**EFFECTS OF MALNUTRITION ONTTHE ACADEMIC PERFORMANCE OF STUDENTS: FOCUS ON THE STUDENTS OF EBONYI STATE COLLEGE OF EDUCATION, IKWO**

**Nwofe, Peter.**

**Department of Economics**

**Ebonyi State College of Education,**

**Ikwo**

**08037715738**

**Abstract**This study investigated the effects of malnutrition on the performance of students, focusing on Ebonyi State College of Education Ikwo. The problem lies in the high prevalence of malnutrition among students, which can impair cognitive function, academic performance, and overall well-being. The objectives of the study are to:- Examine the nutritional status of students at Ebonyi State College of Education Ikwo. - Investigate the relationship between malnutrition and academic performance. - Identify the factors contributing to malnutrition among students. This study employs a quantitative method to gather data from a representative sample of students. Findings from the study revealed a significant correlation between malnutrition and poor academic performance. Malnourished students tend to have lower GPAs, reduced concentration, and decreased cognitive function. Factors contributing to malnutrition include inadequate dietary intake, poverty, and lack of nutrition education. The study recommended among other things an implementation of nutrition education programs to promote healthy eating habits and as well, provision of an access to nutritious food options on campus. The study concluded that malnutrition has a significant impact on the academic performance of students at Ebonyi State College of Education Ikwo. Addressing malnutrition through targeted interventions can improve academic outcomes and overall well-being.

**Key Words**: Malnutrition, Academic Performance, Nutrition Education, Student Health, Cognitive Function

**INTRODUCTION**

**Background of the Study**

Malnutrition has been defined as the cellular imbalance between supply of nutrients and energy and the body's demand for- them to ensure growth maintenance of body's specific functions. It can also be referred to as a medical caused by an improper or insufficient diet (Ebuehi, 2012). According to Sawaba (2006), malnutrition occurs when hunger goes on in such intensity and for such a long period of time that they start to interfere in the body's energy supply. Malnutrition has also been seen as insufficient, excessive or imbalance consumption of dietary energy and nutrients. It manifests in different forms, such as under nutrition, over nutrition and micronutrients- malnutrition (Smith and Haddad, 2009). Malnutrition also occurs as a result of inability to eat good/balanced diet, defective digestion, absorption or metabolism of food molecules or disease state that increases nutrient loss (Azubuike 2013).

Malnutrition in early childhood is associated with functional impairment in adult life. Malnourished children are physically and intellectually less productive even when they become adults (Smith and Haddad, 2009). Children that are malnourished tend to have increased risk of morbidity and mortality and often suffer delayed mental development, poor school performances and reduced intellectual achievement. Also Babatunde, Olagunju, Fakayode and Sola-Ojo 2011) observed that chronic malnutrition experienced during early life inhibits growth, retards mental development, and reduces motivation and energy level, causing a reduction in educational attainments and delay in school entry and exit. Many researchers have noted that serious malnutrition can cause neurological impairment which can lead to physical and mental deficiencies that could jeopardize learning (Azubuike 2013, Eze 2010, Mcdubb 2012). Bobbing (2002) also opines that serious malnutrition cases can cause the changes in the central nervous system (responsible for the intellectual function of the individuals) that fell upon the brain anatomy, reduction of the weight, size, volume and body physique

Healthy eating habits play a key role in human mental and physical development and also promote growth and reduce many risks associated with both immediate and long-term health problems (Bordi, 2002). It encourages learning and promote a healthy living. Eating balanced diet helps the body to be agile and ready to fight and protect the body against infections and diseases. While malnutrition makes the body to be prone to diseases. According to Azubuike (2012), malnutrition is not caused by hunger or skipped meal but inability of an individual to eat food that contains necessary and basic food nutrients (based on the six classes of food). For instance, most a time, people are seen eating starchy food like garri, yam, noodles (indomie, spaghetti, Marconi etc) and rice without alternating their food intake with other food that contain vitamins, protein and mineral salt that will help the antibodies in human body.

