintaining strong bones and teeth, vitamin D aids in the absorption of calcium and contributes to various bodily functions. Calcium and vitamin D are essential nutrients for maintaining bone health, improve bone mass, reduces bone loss, the risk of any fracture and specifically the risk of hip fracture in adults. However, many adults above 40 years consume inadequate dietary calcium [1]. This study examined the dietary calcium and vitamin D intake level among the adults in Bowen University, Iwo.

MATERIALS AND METHODS:

An interviewer administered questionnaire was used in this cross sectional study to obtain 200 respondent's data on socio-demographic and economic characteristics, anthropometric measurements, blood pressure, and knowledge on calcium and vitamin D. Adequacy in the dietary intake and pattern of calcium rich food was obtained with a modified food frequency questionnaire on calcium rich food and 24 – hour dietary recall. Data obtained were analyzed using IBM SPSS version 27.0 for the mean, frequency with percentage and Pearson's chi square for association of variables at $p<0.05$.

RESULTS AND DISCUSSION:

The result showed that most (60.0%) of the respondents were females and 40.0% males. More than half (55%) of the respondents were within the age range of 40 - 49 years. The prevalence of overweight in this study was 45.5% and 40% had normal blood pressure. Majority (73%) of respondents had good knowledge on calcium and vitamin D. In this study, 65%, 51% and 42.5% of the respondents had inadequate intakes of calories, protein and total fat respectively while majority (95%) had inadequate calcium intake. Only 5% had adequate calcium intake. No value was recorded for vitamin D intake. Majority of the respondents had a higher percentage of infrequent consumption of the seven food groups compared to the frequent, with 82.0% of the respondents having infrequent consumption of milk and milk products while 32.0% of respondents had the highest percentage of frequent consumption of fruits and vegetables. Below half (48.5%) of respondents had a medium dietary diversity score, while 14.5% had high dietary diversity score. There was no significant association between knowledge on calcium and its intake (Table 1). Knowledge of calcium among respondents was significantly associated (at $p \leq 0.05$), with educational level ($p = 0.002$), ethnicity ($p = 0.04$), occupation ($p = 0.007$), monthly income ($p = 0.002$) and amount spent on food per day ($p = 0.022$).

Table 1: Association between knowledge on calcium and calorie with selected nutrients intake and adequacy of the respondents

	Good Knowledge		Poor Knowledge		p-value
Calories					0.193
<1800kcal	91	62.3%	39	72.2%	
≥1800 kcal	55	37.7%	15	27.8%	
Protein					0.150
<46.0g	79	77.5%	23	22.5%	
46g to 56g	32	62.7%	19	37.3%	
>56.0g	35	74.5%	12	25.5%	
Total Fat					0.147
<20g	32	64.0%	18	36.0%	
20g to 35g	85	73.9%	30	26.1%	
>35g	29	82.9%	6	17.1%	
Calcium					0.610
< 800mg	138	94.5%	50	92.6%	
≥ 800mg	8	5.5%	4	7.4%	

CONCLUSION AND RECOMMENDATION:

In conclusion, the findings of this study revealed that dietary calcium intake is inadequate among the respondents due to poor consumption of calcium and vitamin D rich foods which can contribute to risk of calcium deficiency outcomes in adults in later years. Hence, it is recommended that comprehensive nutrition education programs should be developed and implemented targeting adults in Nigeria at large. These programs should focus on raising awareness about the importance of adequate dietary calcium and vitamin D intake, dietary sources of these nutrients, and the potential health consequences of deficiencies.

REFERENCES

1. Shlisky J., Mandlik R., Askari S., Abrams S., Belizan J. M., Bourassa M. W., Cormick G., Driller-Colangelo A., Gomes F., Khadilkar A., Owino V., Pettifor J.M., Rana Z.H., Roth D.E., and Weaver C. (2022). Calcium deficiency worldwide: prevalence of inadequate intakes and associated health outcomes; Technical Report, *Annals of the New York Academy of Sciences* 1512 10–28. doi: 10.1111/nyas.14758

PL15

Dietary diversity, Health and Nutritional Status of Inmates in Ilesha and Ife Correctional centers of Osun state Nigeria.

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KEYWORDS:inmates, nutritional-status, health, dietary-diversity

HIGHLIGHTS

- Dietary intake of inmates lacks variety
- There are evidence of micronutrient deficiency related diseases conditions among inmates

BACKGROUND AND OBJECTIVES: One of the most important aspects in the lives of inmates is food and the maintenance of nutritional adequacy becomes very important especially where there is restriction and rationing of food as seen in prisons, hospitals and homes for older people (Fontanella et al, 2020). The general objective of this study is to assess the dietary diversity, health and nutritional status of inmates in the Ilesha and Ife correctional centres of Osun State, Nigeria.

MATERIALS AND METHOD: The study is cross-sectional in design. A total of 288 inmates who were confined in Ilesha and Ife correctional centres of Osun State Nigeria and are within the age range 18-65 years were randomly selected for this study. A semi-structured interviewer-administered questionnaire was used to obtain data from the prison inmates on the [i] socio-demographic characteristics [ii] prevalence of common diseases and conditions [iii] anthropometric measurement and 24-hour dietary. Data was represented using descriptive statistical analysis.

RESULTS AND DISCUSSION: The result in table 1 shows that 40% of other diseases and conditions identified the prevalent ones among the inmates were Fever and short-sightedness. It is noteworthy that 117(40.3%) of the respondents have at least one condition or disease. Table 2 shows that most of the respondents consumed Starch (97.9 %,), Legumes and nut (92.8%) and Fats and Oil (90.0%). While very few consumed vitamin A rich fruits and vegetables (6.2 %,), other fruits (13.1 %,), other vegetables (7.6 %,), milk (5.2%) and Egg (7.6%). Thus, about half of the inmates have a low Diet diversity score with mean DDS of 3.61 ± 1.02.

CONCLUSIONS AND RECOMMENDATION: Foods served to lacks variety especially in micronutrient rich sources like fruit and vegetables, which may predispose inmates to micronutrient deficiency and increased prevalence of disease. As such, the correctional center food service should be revisited and made to accommodate micronutrient-rich foods especially fruits and vegetables to a quantity that meets the recommended daily allowances of inmates.

Table 1: Prevalence rate of common diseases and conditions

Conditions	Frequency	(%)	Diseases	Frequency	(%)
Short sightedness	19	6.6	Hypertension	5	1.7
Back-pain	10	3.4	Diabetes	1	0.3
Bloody stool	2	0.7	Malaria	3	1.0
Blurry Vision	9	3.1	Ulcer	25	8.6
Fever	19	6.6	Asthma	2	0.7
Cracked lips	27	9.3	Anemia	3	1.0
Skin dermatoses	21	7.2			

Table 2: Dietary diversity score of inmates

Dietary Diversity score		Frequency	Percentage	Mean ±SD
Low	(0-3 food groups)	142	49.0	3.61±1.02
Medium	(4-6 food groups)	144	49.7	
High	(7-9 food groups)	4	1.4	

REFERENCES

Fontanella L, Maloberti A, Rossetti E, et al. Nutritional status of prisoners: a systematic review. J Hum Nutr Diet. 2020;33(4):556-571. doi:10.1111/jhn.12740

PL17

Effects of Complementary food formulated from maize, fermented soybean and Jathropha blends on hematological parameters of malnourished weanling albino rats

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KEYWORDS: Iron-deficiency anemia, malnutrition, complementary food

HIGHLIGHTS

- Maize, soybean, and Jathropha blends showed significant positive effects on blood composition.

