Original research article

Comparison and reasons for diet-intake before and after COVID-19 lockdown in selected households in Chikun Local Government Area of Kaduna State, Nigeria

Abstract

Background: The COVID 19 pandemic between 2019-2020 resulted in lockdowns and travel restrictions worldwide. This could however, significantly influence the dietary habits of humans worldwide considering its economic, financial and health impacts

Aims: The study aims to investigate dietary habits in selected households in Chikun Local Government Area of Kaduna State, Nigeria.

Methodology: 24 hour dietary recall was used to collect dietary data on meals consumed a day before interview both before and after the lockdown was lifted using the same questionnaire, a total of 50 respondents, 25 female and 25 male. Convinience sampling was used in the knowledge, attitude and practice study.

Results: The respondents had an improvement in diet choices post COVID-19 lockdown as show on the charts above, the increase in the consumption of fruits /vegetable (7%) and spice/seasoning (5%) food groups was majorly as a result of their associated health and wellbeing benefits however, there was also a reduction in the percentage intake of protein (5%) and complex carbohydrates (13%) probably due to the overall reduction in caloric intake. An increase of 4% was also recorded in the intake of simple carbohydrates.

Conclusion: There was an overall improvement in diet choices and lifestyle post Covid-19 in the Study Area.

Keywords: COVID-19, diet, lockdown, Kaduna, Nigeria.

Introduction

COVID-19, an acute respiratory illness caused by Corona Virus became a pandemic between 2019-2020(1), it is characterized by some or all symptoms such as cough, sputum, shortness of breath, fever or chills, joint aches, fatigue, vomiting, diarrhea, loss of taste or smell, sore throat, congestion and nausea(2).COVID-19 illness was more prevalent in vulnerable groups such as most individuals who are older than 60 years, those who have underlying health conditions such as pulmonary disease, cardiovascular disease, metabolic diseases such as diabetes mellitus and

conditions that affect the immune system (WHO). Nutrients from diet is a fundamental tool in improving resistance and immunity to illnesses (3) . The functional choices of diets should include foods from at least five food groups namely; one sourced from animal flesh, one fruit or vegetable source in addition to staple foods such as grains, tubers, legumes, dairy products, fresh foods, eggs, Vitamin A rich fruits and vegetables and other fruits and vegetables (4) .

The Northern part of Nigeria where the research was conducted has soil suitable for farming grains, the southern parts have fruits and vegetables of varying kinds all year round, there nonetheless exist a prevalence of micro nutrient deficiencies and poor nutritional status (5). Likewise specific functional food stuff sourced from various food groups of Nigerian cuisine have been touted for their health promoting benefits, such as boosting immunity, phytochemical properties, anti-oxidants, enhancement of physiological function, preventing chronic disease progression. The functional foods can be conventional, modified medical in nature (6) . Other food substances worthy of note which have been found to improve immune system include fruits such as oranges, mangoes, pawpaw, guava, pineapple, grapefruits. These fruits are available either during the rainy or dry seasons (7) and indigenous spices such as Piperaceae, Afrmomum melegueta K, and Tetrapleura tetraptera are few of the many notable spices which have good nutritional value and can boost immunity. Spices are known to not enhance the flavor of food but likewise improve on the nutrient value of diet (8).

The most recent Nigerian vulnerable population nutritional status stands at 12% underweight with a body mass index BMI< 18.5, 28% overweight as well as 56% minimum dietary diversity for women of child bearing age. Adolescent and Women of reproductive age also consumed 5 or more out of 10 specified food groups while for children between 6-59 months of age, 37% were stunted (height-for-age), 7% wasted (low weight-for-height) , 22% underweight (low weight-for-age) and 2% overweight (BMI between 25.0-29.9) (9) An online survey with data collected via an app called ALO mama shows that the pandemic affected the dietary patterns of respondents in the research area who consumed various food groups (10) likewise another study using a drive through distribution of consumable food style program was effective during the COVID-19 lockdown period in meeting the nutritional needs of residents of the study area (11).

