

NIGERIAN JOURNAL OF HEALTH EDUCATION

Vol. 19, No.1, 2015

njhe

ISSN: 119-7323

NIGERIAN Journal of Health Education

Vol. 19, No. 1, 2015

**njhe is an Official Journal of the
Nigerian Association of Health Educators.**

EDITORIAL BOARD

Professor Ikponmwosa Owie

Department of Health Safety and Environmental Education,
Faculty of Education, University of Benin, Benin City.

Editor-in-Chief

Professor C. O. Udoh

Department of Physical and Health Education,
University of Ibadan, Ibadan.

Consulting Editors

Professor O. G. Oshodin

Department of Health Safety and Environmental Education,
Faculty of Education, University of Benin, Benin City.

Consulting Editors

Professor Richard I. Papenduss

Division of Committee and Environment Health,
University of Arizona, Tucson Arizona 85719, USA

Consulting Editors

Professor J. O. Okafor

Department of Physical and Health Education
Nnamdi Azikiwe University, Awka

Consulting Editors

Professor I. E. Achalu

Department of Physical and Health Education
University of Uyo, Uyo.

Consulting Editors

Prof. Ursula Nnabueze

Department of Health and Physical Education
Enugu State University of Technology, Enugu.

Consulting Editors

Prof. C. Ene

Department of Health Physical Education,
University of Nigeria, Nsukka.

Prof. A.I. Ogbalu

Department of Physical and Health Education
Nnamdi Azikiwe University, Awka

Consulting Editors

EDITORIAL ASSISTANTS

Daniel Aideyan, Norris Erhabor

Department of Health Safety and Environmental Education,
Faculty of Education, University of Benin, Benin City.

CONTENT

UTILIZING DISTANCE EDUCATION AS INTERVENTION MEASURE TO
INSURGENCY IN NORTH EAST, NIGERIA

Suleiman Zubairu & Bawa Nura 1

INCLUSIVE FOOD SECURITY AND HEALTH EDUCATION
PROGRAMME: A PROACTIVE APPROACH FOR SUCCESSFUL
ATTAINMENT OF THE MILLENNIUM DEVELOPMENT GOALS (MDGs)

Akerele, Stephen Segun & A.M. Hamza 14

FACTORS ASSOCIATED WITH INTERNAL INSECURITY AND THE
IMPACT ON THE HEALTH OF FAMILIES IN NIGERIA

Audu Andrew Jatau & Banmang Ezekiel Kumnah 21

THE QUALITY OF SECURITY OUTFIT PROVIDED IN TERTIARY
INSTITUTIONS IN IMO STATE

Oparah, J. S., Fidelis, M. N., Ogbu, I. U., & Mgbeahurike, C. C 38

THE CHALLENGES OF SECURITY MANAGEMENT PRACTICES IN
NIGERIAN SCHOOLS: THE WAY FORWARD

Ikogho, Doris Eseoghene 53

PERCEIVED INFLUENCE OF FOOD SECURITY ON ACADEMIC
PERFORMANCE OF SECONDARY SCHOOL STUDENTS IN ILORIN
METROPOLIS

James J.F & Ologele I. 61

SAFETY PRACTICES AND VIOLENCE PREVENTION AMONG
GRADUATING TEACHER TRAINEES IN EKITI STATE UNIVERSITY,
ADO-EKITI

Joseph Afolayan Adegboyega, & Ajoke Olukemi Awosusi, ...74

SCHOOLS' SAFETY, HEALTH AND LEARNING ENVIRONMENT IN
NIGERIAN SECONDARY SCHOOLS.