In academic parlance, malnutrition has been identified to affect the cognitive development of students. According to Grantham-McGregor in Ani (2001), apart from the adverse effect of malnutrition on the cognitive achievement of school students, malnutrition is also likely to result in poor attendance at school, low health status which will invariably lead to high withdrawal rate. In line with this, Olusanaya (2012) observed that malnutrition can also lead to low entrance and late exit in school and even dropping out.

In most schools, malnutrition among students is caused by skipped meals, an unbalanced meal/diet, over concentration on 'indomie', and other nodules that are starchy as well as over concentration of students on snacks and junk foods among others. This chronic under-nourishment as a result of the above mentioned food habit, interferes with concentration of students at school. The influence of certain deficiencies has been well established, such as iron deficiency, which can shorten a students' attention span, alertness and ability to concentrate; Studies have also shown clear links between malnutrition and cognitive impairment.

In Ebonyi State University, it has been observed that malnutrition is one of the causes of high rate of sickness among students which have-led to low students school attainment, withdrawal and low students achievement. According to Nwangbo (2013), about 70% of students who were admitted in Federal Medical Centre Abakaliki in 2013 are suffering from malnutrition and its effect.

**Statement of the Problem**

It has been observed that the high rate of malnutrition among students of Ebonyi State University is one of the major causes of high rate of sickness among them. The rate of sickness among students in Ebonyi State University has caught the mind of the researchers. For instance in 2013, about 60% of patients admitted in Federal Medical Centre (FMC) are students of Ebonyi State University (Federal Medical Centre Statistical Record, 2013). Almost all of them are suffering from one malnutrition related diseases or the other. Some of the diseases suffered by these students include; marasmus, eye problems, scurvy, angular, anaemia, anorexia, goitre, kwashiorkor, scaly skin among others.

The prevalence of malnutrition among students of Ebonyi State University Students is particularly the interest of the present study. Thus many students do come back from holidays healthy and strong and fall sick from about two-three weeks after.

**Purpose of the Study**

The main purpose of this study was to assess the prevalence of malnutrition among students of Ebonyi State University. It will specifically:

1. Determine types of malnutrition affecting Ebonyi State University Students
2. Find out the causes of malnutrition among Ebonyi State University Students.
3. Ascertain the effect of malnutrition among Ebonyi State University Students
4. Determine the solutions to the malnutrition problems among Ebonyi State University Students.

 **Significance of the Study**

The issue of malnutrition especially among the students should be of utmost concern to all. It calls for urgent attention because students represent the future generation and they will continue the process of life. What will be the fate of a country or community whose youths are affected with diseases; intellectual and mental retardation as a result of malnutrition? It is therefore assumed that the findings of this study will help to provide information on the prevalence of malnutrition among the students of Ebonyi State University.

The findings of this study will give parents adequate information on the nutritional status of their sons and daughters in Ebonyi State University. This will motivate them to take necessary actions for a corrective measure. The findings of this study will give nutritionists a guide to enable them plan adequate strategies for the reduction of malnutrition in the study area.

The findings of this study will highlight the nutritional status of students in Ebonyi State University and its causes thereby giving Education stakeholders clue to the root cause of malnutrition and thereby help them to know how to approach its solution from the grass root, thereby formulating solution strategies.

 The findings of this study will enable policy makers to formulate policies aimed at improving nutritional status of the students of Ebonyi State University. To the society, the findings of this study will provide the necessary information needed for the fight against malnutrition locally and globally. It will also inform the public health policy on the measures to take. The findings of this study, as an academic work will serve as base line data for future studies.

**Scope of the Study**

The study is aimed at assessing the rate of malnutrition among Ebonyi State University Students. The study sought to determine types of malnutrition affecting Ebonyi State University Students, find out the causes of malnutrition among Ebonyi State University Students and determine the solutions to the malnutrition problems among Ebonyi . The study is limited to students of Ebonyi State University. The students of Ebonyi State University are the respondents.