- Experimental groups showed decreased triglyceride levels.
- Experimental groups showed higher PCV and RBC levels

BACKGROUND AND OBJECTIVES

Anemia, a global public health problem, is defined as low blood hemoglobin levels. The World Health Organization estimates 62.3% of African preschoolers are anemic, with 50% attributed to iron deficiency (WHO, 2015). Providing sufficient dietary iron during breast feeding is challenging due to iron-poor breast milk and iron absorption inhibitors in complementary foods. Research on developing complementary foods from maize, fermented soybean, and jathropha blends, can address iodine deficiency anemia (IDA). This study aims to develop a local complementary food using maize, fermented soybean, and Jathropha blends and assess its impact on the on hematological parameters of weanling rats.

METHODOLOGY

Thirty (30) weanling albino rats (5 months old) were divided into groups A-F (5 rats each). After 7 days of acclimatization, they were only fed cassava starch and water for 14 days. Baseline hematological parameters (hemoglobin level, PCV, McH, and RBC) were recorded on day 14. Therapeutic food made from different blends of maize (MF), fermented soybean (FSF), and *Justicia carnea* leaf (JCL) was produced and fed to groups B-F as the intervention, Group A was fed with normal rat pellets for twenty-one days. Group B were fed with 70 maize: 25 soybean and 5 justicia, group C with 60 maize: 30 soybean: 10 justicia, group D were fed with 50 maize: 40 soybean and 10 justicia, group E with 45 maize: 40 soybean and 15 justicia and group F were fed with 40 maize: 40 soybean: 20 justicia. Hematological parameters were determined and recorded at the end of the intervention. Data were analysed using Minitab (version 18.0) with descriptive and Fisher Test used to separate the mean.

RESULTS AND DISCUSSION

The significant changes in PCV and RBC levels in certain diet groups indicate potential positive effects on blood composition and oxygen-carrying capacity. This is consistent with the report from Olagunjo *et al*. (2023). HBC differences were more pronounced in the control and experimental group D. Control group showed the highest increase in triglyceride (0.65-1.18 mmol/L), while experimental group F had the lowest decrease (1.10-0.43 mmol/L) after 21 days on the formulated diet. Decreased triglyceride levels in experimental groups may imply potential cardiovascular benefits, especially in the group with the lowest levels.

Table 1. Comparison of hematological parameters across the groups

Parameters	Groups					
	A	B	C	D	E	F
PCV (%)						
Initial	33.12^{a}±0.87	30.62^{a}±0.83	36.08^{b}±0.06	26.28^{b}±0.62	31.42^{b}±0.20	34.23^{b}±0.16
Final	36.54^{a}±0.28	35.32^{a}±0.81	48.28^{a}±0.22	33.43^{a}±0.12	36.66^{a}±0.33	40.89^{a}±0.49
RBC (×10^{6}μ/L)						
Initial	6.78^{a}±0.09	4.60^{b}±0.02	4.20^{b}±0.06	5.09^{b}±0.05	6.31^{b}±0.27	5.66^{b}±0.12
Final	7.11^{a}±0.04	6.78^{a}±0.23	7.49^{a}±0.06	9.32^{a}±0.11	8.60^{a}±0.14	8.92^{a}±0.19
TG (mmol/L)						
Initial	0.65^{b}±0.04	1.33^{a}±0.04	0.83^{a}±0.13	1.27^{a}±0.03	1.00^{a}±0.12	1.10^{a}±0.06
Final	1.18^{a}±0.02	1.23^{a}±0.01	0.69^{a}±0.03	0.67^{b}±0.03	0.52^{b}±0.04	0.43^{b}±0.08
HBC (g/dl)						
Initial	35.78^{b}±0.93	36.30^{b}±0.09	37.08^{b}±0.08	35.15^{b}±0.13	36.23^{b}±0.16	36.11^{b}±0.11
Final	41.91^{a}±0.43	41.28^{a}±0.07	42.05^{a}±0.41	41.29^{a}±0.60	41.66^{a}±0.30	41.78^{a}±0.30
McH (pg)						
Initial	19.81^{a}±0.44	19.24^{a}±0.16	19.88^{a}±0.14	20.33^{a}±0.13	19.12^{a}±0.11	19.55^{a}±0.21
Final	22.50^{a}±0.10	20.61^{a}±0.40	19.92^{a}±0.93	20.89^{a}±0.49	19.60^{a}±0.84	20.36^{a}±0.60

PCV packed cell Volume, *RBC* red blood cell, *HBC* hemoglobin concentration, *McH* Mean corpuscular hemoglobin, *TG* Triglyceride.

CONCLUSION AND RECOMMENDATIONS

Maize, fermented soybean, and *Justicia carnea* leaf complementary food blends, had significant positive effects on blood composition as evidenced by changes in PCV and RBC levels and a decrease in triglyceride levels. The

formulated complementary food shows promise as a potential solution to address iron-deficiency anemia and improve hematological parameters in infants.

REFERENCES

- Olagunju, M.T., Abodunrin, O.R., Aleru, E.O., Adewole, I.E., & Akinsolu, F.T. (2023). Effects of complementary food formulated from millet, soybean, and grasshopper on hematological parameters of malnourished weanling albino rats. *Nor. Afr. J. Food Nutr. Res.*, 7 (15): 108-116
- World Health Organization (2015). *The Global Prevalence of Anaemia in 2011*; World Health Organization: Geneva, Switzerland, 2015.

SUB-THEME M: ADDRESSING FOOD SAFETY AND HYGIENE TO REDUCE THE BURDEN OF FOODBORN ILLNESS)

OM1

Iron status, hygeine practices and nutritional status of selected primary school children in ogun state.

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KEYWORDS: Iron status, Hygiene, Nutritional status, Anaemia

BACKGROUND AND OBJECTIVES
Iron deficiency (anaemia) is a global public health problem. Across the globe, anaemia affects over 2 billion people worldwide with an estimated 36% of the developing world's population suffering from this disease (1). Nigeria accounted for 82.6% of children aged 7 to 12 years, with rates of mild, moderate and severe anaemia being 9.6%, 71.6% and 1.4% in Abia State (2). From an extensive search of the literature, there is little information and few facts relating to anaemia in primary school children living in Ofada town, Ogun State. In addition to this, no study relating to anaemia that has been done in the Ofada area. This study assessed the iron status, hygiene practices, and nutritional status of selected primary school children in Ogun State.

METHODOLOGY
This is a cross-sectional study that involved 400 randomly selected primary schools pupils in Ofada town, Obafemi Owode LGA. A structured questionnaire was used to obtain data on respondents' socio-economic and demographic characteristics, water source, sanitation and hygiene (WASH), food consumption pattern of the respondents and anthropometric measurements (weight and height) taken using standard procedures. Blood samples from a sub-sample (50) of the selected children were analyzed for biochemical indices [Serum ferritin (SF) and Heamoglobin (Hb)] using standard procedures. Anthropometric data was analyzed using WHO ANTHROPLUS software and later exported to SPSS. Ethical clearance was collected from Ogun State Ministry of Health and the Ministry of Education.

