



Micro-nutrient related diseases prevention: An intervention based approach towards the attainment of sustainable development goal No.3 (Good health and wellbeing)

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Abstract

If we must achieve No.2&3 of the Sustainable Development Goals (SDGs) we must ensure food availability, food accessibility and food affordability. The purpose of this study was to proffer feasible solutions to the prevention of micro-nutrients related disease through nutrition based approach. Quantitative and qualitative research methods were employed through the use of questionnaires and field observations to elicit responses from 40 households. Data generated were analysed using SPSS version-20, hypotheses were tested using Pearson Product Moment Correlation Coefficient (PPMCC) and results were presented descriptively in simple percentages, and graphs. The study findings/results showed that there is significant relationship between food availability, food accessibility, food affordability and prevalence of micro-nutrients related diseases. Based on this, one of the recommendations was that small scale farmers are to be empowered through provision of farm resources like fertilizers, loans and equipment to encourage them.

Keywords: national food security, home economics teaching, home economics research, home economics practice, and public health

Introduction

In the year 2000, one hundred and eighty nine (189) countries of the world came together to face the future in a bid to prevent daunting, famine, drought, war, plague, poverty, etc. which they foresaw may hit continents, nations, cities, towns, villages, families and individuals globally. Though there were enough food to feed nations but the problem was that there is no equity in sharing. As a result of these foreseen challenges, leaders of these countries created a plan called the Millennium Development Goals (MDGs) which constitutes a set of eight (8) goals imagining a future just 15 years off that would be rid of poverty and hunger (UNDP, 2016) [7].

However, according to the United Nations Development Programme, hunger has been cut in half. Extreme poverty is down nearly by half, more kids are going to school and fewer are dying. Now, still these countries want to build on the many successes of the past 15 years, and go further and have given birth to the new set of goals, the Sustainable Development Goals (SDGs) with 17 goals aims to end poverty and hunger by 2030 (UNDP, 2016) [7]. Hunger cannot be ended if there is no food security and the food must contain adequate micro-nutrients for sustainable living.

Study Area

This study was carried out in Koko community which is a cosmopolitan town with a sea port in Warri North Local Government Area of Delta State, Nigeria. It has a land mass of 1,841km² and a population of 137,300 as at 2006 National Census. It lies between latitude 4°46'0" North and longitude 8°15'0" East. The local government is predominantly riverine. It is bounded in the east with Ologbo in Edo State, in the north

with Oghara in Ethiope West Local Government Area of Delta State. The main dwellers/inhabitants are; the Itsekiris and IZONS. The major widely spoken language is Ijaw and Itsekiri. The main occupation of the people include; fishing, carving of canoes, net weaving, hunting, clothes dyeing, trading, crafting, and farming. It is also the location of a lovely tourist attraction, the floating market at Ogheye. However, it is an oil producing area and as a result of this, some of the dwellers find it an excuse not to farm owing to their believe that the land has been polluted by oil spills/ activities of the oil companies in the land and the few who try it are not serious about it but depend largely on the remunerations paid to the indigenes by sailors or the oil companies around. Their delicacies include Owoh soup, Bangha soup, melon pepper soup, Okra pepper soup, Ogolekpo, Ogolale, and Ogolisagwe.

Statement of Problem

It is no news that the contemporary Nigeria is passing through economic challenges and this has affected the level of food availability and affordability which has given rise to prevalence of micronutrients related diseases especially among children and the aged. In order to contribute towards the achievement of the Sustainable Development Goal No.2 & 3, the researchers have taken a step further to proffer solutions to prevalence of micronutrients related diseases.

Purpose of the study

This study was tailored towards the prevention of micro-nutrients related diseases to attain Sustainable Development Goal (SDGs) No. 2 & 3 through feasible and reliable nutrition based strategies.

Literature

According to UNDP (2016) [7], in the past 20 years, hunger has dropped by almost half. Many countries that used to suffer from famine and hunger can now meet the nutritional needs of their most vulnerable people. It's an incredible accomplishment. Now we can go further and end hunger and malnutrition once and for all by promoting sustainable agriculture and supporting small farmers. More so, for the sake of the nearly 1 out of every 9 people on earth who go to bed hungry every night, we have got to try so as to attain a world where everyone has access to sufficient and nutritious food all year round.

The prevention of micro-nutrients related disease is very pertinent. Iron deficiency is one. According to the world Health Organization-WHO (2001), iron deficiency, and specifically iron deficiency anaemia, remains one of the most severe and important nutritional deficiencies in the world today. Every age group is vulnerable. Iron deficiency impairs the cognitive development of children from infancy through to adolescence. It damages immune mechanisms, and is associated with increased morbidity rates.