**Research Questions**

 The following research questions guided the study

1. What are types of malnutrition affecting Ebonyi State University Students?
2. What are the causes of malnutrition among Ebonyi State University Students?
3. What are the effect of malnutrition among Ebonyi State University Students?
4. What are the solutions to the malnutrition problems among Ebonyi State University Students?

 **METHODOLOGY**

 This chapter seeks to describe the instrument used in this research study. It also sets out to describe the research design, area of study, population of study, instrument for data collection, validation of instrument and method of data analysis.

 **Research Design**

Survey research design is appropriate for this type of research and so it will be used to gather the necessary data. In survey research an investigation is carried out to assess the responses and/or opinions of respondents on the subject matter, in this case, an assessment on the prevalence of malnutrition among Ebonyi State University Students will be made using survey method. Survey design also involves gathering information about a small number of people by collecting information from them with the use of questionnaire (Warner 2006). According to Nwankwo (1999), survey research is basically an exploratory research.

**Area of the study**

 The area of this study is Ebonyi State University Abakaliki, which is located at Ebonyi North Senatorial zone of Ebonyi state. Ebonyi State University has four campus; college of Agricultural Sciences (CAS) which comprises of Faculty of Law and Faculty of Agriculture, Ishieke Annex: which is faculty of education, Permanent site; which has faculties of management sciences, social sciences and Arts and Humanities and PRESCO which has Faculty of Basic Medicine and Physical sciences.

**Population of the Study**

 The population of the study is 17276 of population of Ebonyi State University Students Abakaliki (Students affairs, 2013/2014)

**Sample and Sampling Techniques**

In view of the fact that the total population is very bulky, the researcher used Yaro Yamane formula to select the sample size, since the population of the study is seventeen thousands two hundred and seventy six (17276).

n

l+N(e)2

Where

n= Sample size

N = total population

e = error margin = 0.05

1= constant

n =

17276

1+17276(0.05)2

 17276

1+17276(0.0025)

17276

= 391

1+43.19

From the analysis, simple random sampling was used to select one hundred and twenty (120) respondents for the study.

 **Instrument for Data Collection**

The main instrument used for this study is structured questionnaire. The research questions contain a total number of twenty (21) items. These items were grouped sequentially under the different research questions to which they relate. Items 1-5 relate to question 1. Items 6-11 relate to research question 2. Items 12-16 deals with research questions 3 while 18-21 deals research question 4 All these responses in the section two were in four categories of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD)

 **Validation of the instrument**

The instrument was validated by presenting the drafted questionnaire to experts in Technology and Economics Department.

 These lecturers vetted each item in terms of sentence structure. Based on their comments and suggestion, the instrument will be modified to suit the study.

 **Method of Data collection**

One hundred and twenty copies of the questionnaire were printed on the whole and these questionnaires were administered to the students; thirty copies of questionnaires will be administered to each of the campuses. These questionnaires will be filled and will be collected after completion.

 **Method of Data Analysis**

All the copies of these questionnaires will be used for the analysis. The statistical tools used for analysis were frequency mean and percentage.

**Decision Rule:**

The number of response in each column was multiplied by the corresponding value. The product were summed up and divided by the number of the respondent.

This gives the mean scores for items as follows

x = ∑

 Where x= mean score

X = nominal value

N= number of correspondents to each item F= frequency

In order to determine the extent of the agreement or disagreement in each of the seeking statement in the questionnaire.
Nominal value were assigned to the scaling item as follows
Strongly agree (SA) - 4 points
Agree (A) - 3 points

Disagree (D)-2 points Strongly disagree (SDA)-l points

The nominal value of the four rating items were summed up to be

4+3+2 + 1 10

 Any response with a mean of 2.5 and above was accepted as agree while any one below 2.5 was regarded as disagree

 **RESULTS**

 This chapter focused on the presentation and analysis of data. It is organized based on the research question.