RESULTS AND DISCUSSION
The prevalence of underweight, overweight, stunting and wasting was 50, 11, 19 and 20%, respectively, with significant ($p=0.000$) gender difference. Children's classification to iron status showed that 56.0% were anaemic, 44% were iron sufficient, and none had iron deficiency anaemia or iron deficieny. Nutritional status was significantly ($p<0.05$) associated with household size ($\chi^2=12.39$), and rooms for sleeping ($\chi^2=18.05$) for

WASH.

Table1 : Anthropometric Characteristics and WASH of the Children

Variables	Frequency	Percentage	Variable	Frequency	Percentage
BMI-for-AGE			**Type of toilet**		
Normal	207.0	51.8	Bush	43.0	10.7
Moderately thin	120.0	30.0	Pit latrine	140.0	35.0
Severely thin	58.0	14.5	Water closet	214.0	53.5
Overweight	15.0	3.8	Bucket	3.0	0.8
TOTAL	**400.0**	**100.0**	**TOTAL**	**400.0**	**100.0**

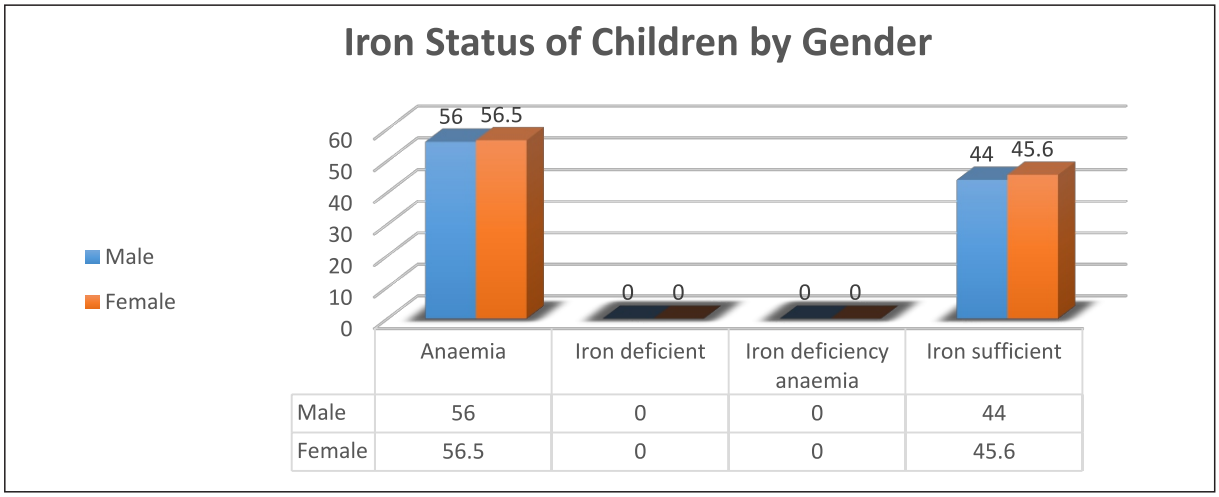

Figure 3: Iron status of respondents

CONCLUSSION AND RECOMMENDATION

In conclusion, the poor iron status, hygiene practice and nutritional status assessed among selected primary school children in the Ofada area, could be an indication of low socio-economic status among parents. Nutrition education is necessary to enlighten both parents and children.

REFERENCE

(1) Benoist B, McLean E, Egli I, Cogswell M, eds. Worldwide prevalence of anaemia 1993 – 2005. WHO global database on anaemia. Geneva: World Health Organization. 2008

(2) Onimawo IA, Ukegbu PO, Asumugha VU, Anyika JU, Okudu H, Echendu CA, Nkwoala C, Emebu P. Assessment of anaemia and iron status of school age children (aged 7-12 years) in rural communities of Abia state, Nigeria. *African J. Food, Agric. Nutr. Dev.* 2010;10(5):2570- 2586.

OM3

Hygienic Practices during Complementary Feeding and Episode of illness among Malnourished Children in Institute of Child Health, ABUTH, Zaria

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KEY WORDS: Hygiene, Complementary feeding, Children, Illness

BACKGROUND AND OBJECTIVES: Complementary feeding is the process that starts when breast milk alone is no longer sufficient to meet the nutritional requirements of infants and therefore food is needed, along with breast milk. Complementary feeding in resource-poor settings can result in diets that are microbiologically unsafe, which can lead to the risk of exposure to food-borne pathogens (1). Microbiologically contaminated food is particularly harmful for children aged <2 years, who have immature immune systems and are vulnerable to infections with enteric pathogens (2).
This study aimed to assess hygiene practices during complementary feeding and episode of illness among malnourished children in Institute of Child Health (ICH), ABUTH, Zaria.

METHODOLOGY: A descriptive, cross sectional study involved randomly selected 30 caregivers with malnourished children (6–59 months). A semi-structured questionnaire was used to obtain information relating to hygiene practices, episode and type of illness since introduction of complementary feeding. Descriptive statistics was used to analyze the data.

RESULTS/DISCUSSION: The study revealed that 53.3% of the household's primary source of water is well which is not consistent with (3, 4). A portion (23.3%) of the caregivers used feeding bottle with a nipple to feed their children agreeing with findings of (5) which reported 20.2%, 18.6% and 26.3% for the national, North West and Kaduna state average, respectively. Only 10% washed the feeding utensils before and immediately after feeding and 63.3% of the mothers claimed to have been washing their hands before feeding the children. Less than half (40%) of the children had at least an episode of illness since the initiation of complimentary feeding consistent with (5) of which most (66.7%) reported having diarrhea and or vomiting, higher than the average reported for national (5, 4), North West and Kaduna state, respectively (5).

Table 1: Hygiene practices during complementary feeding	Frequency	Percent (%)
a) Primary source of water		
Well	16	53.3
Borehole	12	40.0
Hand pump	2	6.7
b) Utensils used for feeding		
Cup and spoon	23	76.7
Feeding bottle	7	23.3
c) Washing of feeding bottles and utensils		
Before feeding only	1	3.3
After feeding only	26	86.7
Before and after feeding	3	10.0
d) Washing of hands before feeding the child		
Yes	19	63.3
No	11	36.7
e) Sterilizing the bottles and utensils		
Using of boiled water	3	10.0
Washing with soap	27	90.0

Table 2: Episode and types of illness among children since introduction of complementary feeding

	Frequency				Percentage (%)	
a) Episode of illness						
Yes	12				40.0	
No	18				60.0	
b) Types of illness						
	Diarrhea &/or Vomiting		Dermatitis		Pneumonia	
	Frequency	(%)	Frequency	(%)	Frequency	(%)
	8	66.7	1	8.3	3	25.0
c) Episode						
1-3 times	5	62.5	1	100%	1	100
>3 times	3	37.5				

CONCLUSION/RECOMMENDATION: Poor hygienic practices were observed during complementary feeding. Therefore, it is crucial to intensify health education and training on the health consequences of poor hygienic practice during complementary feeding on children.