Diet was found to be an effective strategy in preventing diseases such as kidney infection during the COVID-19 lockdown thus preserving kidney health and management of kidney disease in cases applicable (12), eating habits in Saudi Arabia improved with as much as 85.6% eating home cooked meals which is a standard in terms of monitoring diet condiments and keeping track of intake of nutrients as opposed to 35.6% before the pandemic, showing that there was an improvement in dietary lifestyle generally following the lockdown (13). Another research showed a mean reduction in food shopping and consumption frequency which is a direct effect of lack or low financial capabilities characteristic in many households with poor access to adequate food or nutrient required to maintain optimum health (14).

The influence of the pandemic on nutrition and diet intake has gone beyond individual and community levels and reached global levels thus posing a global threat to nutrition and overall health of millions of affected people (15). Nutrients sourced from diet have powerful immuno-modulatory actions with the potential to alter susceptibility to corona virus disease, the more functional nutrients consumed by populations the less likely such individuals would come down with the negative effects of COVID-19 disease on health (16). The consumption of certain foods like coffee, vegetables and breast milk were associated with reduced Covid-19 incidence as reported in a study this could be as a result of the activity of functional components of such food items to physiologic functioning of the body system of consumers (17).

MATERIAL AND METHODS

Study Design

24 hour dietary recall was used to collected dietary data on meals consumed a day before interview both before and after lockdown was lifted using the same questionnaires. A 24- hour dietary recall is an interview conducted by an interviewer to an interviewee with the intention to document all food items and beverages consumed over a period of 24 hours, usually all that was eaten from day break to bedtime is recorded.

Duration of Study

The study began in January 2020 at the onset of covid-19 in Nigeria, the lockdown began in February and ended in October 2020 after the lockdown was fully lifted. A total of 10 months in all.

Study Area

Gonin-Gora is a small settlement located along Kaduna – Abuja express way in Chikun Local Government Area of Kaduna State, situated in the North-western parts of Nigeria. It is in an area of 4,466KM² and a population of 372,272. Its geographical coordinates is 10° 26′ 0″ North and 7° 23′ 0″ East.

Study Population

A total of 50 adults were coopted as respondents for the study 25 Females from different households and 25 Males from different households making a total of 50 different households. The age groups were with an age bracket from 20-70 years of age with 10 respondents taken from each age bracket of 10 years. For example 10 respondents were selected from age bracket 20-30 years and selection continued up to the last age bracket of 60-70 years.

Sample Size

Convenience sampling technique was used given that research started out at a time when few respondents were willing to participate in any form of research for fear of contracting COVID19 or the spread to communities. Convenience sampling is a type of sampling used in population research where there is no probability correlated to another population.

Field Data Collection

Semi structured questionnaires were administered to respondents from 50 different households in Federal Housing Estate, Gonin Gora, Chikun Local Government area of Kaduna State. Data collected included socio demography and dietary recalls of past 24hours and a list of staple food available at home prior to day of interview. No specific dietary changes were required of respondents during sensitization of selected respondents such that the accurate diet of households were captured before and after the COVID-19 lockdown.

Permission for Questionnaire Administration

Consent forms were given to all individuals who participated in the research for approval and protective gear such as face masks, hand sanitizers were provided all through the duration of research.

Data analysis

Results obtained were expressed as percentages, presented as bar graphs and charts.

Results

The Results as presented in fig 1 shows the percentage consumption of different food groups before the COVID 19 outbreak as follows: protein (30%), complex carbohydrates (45%), simple carbohydrates (3%), spices (2%), fats (10%), vegetables and fruits (10%). Following the lifting of COVID 19 restrictions, the food consumption patterns as shown in fig 2 revealed the consumption of the different food groups as follows: protein (25%), complex carbohydrates (32%), simple carbohydrates (7%), spices (7%), fats (7%), fats (12%), vegetables and fruits (17%). Based on the findings of the survey, respondents were observed to improve on their diet choices of which health and well being was captured as a predominant reason for this improvement at 53% as shown in fig 3.