 **Research Question 1:** What are the types of malnutrition affecting Ebonyi State University Students?

**Table 1** mean score of the types of malnutrition affecting Ebonyi State University Students?

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S/N** | **ITEM** | **SA** | **A** | **D** | **SD** | **- N** | ***X*** | **Decision** |
| 1 | Marasmus | - | - | 70 | 50 | 120 | 1.5 | Rejected |
| 2 | Vitamin A | 100 | 10 | 5 | 5 | 120 | 3.7 | Accepted |
|  | deficiency |  |  |  |  |  |  |  |
| 3 | Kwashiorkor | - | - | - | 120 | 120 | 1.0 | Rejected |
| 4 | Angular stomatitis | - | 10 | 70 | 40 | 120 | 1.7 | Rejected |
| 5 | Anorexia | 70 | 30 | 20 | - | 120 | 3.4 | Accepted |

Table 1 above showed that item 1, 3 and 4 had the mean score of 1.5, 1.0 and 1.7 respectively which were below 2.5 the cut-off mark for-acceptance. This indicates that the respondents rejected that the items are not- the type of malnutrition problems among Ebonyi State University Students. Items 2 and 5 had the mean scores of 3.7 and 3.4 respectively which were above 2.5 respectively. This shows that the items are the type of malnutrition among Ebonyi State University Students.

**Research Question** 2: What are the causes of malnutrition among Ebonyi State University Students?

**Table** 2: the causes of malnutrition among Ebonyi State University Students
S/N **ITEM SA A D SD N x Decision**

1. Poverty among the students cause 40 40 25 15 120 2.8 Accepted
malnutrition
2. Lack of access to vegetables and fruits - 20 45 55 120 1.7 Rejected
cause malnutrition
3. Excessive consumption of starchy food 50 40 20 10 120 3.0 Accepted
cause malnutrition
4. Students find it difficult to eat adequate 30 30 4.0 20 120 2.5 Accepted
diet
5. Student prefer eating junk food 60 30 20 10 120 3.1 Accepted

Table 2 above indicated causes of malnutrition among Ebonyi State University students. From the table, items 6, 8, 9 and 10 were with the mean scores of 2.8, 3.0, 2.5 and 3.1 respectively which were above 2.5 the cut-off point for acceptance. This indicates that the above mentioned items are the causes of malnutrition among Ebonyi state university students. On the other hand, item 7 was rejected by the respondents. This is evidently shown in the mean score of item which is below 2.5 the cut-off point for acceptance.

**Research Question** 3: What are the effect of malnutrition among Ebonyi State University Students?

**Table 3:** the mean response of the effect of malnutrition among Ebonyi State

University Students

 **S/N ITEM SA A D SD N x Decision**

1. Cases of eye problem among 40 40 25 15 120 2.8 Accepted
students
2. Kwashiorkor - 20 45 55 120 1.7 Rejected
3. Beriberi 50 40 20 10 120 3.0 Accepted
4. Low school attendance because of 60 30 20 10 120 2.6 Accepted
sickness

15 Low academic performance due to 100 15 5 120 3.7 Accepted
 poor cognition

From table 3 above, the respondents agreed in items 11, 13, 14 and 15 are with the mean scores of 2.8, 3.0, 2.6 and 3.7 respectively which were above 2.5 the cut-off point for acceptance. The items show the effect of malnutrition among Ebonyi State University Students. On the other hand item 12 was rejected by the respondents as the effect of malnutrition among Ebonyi State University Students.