REFERENCE

1. Kung J. K., Boor K. J., Ame S. M., Ali N. S., et al., (2009). Bacterial populations in complementary foods and drinking-water in households with children aged 10–15 Months in zanzibar, Tanzania, Journal of

Health, Population and Nutrition, vol. 27, no. 1, pp. 41–52.
2. Parvez S. M., Kwong L., Rahman M. J. et al., (2017). Escherichia coli contamination of child complementary foods and association with domestic hygiene in rural Bangladesh," Tropical Medicine & International Health, vol. 22, no. 5, pp. 547–557.
3. National Bureau of Statistics (NBS) and United Nations Children's Fund (UNICEF). 2014 National Nutrition and Health Survey, Report. Abuja, Nigeria. NBS and UNICEF.
4. National Bureau of Statistics (NBS) and United Nations Children's Fund (UNICEF). 2018 National Nutrition and Health Survey, Report. Abuja, Nigeria. NBS and UNICEF.
5. National Bureau of Statistics (NBS) and United Nations Children's Fund (UNICEF). 2017 *Multiple Indicator Cluster Survey 2016-17, Survey Findings Report*. Abuja, Nigeria: NBS and UNICEF.

SUB-THEME N: INNOVATION TO IMPROVE NUTRITION ACROSS THE LIFESPAN AND IN SPECIAL POPULATIONS.

ON4

Minimum Dietary Diversity and Food Insecurity in Women of Reproductive Age in Ife central and Ife north local government area, Osun state.

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KEYWORD: Minimum dietary diversity, Women of Reproductive Age, Food Insecurity

HIGHLIGHT

- At least, 9 out of 10 Women of Reproductive Age (WRA) were food In-secured
- There was no significant correlation between dietary diversity and food insecurity.

BACKGROUND AND OBJECTIVE

High-quality monitoring and evaluation tools are necessary given the popularity of nutrition-sensitive interventions. The validation of the Minimum Dietary Diversity for Women of Reproductive Age (MDD-W) as a proxy of micronutrient adequacy fills a void in this context. However, there is still lack of information regarding its connections to other aspects of food and nutrition security due to the indicator's recent endorsement.

OBJECTIVE: The objective of this study was to assess dietary diversity, prevalence and associated factors of food insecurity among women of reproductive age as well as determines existing relationships.

MATERIALS AND METHOD

A cross-sectional study design was utilized. Data was collected with the aid of well–structured questionnaire consisting of the socio-economic characteristics, factors influencing food Insecurity of the respondents, a FAO Household Food Insecurity Access Scale (HFIAS), and the Minimum Dietary Diversity for Women (MDD-W) questionnaire used to obtain the DD Scores of WRA. The sample size of three hundred and seventy-two (372) respondents was used in selected communities using a proportional stratified sampling technique for the WRA in Ife central and Ife north local government area, Osun state. Data collected was analyzed using IBM (SPSS) version 26.0. Descriptive statistics such as percentages, means, and frequencies were used to describe the data. Pearson correlation and chi-square tests were used to determine relationships.

RESULT AND DISCUSSION

Results showed that 73% of respondents reached the MDD food group value while 94.9% were food In-secured. An increase in food prices was the greatest influencer of their food insecurity, affecting 87.1% of the respondents. Overall there is no correlation between dietary quality and food insecurity. The only socio-economic characteristics that were associated with dietary diversity were positions of wives in a polygamous family (p =0.018) , household type (p =0.047) while household size (p=0.032, R=-1.11) was negatively correlated with the respondent's dietary diversity.

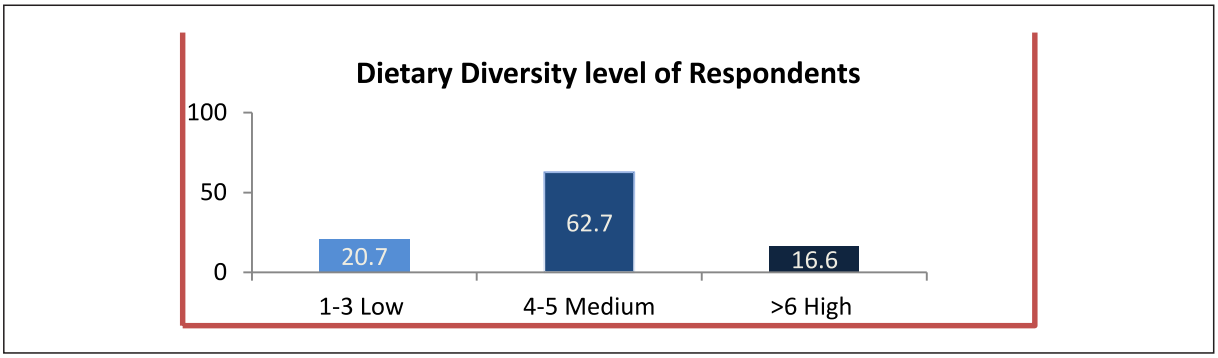

Fig 1.

CONCLUSION AND RECOMMENDATION

In conclusion, the study confirmed that the dietary quality of the WRA is not dependent on their food insecurity. Household size, Household type and position of wives in a polygamous family is associated with the respondents DD score. Hence more extensive investigation should be carried out on WRA food insecurity in relationship to their Dietary Diversity, while quick intervention on tailored programs to aid diversification of diet should be targeted more at WRA in polygamous family.

REFERENCES

Martin-Prevel Y., Arimond M., Allemand P., Wiesmann D., Ballard T.J., Deitchler M., Dop M., Kennedy G., Lartey A., Lee W., et al. Development of a Dichotomous Indicator for Population-Level Assessment of Dietary Diversity in Women of Reproductive Age. Curr. Dev. Nutr. 2017;1:001–701.

PN5

In-vitro digestibility and glycemic index of extruded snacks produced from flour blends

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KEYWORDS: product development, under-utilized crops, protein concentrate, blends

BACKGROUND AND OBJECTIVES:

Extrusion cooking is a promising technology that provides a convenient, inexpensive and efficient manufacturing process to obtained snacks (1). Development of snacks using locally under-utilized crops such as orange fleshed sweet potatoes (OFSP) and Bambara groundnut is crucial for alleviating under-nutrition among the population through food-based approach. Therefore, the study examined the in-vitro digestibility and glycemic index of extruded snacks produced from OFSP and Bambara groundnut protein concentrate.

MATERIALS AND METHOD:

Raw materials were procured from Kure Ultra-Modern Market, Minna, Niger State. The OFSP was washed, peeled, sliced, surphited by soaking in water containing sodium meta-bisulphite for 30mins, drained and solar dried for 48hrs. The dried OFSP was milled into flour as described by (Olatunde *et al*.,). The bambara seeds were

cleaned and then soaked in distilled water for six hours, at ambient temperature. The soaked bambara seeds were spread on jute bags and allowed to germinate for 48 hours with sprinkling of water at intervals. The germinated bambara seeds were dried using solar drier for 48 hours and then milled. The protein extraction was carried out as described by (Chandi and Sogi), with minor alterations. In-vitro starch digestibility was determined using the method of (Chung *et al.,*). The analyses were conducted in triplicates and data were subjected to one-way analysis of variance.

RESULTS AND DISCUSSION:
Table 1 shows all parameters measured were significantly. However, the variation in the in-vitro starch digestibility may be attributed to formation of protein starch complexes that alters starch gelatinization behaviour. The relatively high values of Slow digestible starch (SDS), Resistance starch (RS), Total glucose (TG), may be as a result of the destruction of double helix structure of starch during extrusion. (Kamble *et al.,* 2019) Also, as the protein proportion increases, Resistance starch show a constant decrease.