During pregnancy, iron deficiency is associated with multiple adverse outcomes for both mother and infant, including an increased risk of haemorrhage, sepsis, maternal mortality, perinatal mortality, and low birth weight. It is estimated that nearly all women are to some degree iron deficient, and that more than half of the pregnant women in developing countries suffer from anaemia. Even in industrialized countries, the iron stores of most pregnant women are considered to be deficient. However, as much as a 30% impairment of physical work capacity and performance is reported in iron-deficient men and women (Calton, 2010) [2]. In the last two decades, the importance of iron deficiency and anaemia as a public health problem has been increasingly recognized by health authorities and policy makers. The economic implications of iron deficiency and of the various intervention strategies to combat it, suggest that food-based approaches and targeted supplementation are particularly cost-effective. The highest benefit-to-cost ratio is attained with food fortification (WHO, 2001).

Research has shown micronutrient deficiency to be scientifically linked to a higher risk of overweight/obesity and other dangerous and debilitating diseases (Calton, 2010) [2]. Several scientific studies have established a strong correlation between nutrient deficiency and the condition of overweight/obesity (Asfaw, 2007; Smotkin-Tangorra, Purushothaman, Gupta, Nejati & Ten, 2007) [1, 6]. More so, the study of Dzieniszewski, Jorosz, Szczygie, Diugosz, and Orzeszko (2005) [3] found an 80.8% increased likelihood of being overweight or obese in micronutrient deficient subjects.

Other micro-nutrients related diseases are iodine, vitamin-A, -B, -C, -D, -E, and -K, iron, calcium etc. This can result in goitre, vision impairment, osteoporosis, (Calton, 2010) [2]. Micronutrient deficiencies can have major adverse health consequences, contributing to impairments in growth, immune competence, mental and physical development, and poor reproductive outcomes that cannot always be reversed by nutrition interventions (Ramakrishnan, 2002; Vitteri & Gonzalez, 2002) [7, 8]. According to Calton (2010) [2], problems with food accessibility and affordability have contributed to prevalence of micronutrients related diseases. In such circumstances, dietary diversification and modification, designed and implemented through a formative research process, may be the preferred strategy. The approach involves changes in food selection patterns and traditional household methods for preparing and processing indigenous foods, with the overall goal of enhancing the availability, access to and utilization of foods with a high content and bioavailability of micronutrients throughout the year.

Methodology

A simple sample survey was employed for this study. Assessment of respondents' household waste was carried out as the major mean of data collection to know frequently consumed diets. Another source of primary data was the use of 40 questionnaire to get data from respondents which represents the number of households accessed through stratified random sampling. Data collected was analysed using Pearson Product Moment Correlation Coefficient (PPMCC) and data presented descriptively for clarity purpose.

Results and Findings

The study investigated the relationship between food availability and micro-nutrients related diseases. Results obtained were used to test the Null hypotheses (Ho): Food availability has no significant relationship with the prevalence of micro-nutrients related diseases. The independent variable was food availability while the dependent variable prevalence of micro-nutrients related diseases. Testing this, the test statistical technique adopted was Person Products Moment Correlation Coefficient Analysis (PPMCCA). Result of the test gave calculated r – value of 0.92 and this is greater than the critical r – value of 0.312 at 0.05 level of significance and 38 degree of freedom (df). This implies that, food availability has a significant relationship with prevalence of micro-nutrients related diseases, which indicates that the absence of food can make on susceptible to micro-nutrients related diseases. This shows that the null hypothesis (Ho) was rejected in favour of the alternative hypothesis (Ha). This is summarized in table 1 below.

Table 1: PPMCCA of the relationship between food availability and prevalence of micro-nutrients related diseases (N = 40).

Variable	$\sum X$ $\sum Y$	$\sum X^2$ $\sum Y^2$	$\sum XY$	r – val.
Food availability (X)	99	195	102	0.92
prevalence of micro-nutrients related diseases (Y)	61	150		

Level of significance at 0.05; df = 38; Critical r – Value = 0.312

Data Source: Field Survey, 2016.

There is no significant relationship between food accessibility and prevalence of micro-nutrients related diseases. The independent variable was food accessibility while the dependent

prevalence of micro-nutrients related diseases. Testing this, the result in table-2 shows that the test gave calculated r – value of 0.97 and critical r –value of 0.312 at 0.05 level of significance

and 38 df. Hence the calculated r – value was greater than the critical r – value, the Ho is rejected in favour of the Ha. This implies that even though there may be food in a nation, if it

cannot be accessed by those who need it most (that is, absence of equity in circulation or distribution) it may make one susceptible to micro-nutrients related diseases.

Table 2: PPMCCA of the relationship between food accessibility and prevalence of micro-nutrients related diseases (N = 40).

Variable	$\sum X$ $\sum Y$	$\sum X^2$ $\sum Y^2$	$\sum XY$	r – val.
Food accessibility (X)	105	210	101	0.97
Prevalence of micro-nutrients related diseases (Y)	61	150		

Level of significance at 0.05; df = 38; Critical r – Value = 0.312

Source: Field Survey, 2016.