**Research Question 4:** What are the solutions to malnutrition among students of Ebonyi State University Students?

**Table 4:** the mean response of the solutions to malnutrition among students of Ebonyi State University Students

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S/N** | **ITEM** | **SA** | **A** | **D** | **C:\Users\NNANNA\AppData\Local\Temp\ksohtml1152\wps16.pngSD N** |  | **C:\Users\NNANNA\AppData\Local\Temp\ksohtml1152\wps17.pngx** | **Decision** |
| 16 | Educating students on nutritional tips | 70 | 30 | 20 | * 120
 | 3 |  | Accepted |
| 17 | Including food and nutrition into | 70 | 40 | 20 | * C:\Users\NNANNA\AppData\Local\Temp\ksohtml1152\wps18.png 120
 |  | .6. | Accepted |
|  | students curriculum |  |  |  |  |  |  |  |
| 18 | Advising students on the need to eat | 60 | 30 | 20 | 10 120 | 2 | .6 | Accepted |
|  | vitamin rich foods |  |  |  |  |  |  |  |
| 19 | Provision of Ready-to-Use | 100 | 15 | 5 | 120 | 3 | .1 | Accepted |
|  | Therapeutic food supplements by |  |  |  |  |  |  |  |
|  | Government |  |  |  |  |  |  |  |
| 20 | It can be controlled through effective | 80 | 30 | 10 | 120 | 3 | .9 | Accepted |
|  | health care services in the schools |  |  |  |  |  |  |  |
| 21 | Provision of nutrition rehabilitation | 60 | 30 | 20 | 10 120 | 2 | *.6* | Accepted |
|  | centre within the campuses |  |  |  |  |  |  |  |

Table 4 above indicated various ways malnutrition can be controlled. Item 16, 17, 18, 19, 20 and 21 are with the mean scores of 3.4, -3.6, 2.6, 3.7, 3.9 and 2.6 respectively which were above the 2.5 the cut-off point for acceptance. This therefore means that the items indicated various ways of curbing malnutrition among Ebonyi State University Student.

 **Major Findings of the Study**

Based on the data, the following were the findings

1. It was discovered that Eye problem and Angular stomatitis are types of malnutrition affecting Ebonyi State University Students
2. It was discovered that poverty, skip of meals and counsuption of starchy food are the causes of malnutrition among Ebonyi State University Students.
3. It was also discovered that malnutrition has a negative effect on students of Ebonyi State University.
4. Finally, there were solutions to the malnutrition problems among Ebonyi State University Students

 **Discussion of Findings**

From the findings in table one, it was revealed that malnutrition is a condition that results from eating a diet in which nutrients are not enough or are too much such that it causes health problems. It was revealed that angular stomatitis is one of the sickness suffered by Ebonyi State University Students. Angular stomatitis is an inflammation with a wrinkled tissues. It was also revealed that there are malnutrition problems among Ebonyi State University Students. In line with this, Nwokeoha (2005) opines that in most students in EBSU schools today suffer malnutrition problems due to excessive consumption of starch coined food such as indomier noddle instead of taking natural foods that contains all the necessary nutrient. In the table also, it was discovered that most student suffer from night blindness which is as a result of lack or insufficiency of vitamin A. Lack of vitamin A causes eye problem which influences students academic performance due to their inability 'to read and prepare well for their examination. This finding also is in line with Madu (2009), who noted that most students cannot read in the night due to the problem of night blindness.

 From table two, it was revealed that poverty among the students cause malnutrition. Poverty is one of the major factors affecting healthy living. Poverty in this regard means lack of money to buy necessary nutritious food which will help in the reduction of malnutrition. Due high level of poverty among students most are financially handicapped to buy vegetables and other nutritional foods that will make them to have a balanced diet. Lack of access to vegetables and fruits cause malnutrition, Excessive consumption. of starchy food cause malnutrition, Students find it difficult to eat adequate diet and student prefer eating junk food. All these according to respondents are the major causes of malnutrition among Ebonyi stat University students. All the finding of this study are in line with Sue (2011) who noted that poverty, lack of access to balance diet and excessive consumption of junk food are various causes of malnutrition among students.

 From table 3, it was indicated that high cases of eye problem among students, kwashiorkor, beriberi, low school attendance because of sickness and low academic performance due to poor cognition are the major effect of malnutrition among students. The finding of the study is in accordance with Ozoamadi (2012) who opined that poor malnutrition have a negative effect on students' academic performance.