Awodiji, Omotayo Adewale., Ogbudinkpa, Ijeoma Charity., & Osasuyin, Abimbola Mercy	85
FOOD INSECURITY: A THREAT TO THE HEALTH OF NIGERIANS	
Kolawole, Agnes Anike.....	97
PROMOTING SOCIAL SAFETY NET AS A WAY OF ENSURING FOOD SECURITY IN NIGERIA	
Erhabor, Norris Igbinosa & Idehen, .O. Cosmos	108
FOOD SECURITY AS A TOOL FOR HEALTH AND SUSTAINABLE DEVELOPMENT IN NIGERIA.	
Nenbee, Nelson Dumbari	122
EFFECTS OF CLIMATE CHANGE ON HEALTH SECURITY	
Onohwosafe, Suoke. Peter	132
BOKO HARAM ACTIVITIES AND REPRODUCTIVE HEALTH OF WOMEN: IMPLICATIONS FOR PUBLIC HEALTH	
Shehu, Raheem Adaramaja; Abdulraheem, Adijat Mojisola; Akorede, Seun Nurudeen; Jidda, Kafayah Adeola & Abdulrasaq, Qazeem Onaolapo.....	141
FOOD SAFETY AND HEALTH: A REVIEW OF LITERATURE	
Ewuzie M. A.....	152
DOMESTIC VIOLENCE: THREAT TO FAMILY HEALTH AND SECURITY	
Egbochuku Obiageli Ogochukwu & Epunah Chinwe Nneamaka	166
TEACHERS' ATTITUDE TO HEALTH AND SAFETY PRECAUTIONS IN EARLY CHILDHOOD SCHOOLS' LEARNING ENVIRONMENT IN OFFA LOCAL GOVERNMENT	
Olabisi Adedigba, & Khadijat Yetunde Nasir	175

BRIDGING THE GAP BETWEEN FIRST AID KNOWLEDGE AND APPLICATION AMONG PHYSICAL AND HEALTH EDUCATION STUDENTS OF OBAFEMI AWOLOWO UNIVERSITY, ILE-IFE, NIGERIA R.B. Ayodele; M.A. Olubayo-Fatiregun & N. U. Igbokwe.....	188
SOCIAL SECURITY PROGRAMMES AND FAMILY BENEFITS IN NIGERIA Akosu, Peter T., Burbwa, Sarah N., & Kartser Titus, M.....	198
INFLUENCE OF WOMEN'S RELIGION AFFILIATION & ETHNICITY ON INFERTILITY TREATMENT UTILIZATION AT THE UITH, ILORIN Olaitan, O.L., Alebiosu, E.O; Abdulmalik N. A & Usman M. D.....	212
THE ROLE OF MATERNAL HEALTH EDUCATION IN REDUCING THE BURDEN OF CHILDHOOD DIARRHOEA Omaka-Amari, Lois Nnenna.....	224
STRATEGIES FOR EFFECTIVE HEALTH SECURITY OF MOTHERS AND GIRL-CHILD IN NIGERIA Helen Sindama & Y.G Kajang.....	238
PRACTICE OF DOUCHING AND KNOWLEDGE OF THE HEALTH EFFECTS AMONG FEMALE STUDENTS IN IGNATIUS AJURU UNIVERSITY OF EDUCATION, RUMUOLUMENI, PORT HARCOURT. Peter-kio, Opirite Boma & Albert, Adaobi Jessica	249
AWARENESS AND ATTITUDE OF LIFE STYLE MODIFICATIONS BY HYPERTENSIVE PATIENTS ATTENDING AN OUT-PATIENT CLINIC OF A TERTIARY HEALTH INSTITUTION IN EDO STATE Roselynd. E. Esewe & Magaret Chika Ubah (BNS).....	265
FOOD HANDLING PRACTICES AND FOOD-BORNE DISEASES AMONG IN-SCHOOL ADOLESCENTS IN IWO LOCAL GOVERNMENT AREA OF OSUN STATE, NIGERIA Francisca Chika Anyanwu	280

ENVIRONMENTAL EDUCATION: A PANACEA FOR SAFE AND HEALTHY PRIMARY SCHOOL ENVIRONMENT IN NIGERIA

Ruth Ochanya Adio-Moses 289

PERCEIVED INFLUENCE OF FOOD SECURITY ON ACADEMIC PERFORMANCE OF SECONDARY SCHOOL STUDENTS IN ILORIN METROPOLIS

J. F. James¹ I.Ologele²

Abstract

Food security is a condition related to food and individual's access to it. Adequate food and balanced nutrient intake are essential to brain function and prime factors in seizing appropriate cognitive capability. This study investigated the perceived influence of food security on academic performance of secondary school students in Ilorin metropolis. The purpose of the study were to determine the influence of provision of adequate food, availability and accessibility of food on the academic performance of secondary school students. A descriptive research design of survey type was used. The population were all public secondary school students totaling 17,603 with the target population of 3,603 students. A multi-stage sampling technique was used to select three hundred and sixty (360) respondents for the study. A researchers' designed structured questionnaire validated by three experts from the relevant field was used for data collection. The reliability of the instrument was ascertained using split-half method. A correlation coefficient of .76r was obtained. Inferential statistics of Chi-square was used to test the null hypotheses set for the study at 0.05 alpha level of significance. The study concluded that provision of free meal by the government, availability and accessibility to food by students had significant influence on their academic performances. It was recommended that nutritious and healthy free meal should be provided by the government, food should always be made available at home at all times; and students should be more accessible to foods.