Table 1. In-vitro Starch Digestibility and Glycemic Index of Extruded Snacks

Parameters	SZ	SY	SX	SW	SV
RDS	12.01 ± 0.01^{d}	16.05 ± 0.04^{c}	10.87 ± 0.02^{e}	22.03 ± 0.02^{a}	20.65 ± 0.03^{b}
SDS	50.64 ± 0.17^{a}	42.61 ± 0.02^{b}	39.80 ± 0.26^{c}	36.14 ± 0.13^{e}	37.94 ± 0.06^{d}
RS	6.81 ± 0.01^{a}	6.22 ± 0.01^{b}	5.91 ± 0.11^{c}	3.95 ± 0.14^{d}	3.14 ± 0.02^{e}
TS	69.47 ± 0.06^{a}	64.89 ± 0.05^{b}	56.59 ± 0.38^{e}	62.13 ± 0.17^{c}	61.74 ± 0.02^{d}
TG	77.19 ± 0.04^{a}	72.10 ± 0.05^{b}	62.88 ± 0.42^{e}	69.03 ± 0.19^{c}	68.60 ± 0.02^{d}
SDI	17.21 ± 0.01^{e}	24.10 ± 0.04^{c}	19.21 ± 0.10^{d}	35.46 ± 0.06^{a}	33.44 ± 0.70^{b}
GI (%)	57.24 ± 0.01^{e}	59.54 ± 0.01^{d}	59.71 ± 0.01^{c}	62.31 ± 0.01^{b}	63.53 ± 0.01^{a}

Values are means ± standard deviation of triplicate determination. Values in the same row with different superscripts are significantly different ($p \leq 0.05$).

Keys: Rapidly digestible starch (RDS), Slow digestible starch (SDS), Resistance starch (RS), Total starch (TS), Total glucose (TG), Starch digestibility index (SDI) and Glycemic index (GI);
SZ = 100 % Orange Flesh Sweet potato and 0 % Bambara Groundnut
SY = 95 % Orange Flesh Sweet potato and 5 % Bambara Groundnut
SX = 90 % Orange Flesh Sweet potato and 10 % Bambara Groundnut
SW = 85 % Orange Flesh Sweet potato and 15 % Bambara Groundnut
SV = 80 % Orange Flesh Sweet potato and 20 % Bambara Groundnut

CONCLUSION AND RECOMMENDATİON(S):
There were significantly difference in the in-vitro starch digestibility and glycemic index of the flour blends. It is also recommended that the flour blends storage stability should be determine.

REFERENCES

[1]. Dilrukshi H.N., Damir D. T., Brennan M.A., and Charles S. B. (2022). Effects of extrusion processing on the bioactive constituents, in vitro digestibility, amino acid composition, and antioxidant potential of novel gluten-free extruded snacks fortified with cowpea and whey protein concentrate. *Food Chemistry* Volume 389, 30.

[2]. Olatunde, G. O.; Henshaw, F. O.; Idowu, M. A.; Tomlins, K. (2020). Quality Attributes of Sweet Potato Flour as Influenced by Variety, Pretreatment and Drying Method. *Food Sci. Nutr,* 4(4), 623–635. DOI: 10.1002/ fsn3.325.

[3]. Chandi, G.K. and Sogi D.S (2007). Functional properties of rice bran proteins concentrate. Journal of Food Engineering 79 (2): 592-597.

[4]. Chung, H.J., Q. Liu and R. Hoover, 2009. Impact of annealing and heat-moisture treatment on rapidly digestible, slowly digestible and resistant starch levels in native and gelatinized corn, pea and lentil starches. *Carbohydr. Polym.*, 75: 436-447.

PN6

Effect of Processing on Nutrient, Phytochemical and Functional Properties of Maize, Soybean and Pumpkin Seed Complementary Food

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KEYWORDS: Complementary food, processing methods, nutrient, anti-nutrient

BACKGROUND
Complementary foods are foods given to infants in addition to breast milk, when breast milk nutrients become insufficient to provide their calories and micronutrients needs (1,2). To improve the nutritional quality of complementary foods several approaches must be applied both to traditional/homemade complementary food and to commercial complementary foods (2,3). In most developing countries, the high cost of fortified nutritious complementary food is always, if not beyond the reach of most Nigerian families (4). Such families often depend on inadequately processed traditional foods consisting mainly of un-supplemented cereal porridge made from maize, sorghum and millet (3). Poor quality of complementary foods and improper complementary feeding practices predispose infants to malnutrition, infections and death. Some of these staple crops have high energy density and often lack protein and micronutrient (5).

OBJECTIVE
This study was carried out to determine the effect of processing methods on nutrient phytochemical and functional properties of complementary food produced from blend of maize, soybean and pumpkin seed.

METHODS
Raw materials were purchased at Shasha Market while a commercial complementary food was purchased Viego Investment and supermarket, Akure Ondo state. Maize, soy beans and pumpkin seeds were separately processed using fermentation, sprouting and toasting, milled into flour and packaged. Using the ratio of 70:20:10 for maize, soybeans and pumpkin leaves, complementary food labelled sample A (70% fermented maize +20% fermented soybeans +10% fermented pumpkin) B (70% roasted maize +20% roasted soybeans %+ 10% of roasted pumpkin) and C (70% sprouted maize+20% sprouted soybeans +10% sprouted pumpkin) were formulated. Samples of the complementary food were subjected to chemical and instrumental analysis using standard methods (7). Analysis of variance (ANOVA) and Duncan's New Multiple Range Test (DNMRT) were performed using Statistical Package for Social Science (SPSS) version 23. Difference is considered statistically significant at $p<0.05$.

RESULT:
Nutrients composition of complementary food
All the proximate parameters apart from moisture, were significantly different ($p<0.05$). Sample A was significantly ($p<0.05$) higher in protein (18.39g/100g), Fe (14.00mg/100g) and Zinc (6.283mg/100g). Sample B was significantly ($p<0.05$) higher in fat (11.33g/100g), Energy (419.38kcal) and copper (1.43mg/100g) while sample D which is the control sample was significantly ($p<0.05$) higher in fibre (7.00g/100g), ash (2.3g/100g) and nitrogen free extract (64.2mg/100g). Sample C was significantly (($p<0.05$) higher in Ca (27.034), Mg (42.996mg), K (569.069mg), and P (281.162), While Sample B is having an intermediary value for Ca (23.562mg), Mg (42.916mg), K (544.754mg) and P (256.337mg). (Table 1)