There is no significant relationship between food affordability and prevalence of micro-nutrients related diseases. The independent variable was food affordability while the dependent variable was prevalence of micro-nutrients related diseases. Still using the PPMCCA as the test statistical technique to test this, result as shown in table-3 indicates that the calculated r – value was 0.83 and the critical r – value was 0.312 at 0.05 level of significance and 38 df. Since the

calculated r – value is greater than the critical r – value; it is a strong evidence to reject the Null Hypothesis (Ho) in favour of the Alternative Hypothesis (Ha). This means that food affordability has a significant relationship with prevalence of micro-nutrients related diseases. This further implies that an individual whose income cannot afford food is likely to be susceptible to micro-nutrients related diseases.

Table 4: PPMCCA of the relationship between food affordability and prevalence of micro-nutrients related diseases (N = 40).

Variable	$\sum X$ $\sum Y$	$\sum X^2$ $\sum Y^2$	$\sum XY$	r – val.
Food affordability (X)	88	200	150	0.83
prevalence of micro-nutrients related diseases (Y)	61	150		

Level of significance at 0.05; df = 38; Critical r – Value = 0.312

Data Source: Field Survey, 2016.

Discussion

Food availability has a relationship with prevalence of micro-nutrients related diseases. Gibson and Hotz (2002) in their study found out that most people who are susceptible to or already victims of micronutrients related disease where those who reported the absence of food due to economic crises or disaster. Result implies that when an individual, especially the elderly and children cannot see food even when they have the money to buy, they may still be victims of the problem under study. This can easily occur when there is persistent absence of food. This further implies that one has the money but cannot see food to buy.

There is a relationship between food accessibility and prevalence of micronutrients related disease as revealed by the results which is in consonant with Calton (2010) [2] report that food need to be accessible. It must not only be there in one place, region or continent, there is need for equity in distribution to reach man. By implication, it infers that everywhere there is live, there is need for food to be available not when some regions have in excess and waste it while others have little or none.

By extension and implication, there is a significant relationship between food affordability and the prevalence of micronutrients related disease. This is supported Ramakrishnan (2002) [5] who reported that to consolidate on the presence of food it must be made affordable by even the least person in the community if at all there is any least person in the community. Some people find it difficult to afford food even for a square meal daily. According to Calton (2010) [2], problems with food accessibility and affordability have contributed to prevalence of micronutrients related diseases.

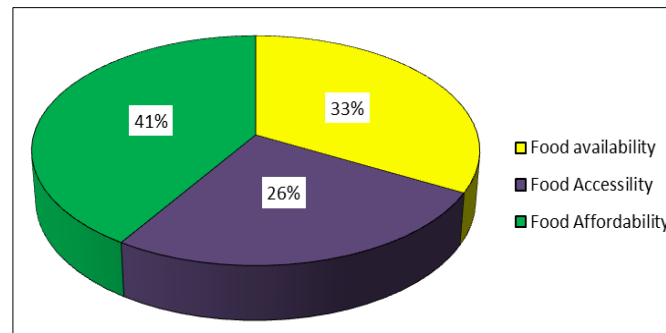


Fig 1: Showing the percentage impact of the three variables to prevalence of micro-nutrients related diseases.

Summary and Conclusion

This study was on micro-nutrients related disease prevention; an intervention based approach towards the attainment of Sustainable Development Goal No. 2 & 3 – health and adequate nutrition for all. 40 households were assessed through assessment of household waste bins. In a bid to study this, it concluded that there is significant relationship between food availability, food accessibility and food affordability with prevention of micro-nutrients related diseases. Food needs to be available, accessible and affordable if we want to achieve SDGs before year 2030.

Recommendations

Based on the findings and the test of hypotheses of the study, the following are recommended;

1. Empowering small scale farmers by providing farming

- materials like fertilizers, loans, and equipment to encourage them.
2. Ensuring food security through effective food storage mechanism to make food available in all seasons.
 3. Annual seminar and awareness on farm and food production process.
 4. Rehabilitation services to victims of micro-nutrients related diseases.
 5. Monitoring and evaluation of empowered farmers to ensure that they use the resources for the purpose it was meant for.
 6. Effective collaboration of agricultural agencies, home economics professionals, public health practitioners, food and nutrition agencies, and all the tiers of government as well as non-governmental agencies.

Suggestion for further studies

It is as well recommended and suggested that further research can also be carried out by researchers on the same study in the same study area to authenticate the findings of this study or other areas or in a wider range – say a local government, senatorial district, state, country, continent or the world – in order to understand the severity of the problem for easy generalization. With these, the set purpose of this study is believed to have been 89% achieved.

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