Keywords: Food security, Academic performance, Students.

^{1,2} Department of Health Promotion and Environmental Health Education
Faculty of Education, University of Ilorin, Ilorin

Introduction

In spite of increased food production, there is a danger of shortfall in its supply due to a tremendous growth of world population (Vijji, 2013). Food security is a condition related to the supply of food and individuals' access to it. Adequate food and balanced nutrient intake are basic necessities for life, health and well-being. Adequate nutrition is especially important in periods of rapid growth and development (Vijji, 2013). Food is a more basic need of man than shelter and clothing. It provides adequately for the body's growth, maintenance, repair and reproduction. Food furnishes the body with the energy required for all human activities including those of academic nature. It provides materials required for building and renewal of body tissues and substance that act to regulate body processes. An individual food may fulfil all these functions or as in the case of sugar, any one function. However, all the above functions of food must be served by the diet in order to maintain the body in good health (Shakuntala,&Shadaksharaswamy, 2010).

All through history, food has played important roles besides that of nutrition. Food serves multiple functions in most living organisms. For example, it provides materials that are metabolized to supply the energy required for the absorption and translocation of nutrients, for the synthesis of cell materials, for movement and locomotion, for excretion of waste products, and for all other activities of the organism. Food also provides materials from which all the structural and catalytic components of the living cell can be assembled (Nutrition, 2014). No person in any country should have to worry about where their next meal will come from or forgo food themselves in order to feed their children. Unfortunately, easy access to food is a necessity that is far from many people in developing countries (Shakuntala&Shadaksharaswamy, 2010).

Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life (Hunger, 2013). Household food security exists when all members at all times have access to enough food for active healthy lives. Individuals who are food secured do not live in hunger or fear of starvation (Coleman, Nord & Singh, 2013). There is evidence of granaries being used over ten years ago with central authorities in civilization including China and Egypt being known to release

food from storage in times of famine. At the 1996 World Food summit, the term food security was defined with an emphasis on supply of food safe for consumption. Food security, they say is the availability of and accessibility to quality and quantity food. It is the supply of basic food stuff to sustain a steady expansion of food consumption and to offset fluctuations in production and price (Florence, Asbridge&Veugelers, 2008).

Food insecurity on the other hand, is a situation of limited or uncertain availability of nutritionally adequate and safe foods or limited ability to acquire acceptable food in a socially acceptable way (Coleman, et al. 2013). Youths face a number of food related concerns, such as poor nutrition, obesity and hunger. In my opinion, many students in Nigeria encounter food insecurity or limited access to food due to an absence of enough money or resources. Recent studies by Florence et al. (2008) shows that there is a significant influence of nutrition on the students' thinking skills, behaviour and health. The research also suggests that diet high in saturated fat can negatively influence learning and memory. Nutritional deficiencies early in life can affect the cognitive development of school age children, while access to good nutrition improves students' cognition, concentration and energy level. Another research outcome, as reported by Florence, et al (2008) shows that 5th grade students who ate more fast food fared worse on Mathematics and reading. The most disturbing aspect of this is that, most of Nigerian secondary school students eat more fast food of low nutrition than homemade food. Food security has four pillars. These are: availability, accessibility, utilization and stability.

Bloom and Dauncey (2009) reported in their research result on the relationship of food and academic performance that, adequate and sufficient healthy intake of food is essential to brain function and a prime factor in seizing appropriate cognitive capability. Most people might share these theoretical assumptions as a starting point for the influence of food security on learning:

- i. that consistent consumption of and adequate, high-quality diet improves academic performance;
- ii. that a higher quality of diet corresponds to a higher academic performance; and

- iii. that malnutrition contributes to the low levels of academic performance prevalent among children and adolescents living in poverty.