Table 1: Nutrient composition of complementary food

Proximate (g/100g)	Sample A	Sample B	Sample C	Sample D
Moisture	10.58±0.023[b]	8.18±0.035[c]	12.15±3.348[a]	2.5.00±0.10[d]
Crude protein	18.39±0.045[a]	16.68±1.769[b]	14.09±0.020[d]	15.00±0.10[c]
Crude fat	4.49±0.010	11.33±0.045	11.00±0.035b	9.00±0.10
Crude fibre	1.35±0.005[d]	1.48±0.020[c]	1.69±0.020[b]	7.00±0.10[a]
Total ash	0.59±0.015[d]	0.68±0.015[c]	2.18±0.015[b]	2.30±0.10[a]
NFE	64.58±.255[a]	62.630±0.007[c]	63.31±0.025[b]	64.20±0.10[a]
Energy (Kcal)	357.03±1.035	419.38±37.975	408.36±0.135	398.00±0.10
Minerals				
Ca (mg/100g).	16.02±0.445d	23.53±0.149c	27.03±0.141b	550.00±0.10a
Mg (mg/100g).	26.98±0.045c	42.92±0.030b	42.99±0.039a	ND
K (mg/100g).	62.19±0.032d	544.75±0.355c	569.07±0.167b	570.00±0.10a
P (mg/100g).	125.12±0.012d	256.34±0.122c	281.16±0.058b	480.00±0.10a
Fe (mg/100g).	14.01±0.358a	11.31±0.019b	13.73±0.093a	10.00±0.10d
Cu (mg/100g)	1.05±0.004b	1.43±0.003a	0.46±0.008c	ND
Zn (mg/100g).	6.28±0.022a	3.133±0.006c	2.32±0.025d	6.00±0.10b

Values are mean ± standard deviation of triplicate analyses. Values with the same superscript in the same column are statistically not significant at ($P<0.05$). Key: A=70% fermented maize + 20% fermented soybean + 10 fermented pumpkin B=70% roasted maize + 20% roasted soybean + 10 roasted pumpkin C=70% sprouted maize + 20% sprouted soybean + 10 sprouted pumpkin, D=100% commercial complementary food

The results indicates that beta carotene (0.461mg/100g) oxalate (21.35mg/100g) and cynaide (4.64) was significantly ($P<0.05$), higher in sample C while sample B was higher in phytate (7.296mg/100g). The functional properties result in sample A shows a significantly ($P<0.05$), higher values for oil absorption (145.00%), emulsion capacity (75.00%) as well as swelling capacity(0.75ml/g) and least value for water absorption (140±0.000). Sample B had highest values for water absorption (250.00±10.000), least gelation (16.00±0.000) and foaming capacity (2.44+0.000) similarly, sample C had highest values for foaming capacity (2.44±0.000) Least gelation (15.00±1.000) and packed bulk density (0.68±0.010) (Table 2

Table 2: Beta-carotene, antinutrients and functional properties of complementary food

Anti nutrient composition	Sample A	Sample B	Sample C
Beta carotene(mg/100g)	0.203±0.002	0.416±0.003	0.461±0.003
Oxalate(mg/100g)	7.483±0.035^{b}	12.187±5.277^{b}	21.350±0.37^{a}
Phytate(mg/100g)	6.690±0.112^{b}	7.296±0.0014^{a}	6.748±0.109^{b}
Cyanide(mg/100g)	0.439±0.003^{c}	2.016±0.028^{b}	4.637±0.043^{a}
Functional properties			
Packed bulk density(g/ml)	0.63+0.000b	0.59+0.010c	0.68+0.010a
Oil absorption (%)	145.00+5.000a	110.00+0.000c	125.00+5.000b
Water absorption (%)	140.00+0.000c	250.00+10.000a	200.00+0.000b
Emulsion capacity (%)	75.00+0.000a	74.00+0.000b	62.88+0.577c
Least gelation (%)	13.00+1.000b	16.00+0.000a	15.00+1.000a
Swelling capacity (g/ml)	0.730+0.000a	0.71+0.000b	0.65+0.000c
Foaming capacity (%)	0.98+0.000b	2.44+0.000a	2.44+0.000a
Loose bulk density(g/ml)	0.45+0.000	0.48+0.015	0.49+0.005

Values are mean ± standard deviation of triplicate analyses. Values with the same superscript in the same column are statistically not significant at ($P<0.05$). Key: A=70% fermented maize + 20% fermented soybean + 10 fermented pumpkin B=70% roasted maize + 20% roasted soybean + 10 roasted pumpkin C=70% sprouted maize + 20% sprouted soybean + 10 sprouted pumpkin,

CONCLUSION

The result shows that processing method had significant effect on the nutrients and functional properties of the foods. On the proximate, fermentation and roasting improved the protein content of the feed while sprouting increases majority of the minerals (Ca, Mg, k, P and Fe) but there was reduction in Cu and Zn. On the other hand, roasting improved the Water absorption, least gelation and Foaming capacity of the feed while fermentation reduces the anti-nutrient content of the foods. With the density of nutrient in the blended complementary foods, it can help in the growth and development of children in addition to regular breast feeding.

REFERENCES

1. Adu-Afarwuah, S.; Lartey, A.; Dewey, K.G. (2016). Meeting Nutritional needs in the first 1000days: A place for small-quantity lipid-based Nutrient supplements. Ann.Ny Acad. Sci. 1392(1), 18-29.
2. Adedayo, O.E, Yisa, O.O, Olanrewaju, O.I, Dele-Olawumi Bukola (2021). Nutrient and Antioxidant Composition of Complementary Foods produced from Brown local rice, Soybean and Tiger nut supplemented with Orange Fleshed Sweet Potato. *Journal of Dietitian Association of Nigeria, Vol 12 (1) pp 61-71*
3. Okoye, J. I. and Ene, G. I (2018). Evaluation of Nutritional and Organoleptic Properties of Maize-Based Complementary Foods Supplemented with Black Bean and Crayfish Flours. *Global Advanced Research Journal of Food Science and Technology*. 6(1) pp. 001-009
4. Ademulegun, T.I, Ibidayo Alebiosu, Adedayo, O.E, Abraham, M.L., Olanrewaju, O.I (2021). Formulation and assessment of nutrient contents of complementary foods from fermented, sprouted and toasted maize-soybean blend. *Journal of Dietitian Association of Nigeria Vol 12 (1) pp 83-91.*

PN7

Body Mass Index, Care Practices, and Quality of Life of a Geriatric Population in Rural Area of Owo Local Government, Ondo State

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KEYWORDS: Care practices, quality of life, body mass index,

BACKGROUND OF THE STUDY
The reduction in functional capacity and quality of life that comes with aging cannot be denied (1,2). In particular, as people get older, physical function (such as aerobic capacity, muscle function, and postural balance) deteriorates, which makes it harder for them to conduct activities of daily living (ADL) (3). Moreover, regardless of the presence or severity of illness conditions, an older person's reduction in functional capacity is a strong predictor of unfavorable outcomes (4). An increased risk of developing one or more chronic diseases, such as respiratory illness, arthritis, stroke, depression, and dementia, is associated with aging (5). These ailments can influence appetite, functional capacity, or ability to swallow, which can change how much food is consumed and worsen nutritional status, in addition to tooth loss, neglect, poor socioeconomic level, and limited mobility (6). An individual's health cannot be at its best if their nutritional condition is inadequate, as there is a strong correlation between good nutrition and individual health. Since excellent nutrition can have an impact on practically all human organs and systems, it is a significant predictor of good health in older people (7).

OBJECTIVE
The study assessed the body mass index, care practices and quality of life of a geriatric population in rural area of Owo Local Government, Ondo state

METHOD
The study was a descriptive cross-sectional study, which involved an apparently healthy older persons aged (60–90years). A multi-stage and systematically sampling method in selection of rural area and respondents respectively. The sample size was determined using the formula for descriptive studies (Araoye, 2008)
where $n = \frac{Z^2_{1}\text{-}\alpha_{/2}P(1\text{-}P)}{d^2}$
sample size of 346 was calculated by substituting 25% represents the prevalence of good quality of life among older adult in Nigeria (8). A structured, interviewer-administered questionnaire was used to source information on activities of daily living, and quality of life questions developed by the World Health Organization. Anthropometric measurements of height and weight to calculate BMI of the respondents was done following standard guidelines. The statistics package for social science, version 25, was used to analysed the generated data. Descriptive statistics, chi-square, and correlation were employed. The level of significance at ($p<0.05$).