Finally, table 4 indicated that educating students on nutritional tips. Nutritional tips are various handbills and other materials that will help the students to know nutritional requirement for their healthy living. Including food and nutrition into students curriculum, advising students on the need to eat vitamin rich foods, provision of Ready-to-Use Therapeutic food supplements by government, it can be controlled through effective health care services in the schools and provision of nutrition rehabilitation centre within the campuses are various ways of solving the problems of malnutrition among Ebonyi State University study. The findings of the study were in line with Nwakama (2011) who noted that educating students about nutritional tips are ways of reducing malnutrition among students.

 **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

This chapter deals with summary of research .problem, problem of the study, its methodology. The principal findings, conclusion recommendation and suggestions for further studies.

**Summary**

Reducing malnutrition among students remains a huge challenge in developing countries of the World. Malnutrition among Ebonyi State University Students have, left an untold problem to the students' academic performance. The high rate of malnutrition among students of Ebonyi State University is one of the major causes of high rate of sickness among them. The rate of sickness among students in Ebonyi State University has caught the mind of the researchers. For instance in 2013, about 60% of patients admitted in Federal Medical centre (FMC) are students of Ebonyi State University (Federal Medical Centre statistical Records 2013). Almost all of them are suffering from one malnutrition related diseases or the other. Some of the diseases suffered by these students include; marasmus, lack of vitamin A (night blindness) eye problems, scurvy, angular, anaemia, anorexia, goitre, kwashiorkor, scaly skin among others.

 The prevalence of malnutrition among students of Ebonyi State University Students is particularly the interest of the present study. Thus many students do come back from holidays healthy and strong and fall sick from about two-three weeks after. This is the simple reason why the researcher sought to investigate the prevalence of malnutrition among Ebonyi State University Students with the aim of finding a lasting solution to the anomaly.

 **Implications of the Findings**

The findings of this study have some educational implications in the teaching and learning process. Malnutrition in students not only affects the cognitive development of the students, it reduces their rate of concentration and comprehension and also is likely to reduce their work capacity in future.

Nutrition plays a key role in the educational development of students. Deficiencies may stunt the rapidly developing brain and nervous system. Also, the neural connections may be altered thereby leading to mental retardation with their impact on alertness, attentiveness, school enrolments and general habits. It impairs the ability to concentrate, learn and attend school regularly

**Conclusion**

 Malnutrition is like a bad wind that blows no good to anybody. Malnutrition is insufficient, excessive or imbalance consumption of dietary energy and nutrients. It manifests in different forms, such as under nutrition, over nutrition and micronutrients malnutrition. Malnutrition among students is associated with functional impairment in adult life as malnourished student are physically and intellectually less productive in academics. Students that are malnourished tend to have increased risk of morbidity and mortality and often suffer delayed mental development, poor school performances and reduced intellectual achievement. This is the reason why schools especially Ebonyi State University should work out modalities in cubing the rate of malnutrition among her student for optimum educational development.

**Recommendations**

1. There should be availability of school canteen so as to help to provide nutrition for students
2. There should be availability of food supplement pills in the school medical centres.
3. Students should be encouraged to eat balance diet for an adequate their healthy living
4. Nutrition related courses should be introduced as general studies, this will help to create public awareness on the need for an adequate balance diet.
5. The university should have food rehabilitation centre

**Limitation of the Study**

1. Some of the respondents were not willing to fill the questionnaires while some just fill in anything they feel like, thereby making it different to get the authentic information from such respondents.
2. Some of the respondents are illiterate and cannot read nor understand the research questions and this contribute a problem to the researcher.
3. The researcher find it very difficult to move from each section of the office to another in order to distribute the questionnaire and collect it back.

**Suggestion for Further Research**

The following areas are recommended for further investigation and research.

1. Assessment of nutritional status among University students.
2. Factors affecting the nutrition knowledge and nutritional intake of Ebonyi State University Students.
3. Influence of malnutrition on students' academic performance in Ebonyi State University.

 **REFERENCES**

Arabian Arties Hepatitis Patient Erudition and Rehabilitation Development,
2000; AAHPRRD (2000) Nutrition, Health; and Education for all
*Education Development Centre and United Nations Development
Program me Electronic Vers ion http://www. cdc. oriJINT/NHEAIlndex. html.*

Adeyanju, G. (2002). The nutritional status of school-aged children: Why should we care? *Food &# 38; Nutrition Bulletin, 3*1 (3): 400-417, 2010.