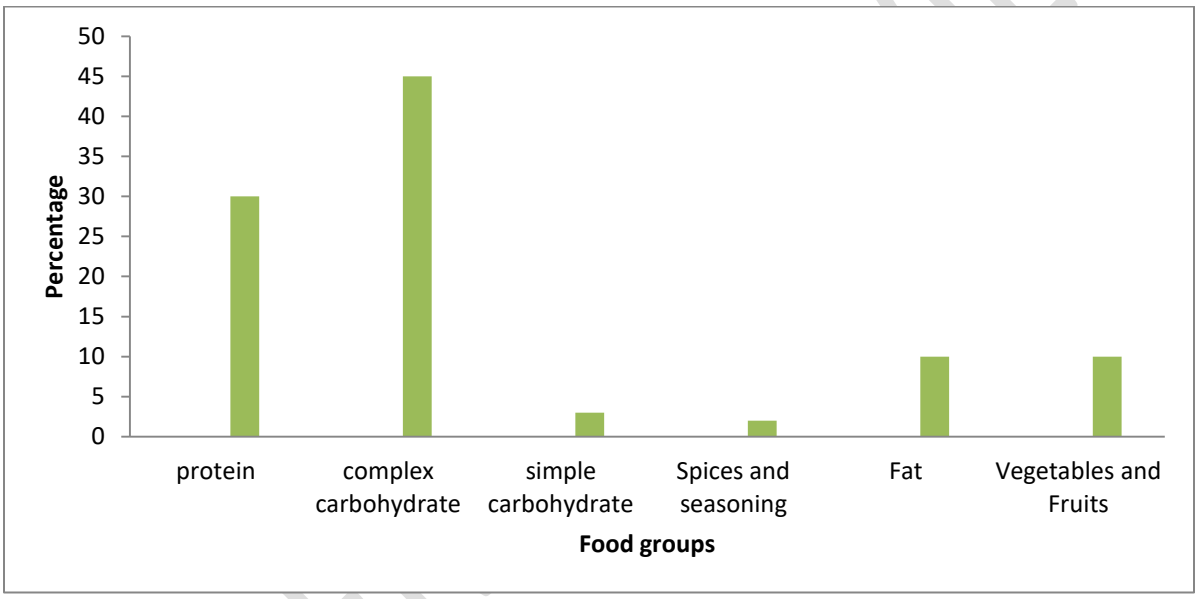

Fig 1: Percentage food consumption before COVID-19

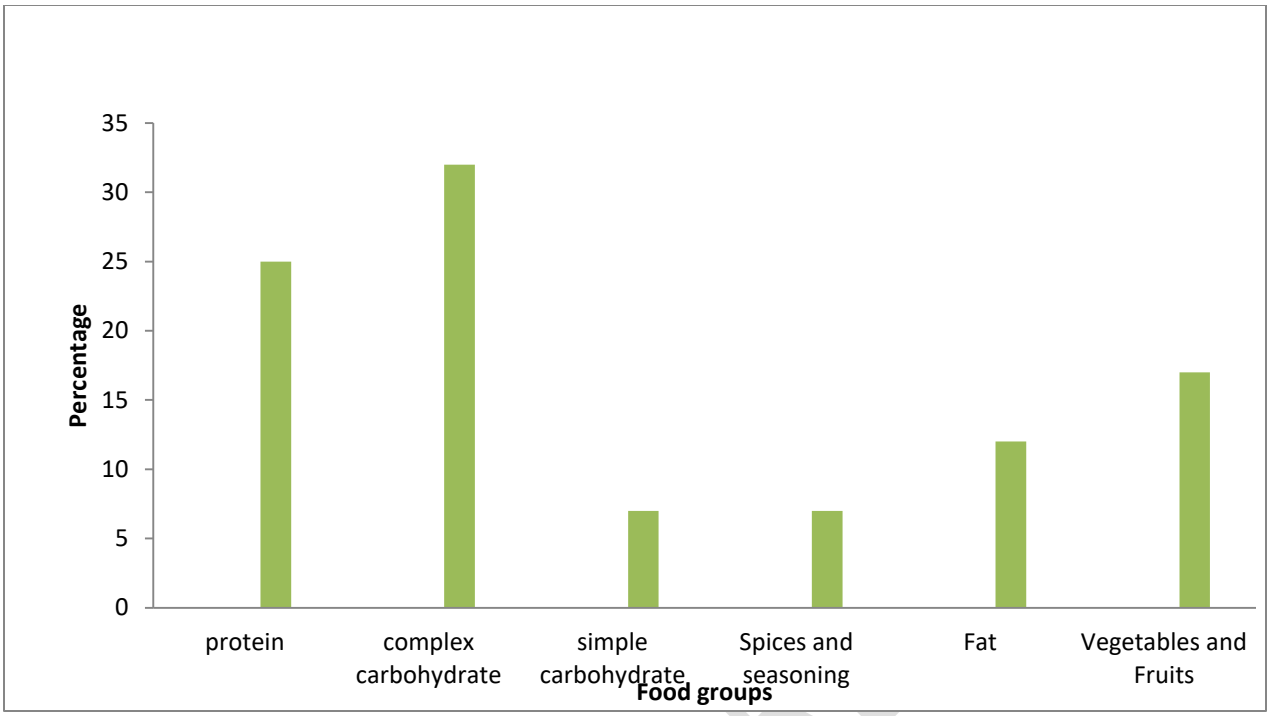