RESULT
Findings show that 37.6% of the elderly were within the age range of 60–64 years. About 90.2% had a fair care practice (NCP score) while 80.6% had good score of activities of daily living Activities (ADL score). Nearly half (49.0%) were within the healthful body mass index range while 31.2% had a good quality of life (QOL) Positive and significant correlations existed BMI and QOL score ($r= 0.254$ vs $P=0.021$), BMI and NCP score ($r= 0.334$ vs $P=0.002$) of the respondents. Positive and significant correlations also existed between NCP score and QOL score ($r = 0.206$, $P = 0.004$). Positive correlation was also seen between BMI against activities of daily living score (ADL score), ($r= 0.334$ vs $P=0.001$).

CONCLUSION
This study revealed high fair care practices, and poor QOL among rural older adult. Furthermore, this study found a positive significant correlation between body mass index, activities of daily activities, care practices and quality of life of the older adult

REFERENCES

1. St John PD, Tyas SL, Menec V, Tate R (2014). Multimorbidity, disability, and mortality in community-dwelling older adults. Can Fam Physician. 60(5):e272–80.
2. Edholm P, Nilsson A, Kadi F. Physical function in older adults: impacts of past and present physical activity behaviors. Scand J Med Sci Sports. At 29(3):415–21. https://doi.org/10.1111/sms.13350.
3. Bouchard DR, Janssen I. (2010). Dynapenic-obesity and physical function in older adults. Journal of Gerontology A *Biol Sci Med Sci.* 2010;65(1):71–7.
4. Cunningham C. R OS, Caserotti P, Tully MA (2020). Consequences of physical inactivity in older adults: a systematic review of reviews and metanalyses. Scand J Med Sci Sports. 2020;30(5):816–27. https://doi.org/10.1111/sms.13616.
5. Oladipupo O. Fakoya1, Emmanuel A. Abioye-Kuteyi, Ibrahim S. Bello1, Olarenwaju O. Oyegbade1, Samuel A. Olowookere, and Ikechi T. Ezeoma (2018). Determinants of Quality of Life of Elderly Patients Attending a General Practice Clinic in Southwest Nigeria. International Quarterly of Community Health Education 39(1) 3-7
6. Olayiwola I., Fadupin, G., Agbato S., & Soyewo, D. (2012). Serum micronutrient status and nutrient intake of elderly Yoruba people in a slum of Ibadan, Nigeria. Public Health Nutr., 17(02), 455-461.

Table 1: Body mass index, Activities of Daily Living and care practices of the respondents

Body Mass Index	**F (%**	**F (%)**	**F (%)**	**X^2**	**P value**
<18.5 (underweight)	6(4.2)	12(5.9)	18(9.0)	17.813	0.007*
18.5 – 24.9 (Normal)	85(59.9)	85(41.7)	170(49.1)		
25-29.9 (Overweight)	38(26.8)	65(31.9)	103(30.0)		
30-34.9 (Obesity class1)	10(7.0)	23(11.3)	33(9.5)		
35-39.9 (Obesity class 2)	3(2.1)	19(9.3)	22(6.4)		
Total	**142(100.0)**	**204(100.0)**	**346(100.0)**		
Activities of Daily living Score					
Poor ADL score	3(2.1)	8(3.9)	11(3.2)	0.895	0.636
Fair ADL score	23 (16.2)	33(16.2)	56(16.2)		
Good ADL score	116 (81.7)	163(79.9)	284(80.6)		
Total	**142(100.0)**	**204(100.0)**	**346(100.0)**		
Care practices score (NCPs)					
Poor care practices (PCP)	8(2.3)	17(4.9)	25(6.1)	1.640	0.440
Fair care practices FCP)	129 (37.3)	183(52.9)	312(90.2)		
Good care practices (GCP)	5 (1.4)	4(1.2)	9(2.6)		
Total	**142 (41.0)**	**204(59.0)**	**346(100.0)**		
Quality of life score					
Good (GQL)	39(27.5)	69(33.8)	108(31.2)	1.614	0.446
Fair (FQL)	102(71.8)	134(65.7)	236(68.2)		
Poor (PQL)	1(0.3)	1(0.5)	2(0.6)		
Total	142(100.0)	204(59.0)	346(100.0)		

*Significant at $p < 0.05$)

Table 2: Relationship between care practices score (NCP) on quality-of-life score of the respondent

Variables	Quality of life score (QOLs)					
NCP score	Poor	Fair	Good	**Total**	**R**	**P-value**
Poor care practices (PCP)	1(0.3)	11(3.2)	13(3.8)	25(7.2)	0.206	0.004
Fair care practices FCP)	1(0.3)	216(62.4)	95(27.5)	312(90.2)		
Good care practices (GCP)	0(0.0)	9(2.6)	0(0.0)	9(2.6)		
Total	2(0.6)	236(68.2)	108(31.2)	**346(100.0)**		

*Significant at $p < 0.05$)

Table 3: Relationship anthropometric status, QOL score, ADL score and NCP score of the respondents

Anthropometric indices	ADL score		NCP score		QOL score	
	R	**P-value**	**R**	**P-value**	**R**	**P-value**
BMI (Kgm^{-2})	0.339	0.001*	0.334	0.002*	0.254	0.021*
WC (cm)	0.087	0.264	0.111	0.113	0.141	0.030*
WHR	0.121	0.075*	0.143	0.028*	0.125	.0650*
WHTR	0.306	0.000*	0.319	0.000*	0.219	0.066*
MAUC (cm)	0.209	0.000*	0.203	0.001*	0.127	0.060*

*Significant at $p < 0.05$), Key ADL=Activities of Daily Living, NCP=care practices score, and QOL = Quality of life score SBP= Systolic Blood Pressure, DBP- Diastolic blood pressure, WHR- Waist-to-Hip Ratio, WHtR- Waist-to-Height Ratio, BMI-Body Mass Index, MUAC- mid upper arm circumference

PN11

Nutritional Status and Financial Circumstances of the Elderly in Abeokuta South Local Government Area of Ogun State Nigeria.

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KEYWORDS: *Nutritional status, Financial circumstances, Elderly, Nutrient intake, RDA.*
HIGHLIGHTS:

- Nutritional status of the elderly are impaired by financial circumstances (Aganiba *et al.*, 2015; Oyewole *et al.*, 2010).
- Nutrient intake of the elderly does not meet the RDA required for calcium etc.
- Financial circumstances of the elderly is directly proportional to the nutrient intake in the study population.

BACKGROUND/OBJECTIVE: Inadequate dietary intake of the elderly Pre-disposes them to chronic disease. Financial burden of medication in order to survive even at unfriendly inflation situation in Nigeria has been

worrisome (Olayiwola *et al.*, 2013). The study was designed to assess Nutritional Status and Financial Circumstances of the Elderly in Abeokuta South Local Government area of Ogun State Nigeria.