Akansola. A. (2004): *Poverty and Fermine: An Essay on Entitlement and Deprivation,* Oxford. Oxford University Press.

Akahoshi, U Babatunde I, Olagunji, M, Fakayode G and Sola-Ojo (2006). *HIV/AIDS education* (Youth Issues Paper 3). Washington, DC: USAID and Youth Net Project.

Ananya, A. (2013). Maternal and child undernutrition: Global and regional exposures and health consequences". *The Lancet* **371** (9608): 243-260,

Anazonwu, R and Bello, E (2006). *A to Z of Community health and Social Medicine:* Ibadan Nigeria. 3 AM Publishers

Babatunde I, Olagunji, M, Fakayode G and Sola-Ojo (2011). The Effect of Income on Demand for Food in Poor Countries: Are our Food Consumption Databases giving us Reliable Estimates? *Journal of Development Economics, 44, '* 199-226. doi:10.1016/0304-3878(94)00012-3, http://dx.doi.org/10.1016/0304-3878(94)00012-3'

Baumgartner, J. (1986): Nutritional status of Pre-school children and women in *Mexico GACMedMex 126:207-224.*

 Dietz, N and Bellizzi, U (2009). The third national health and nutrition *examination survey, 1988-I994.Am J Cttn Nutr. 72:929-936.*

Fox, S (2003). Determinants of Protein-energy Malnutrition in Upper Egypt. *Food and Nutrition Bulletin 1, 333-7*

Frongillo, U (2004). Adult undernutrition in developing countries". *Annals of Human Biology* 30 (5): 520-537.

Heyward, K (2008). Serum Total Protein and Albumin Levels in Different Grades of Protein Energy Malnutrition". *Journal of Bangladesh Society of Physiologist*

Hyeward U (2008). Health and Education for all *Education Development Centre and United Nations Development Programme Electronic Version http://www.cdc.oriJINT/NHEAnndex.html*

Ikemesi, D (2000). Health and nutrition on education. *The World Bank Research Observer,* 11(1):29-40,

Jackson, W. and Pollock (2009)."Gender and adult undernutrition in developing countries". *Annals of Human Biology* **30** (5): 520-537.

Kretsch, K (2001). Adult under-nutrition in developing countries". *Annals of Human Biology* **30** (5): 520-537.

Perez, H (2006). Risk factors for malnutrition in Brazilian children: The Role of Social and Environmental Variables. *Bull World Health Organization: 64: 299-309,*

Perez, H (2008). The gomez classification. Time for a change?" *Bulletin of the World Health Organization* 58 (5): 773-777.

Plowman, A and Smith, D (2007). Weight and Mortality Rates: "Gomez Classification" for Children with Cerebral Palsy?" *Pediatrics* 128 (2): e436-e437.

Plowman, I and Smith (2007). Health and Education for all *Education Development Centre and United Nations Development Programme Electronic Version http://www. cdc. oriJINT/NHEAIlndex.html*

Plowman, S. A and Smith, D (2007). "Early Postnatal Protein-Calorie Malnutrition and Cognition: A Review of Human and Animal Studies". *International Journal of Environmental Research and Public Health* 8 (2): 590-612

Pollock, L and Wilmore (2000). Protein Energy Malnutrition". *Pediatric Clinics of'North America* 56 (5): 1055-1068.

Powel, B. Bellishe F. Debeeger, M. Pequignot F., Sample M. (2007). "Early Postnatal Protein-Calorie Malnutrition and Cognition *International Journal of Obesity*

Journal of Physical Education, Recreation and Dance, 17, 493-497.

 World Health Organisation (2000). *National Bureau &f Statistics,* Abuja, Socio-economic Survey of Nigeria.

World health Organisation (2006) Physical finding in nutritional deficiencies: *Medline 245- 260.*