Fig 2: Percentage food consumption after COVID-19

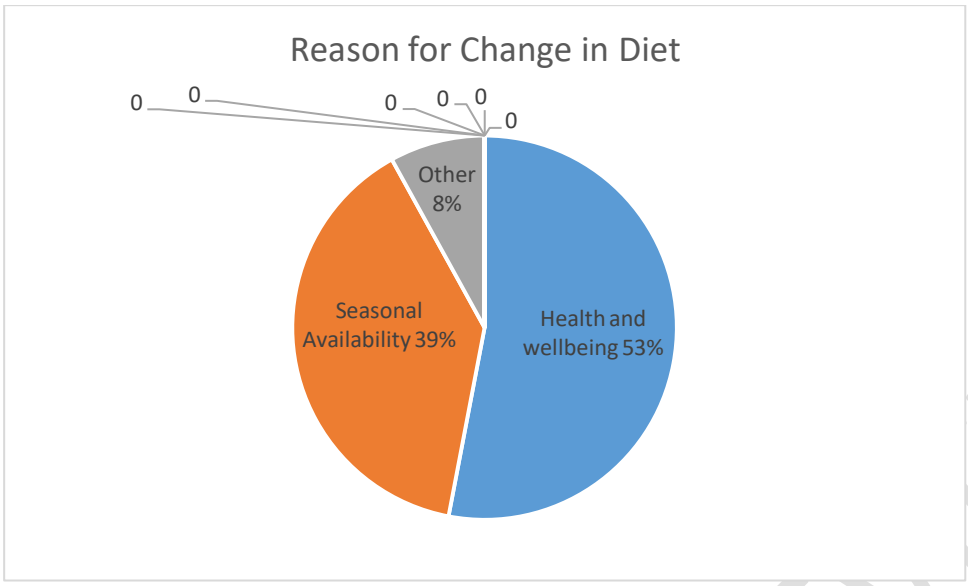

Fig 3: Reasons for diet change (percentage representation)