METHODOLOGY: A cross sectional study was conducted among randomly selected two hundred elderly between 61-80years who usually come for routine medical check-up at State hospital, Ijaye and Federal Medical Centre Idi-Aba, all in Abeokuta. Information were obtained from five domains which includes socio-demographic characteristics, anthropometry (BMI, WHR, systolic and diastolic Blood Pressure) classified according to WHO standard, Nutrient intake (with 24hr dietary recall), independence and control over life, and financial circumstances using standard questionnaire as described by WHO for assessment of the elderly quality of life. Data obtained from nutrient intake was analyzed using Total dietary Assessment (TDA) and compared with Recommended Daily Allowance (RDA) while other data were analyzed with descriptive and inferential statistics to establish association between variables.

RESULT: Shows that 74.0% were between 61-70years, 52.6% were monogamous, 84.5% were Yorubas, 51.0% were male, while 20.4% had tertiary education. Anthropometry result showed 22.0% to be over-weight, and 98.5% had increased risk in term of waist-Hip ratio, 21.0% had Pre-hypertension systolic while 27.0% had hypertension stage 1 diastolic. Nutrient intake reveals less than a quarter of required RDA for Potassium, Calcium, Vitamin A, magnesium and above one third of sodium, zinc iron and average intake of protein. One third (34.0%) were not healthy enough to have independent, while less than a quarter (21.0%) have control over important things in their life from domain of independent and control over life. Financial circumstances domain shows that a quarter (25.0%) do not have enough money to pay household bills, 79.2% could nor buy what they want while 44.4% still have dependants which they cater for at this age. Significant association exist between all the anthropometry parameters, financial circumstances against nutrient intake of the respondents at $p<0.05$.

Table 1: Anthropometric Characteristics of Elderly in Abeokuta South Local Government

Variables	Frequency	Percentage	Mode
Body Mass Index			
Under Nutrition	10	5.0	
Normal Weight	126	63.0	63.0
Overweight	44	22.0	
Obesity Grade I	20	10.0	
Waist Circumference			
Increased	197	98.5	98.5
Substantially Increased	3	1.5	
Systolic			
Normal	156	78.0	
Pre Hypertension	42	21.0	
Hypertension Stage I	2	1.0	
Diastolic			
Normal	48	24.0	
Pre Hypertension	92	46.0	46.0
Hypertension Stage I	54	27.0	
Hypertension Stage II	6	3.0	

Chi-square showing relationship between financial circumstances and nutrient intake of elderly in Abeokuta south local Government

Variables	Chi-square values	Df	P value ($p<0.05$)	Decision
I have enough money to pay of household	528.000[a]	525	0.045	S
repairs or help needed in the house	384.000[a]	382	0.042	S
I can afford to buy what I want to	576.000[a]	573	0.047	S
I cannot afford to do things I would enjoy				
I have dependents at this age	582.000[a]	579	0.0411	S

S = significant, NS = Non significant

CONCLUSION: Nutrient intake was directly proportional to the financial circumstances of the elderly. The study's discoveries indicated the need for enhancing the sources of income and nutrient intake of the elderly as it plays a crucial role in their quality of life. Recommendation: To foster better health outcomes and opportunities for elderly, it is recommended to subsidize food purchase and health facilities tailored to their needs and implement nutritional education programs targeted specifically at this age group.

REFERENCES

1. Aganiba, B. A.,Owusu W. B., Steiner-Asiedu, M. and Dittoh, S. (2015). Association between lifestyle and health variables with nutritional status of the elderly in the northern region of Ghana, *African Journal of agricultural nutrition and development* 15(4)10298-10216.
2. Olayiwola, I. O., Olarewaju, C. A., Adelekan, D. A., Arigbede M. and Afolabi W. A. (2013). Body Ailments Dietary Pattern and Nutritional Status of Elderly in Ondo State, Nigeria, *International Journal of Tropical Disease & Health,* 3(4): 365-377,
3. Oyewole S., Gureje, F. W., Lola K. W. and Ebenezer A. O. (2010). Determinants of quality of life of elderly Nigerians: results from the Ibadan Study of Ageing. *African J. Med Med. Sci.,* 37(3): 239.

SUB-THEME ON: ENHANCING LEADERSHIP SKILLS AND COMPETENCIES TO DRIVE TRANSFORMATIONAL CHANGE IN NUTRITION

001

Capacity development of nutrition students: A Preceptor Approach

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KEYWORDS: Capacity development, nutrition, students, preceptorship

HIGHTLIGHT:

- The findings of the study identified competencies in communication, leadership, organization, decision-making, and specific situations (diet optimizer, knowledge translators, equity champions) leadership skills essential in practice settings
- Preceptorship is a teaching/learning strategy in education to translate theory into practice
- It helps new professionals translate their knowledge into everyday practice, grow in confidence and

understand how to apply leadership skills acquired during training

BACKGROUND AND OBJECTIVE
Optimizing health and well-being through food and nutrition is crucial to the prevention and management of many diseases. Considering the ongoing nutritionists' shortage and the increasing acuity of patients, new graduate nutritionists must master both competency and critical thinking skills rapidly. A preceptor approach can bridge this gap as nutrition education is linked with the theory and practice that occurs in the supervised practice setting. We aimed to determine the leadership capacity development of nutrition and dietetics students through preceptorship training. Patricia Benner's stages of novice to expert (Benner, 2001) model were used to guide the study. This study was conducted among Nutrition and Dietetics students of the University of Calabar.

METHODOLOGY: This study applied an institution based cross-sectional descriptive study design. Ninety five (95) final year undergraduate students were recruited by the purposive sampling technique. A self-administered questionnaire and participant observation checklist were used for data collection. Data analysis was done using SPSS version 25 and inferential and descriptive observation checklist.

RESULTS: Data analyzed was presented using frequencies, percentages and descriptive statistics.The mean age of respondents was 22 years. Majority (84.2%) of the respondents were knowledgeable about the preceptorship programme. Overall, 59 (62.1%) of the respondents reported a strong wish for early exposure to preceptor/preceptee's relationship. Participant observation checklist analysis corroborated with the questionnaire findings in identifying competencies in communication, leadership, organization, decision-making, critical thinking and specific situations (diet optimizer, knowledge translators, equity champions, systems navigators and food systems activists and change agents) that result in leadership skills acquisition.

CONCLUSION: A preceptorship approach to teaching/learning for nutrition students can truly bring about capacity development for nutrition future leaders as diet optimizer and food system activists.

REFERENCES

- Benner, P. (1982). From novice to expert. American Journal of Nursing, 82(3), 402-407.
- Fennimore, L., & Wolf, G. (2011). Nurse manager leadership development: Leveraging the evidence and system-level support. Journal of Nursing Administration, 41(5), 204-210. http://dx.doi.org/10.1097/NNA.0b013e3182171aff.
- Mary Kathryn (2021). Perceptions of Preceptor Training in the Dietetic Supervised Practice Experience. BMC Medical Education. 2021; 21: 277. doi: 10.1186/s12909-021-02700-0
- AbuSabha R, Muller C, MacLasco J, George M, Houghton E, Helm A (2018). Benefits, barriers, and motivators to training dietetic interns in clinical settings: a comparison between preceptors and nonpreceptors. Journal of Academic Nutrition and Dietetics;118(3):471–480. doi: 10.1016/j.jand.2017.08.009.