Discussion

Since 2020, the outbreak of the COVID 19 pandemic influenced the feeding habits of food consumers and purchasing behavior (18 19, 20). This accompanied by lockdowns, social distancing and closure of businesses resulted in a significant decline in economic activities (21, 22) which negatively affected household income and expenditure (23, 24). The International labour organization (25) also reported that working hours globally reduced by 14% in the second quarter of 2020 which was found to result in the loss of about 400 million full time jobs working 48 hours a week. As a result of this pandemic, people reduced going out for safety reasons which also influenced people's food consumption behavior which mostly resulted in a reduced market visits and purchases. The findings of this present study post COVID-19, showed an increase in the consumption of fruits /vegetable (7%) and spice/seasoning(5%) which is in agreement with the works of Ampofo-Asiama et al. (26) who also reported a similar increase in fruit consumption following the covid 19 pandemic in Ghana, this could be due to the series of sensitization schemes by the government through media houses and social media on health benefits of such food. Other studies reported increases in the purchase or consumption of fruits and vegetables (27, 28). This could be ascribed to the perception that fruits and vegetables contain high amounts of vitamins, minerals and valuable compounds that could enhance the immune system for resisting the COVID-19 infections (29). Those who were opportune to visit hospitals and primary health care facilities also benefitted from such health campaigns on diet choices. The citrus family of fruits loaded with Vitamin C is an age long favorite in managing flu and flu-like infection and its use in COVID-19 times were no different however, other fruits worthy of note were mango, pawpaw, avocado, watermelon, guava, dates, and apples. The major vegetables consumed include; carrots, cucumber, lettuce, cabbage, spinach, beets, green pea, tomato, pepper, onion, pumpkin leaves, jute leaves, bitter leaf, wild spinach, false cubeb leaves, bushbuck,, basil leaves, water leaf, lagos spinach, green african spinach, african eggplant leaf, moringa leaf, oha leaf, roselle leaf, english spinach, english bush apple leaf, cocoyam leaf, cassava leaf, dandelion leaf, sweet potato leaves are all worthy of mention. There was also a reduction in the percentage intake of protein (5%) protein food group consumed include; beef, wild chicken, turkey, sardines, stock fish, eggs, wara (fermented soybean), cheese, marcel fish , cat fish, crayfish, snail, melon seed, and oat meal. Consumption of protein which is considered to promote good health and enhance immunity (30) was found to reduce following the pandemic. This observation could be due to the economic impact of the COVID 19 pandemic as the reduced economic activities and income during this period created a significant level of uncertainty about future income which made people to cut down on their expenditures on most food items. This could also be found similar to observation of studies from Ethiopia (31) and Guatemala (32) This observation was however found to be in disagreement with the studies of Bracale and Vaccaro (33). Complex carbohydrates intake reduced (13%) probably due to the overall reduction in caloric intake. This finding is in disagreement with the findings of Ankrah *et al.* (34) who reported an improved convenience of rice purchase in Ghana during the pandemic. Complex carbohydrates consumed include; Rice of varying species, sweet potato, yam, yam flour made

into dough, cassava dough, beans of varying species, cocoyam, plantain, grain dough made from maize, guinea corn, millet, African fonio, wheat, bread, pastries, whole grain cereals and sorghum. An increase of 4% was also recorded in the intake of simple carbohydrates. Examples of simple sugars consumed include; Honey, sugar, sweets, sugar cane, molasses, date-palm, and sweeteners made by different manufacturers. Fats and oils consumed by respondents include; palm oil, groundnut oil, olive oil, palm kernel oil, cheese, soy bean oil, corn oil, butter, margarine, coconut oil, pumpkin seed oil, almond nuts, pistachio nuts, groundnut, and canola oil. The spice and seasoning food group had the following used to cook during the lockdown; curry, rosemary, bay leaves, parsley, fenugreek, fermented locust bean, ginger, achi, ogbono, black pepper, garlic, turmeric, alligator pepper, Cameroun pepper, lemon grass, Jamaican nutmeg also known as calabash nutmeg, thyme, onion, cloves nutmeg, bouillon cubes, fermented melon seeds, cumin, sweet pepper and "uda". The food group had predominant foodstuff consumed, Rice and Sweet Potato for complex carbohydrates, Sugar and sweet for simple carbohydrates, Meat and Egg for Protein, Spinach, lemon and Oranges for fruit and vegetable, Vegetable oil and margarine for Fat and Ginger root, Garlic and Cayenne pepper for Spice and seasoning.

Conclusion

The findings of the present study showed that COVID-19 pandemic influenced the consumption of certain food groups. However, the observed increase in the consumption of fruits and vegetables following the outbreak indicates that respondents understood the health benefits and the essence of healthy feeding especially when faced with a pandemic. This study is therefore important for informing the food and agricultural sector towards establishing a sustainable healthy population in the face of a pandemic. Further studies is recommended to show other non-food items consumed by respondents such as supplements and medication

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