Meanwhile, there may be a consensus that food is essential to learning, there is little empirical research that examines the exact relationship between students' overall diet and academic performance and achievement. Neither are there conclusive results in determining the precise nature and degree of the food learning relationship (Gomez, 2010; Hollar& Messiah, 2010). There is controversy on the effect of food intake throughout development on immediate academic outcome, and the nature and extent of the relationship between nutrition and academic performance. The controversy seems to exist because of divergent conclusions that have emerged from various studies (Paus, 2010; De-Jager&Kovatcheva2010). Thus, while a controversy persists in some quarters of the debate of the influence of food security on academic performance, we tend to take the side of the studies which demonstrate the positive correlation of healthy food intake and increase academic performance. Similarly, a study that analysed a healthy eating campaign and banned junk food(fast food) from schools and introduced healthier freshly prepared school meals found that participating students scored higher on English and Science tests than students who did not take part. Access to nutrition that incorporates protein, carbohydrates and glucose has been shown to improve students' cognition, concentration and energy levels (Paus, 2010).

Hunger (2013) established a link between nutrition and behaviours. The author further found that access to good nutrition, particularly breakfast, can enhance a students' psycho-social well-being, reduce aggression, school suspensions, and decrease discipline problems and improve academic performance. School breakfast programs seek to help meet student's nutritional needs. Participation in breakfast programme plays a role in student behaviour, cognition and academic performance. Cook, Ohri-Vachaspati and Kelly (1996) reported in their research In Minnesota that, many low-income children in the public schools are eligible to free breakfast programs which eventually improved their academic performance. The authors also established the relationship between school attendance and free mid-day meal. There is better school attendance and

improved behaviour in the schools where free breakfast program is being practiced.

A study carried out by Alaimo, Olson and Frogillo (2001) in Minnesota revealed that adequate feeding programme for school age children improved concentration and alertness among them. These children, the report says these children have more energy and attention than those who are not taking part in the program. The children who do not get sufficient meals are more likely to repeat class, the report says. In New York, Hawk, Just, Smith and Wansink, (2012) conducted an experiment at a local high school to test whether making healthier and more hygienic foods available in school would lead to increased consumption. The researchers worked with the school to create a convenient line in the lunchroom that served healthier foods. After a 16-week period, the sales of healthier foods rose by 18 percent and the unhealthy foods sales decreased by almost 28%. In addition, the amount of healthier foods eaten as a percentage of total consumption increased from 33 to 36 percent.

Vijji (2013) affirmed that adequate food and balanced nutrient intake are basic necessities for life, health and well-being. Nutrition affects health from conception to old age. Adequate nutrition is especially important in periods of rapid growth and development. School age periods fall within these periods. Poor nutrition during pregnancy, infancy, childhood and adolescence can mean stunted physical and mental development with life-long consequences. Food insecurity and insufficiency are associated with adverse health and developmental problem among U.S students. Food insufficiency was associated with poorer mathematics scores, class repetition, absenteeism tiredness, anxiety, aggression, psycho-social dysfunction and difficulty in getting along with others (Shakuntala & Shadaksharaswamy, 2010).

Statement of the Problem

One of the ways of ascertaining if the education of the youth is yielding result or not is their academic performance. Obviously, when students perform well in their academics, it gives the nation hope that her leaders of tomorrow will be well-equipped academically and intellectually

to move the nation forward, and vice versa. Observations and research reports have shown that high academic performance has become an uphill and Herculean task to accomplish by students in recent times. Alternatively, poor academic performance has been a source of concern and research interest to educators, government, parents and the general public because of the great importance that education has on the national development of a nation. In Nigeria, there is a consensus views about fallen standard of education. The decline in the academic performance of students in Nigeria had been observed by Soyinka (1999), when he observed that education system in Nigeria needed restructuring. It is also observed that many secondary school students in Ilorin are not adequately fed and some are poorly fed. This may be as a result of poverty that leads to lack of provision, availability and access to good food. This study focuses on discovering the influence of food security on the academic performance of secondary school students in Ilorin Metropolis.

Research Questions

- i. Does provision of free meal by the government have significant influence on the academic performance of secondary school students in Ilorin?
- ii. Does availability of food at home have significant influence on the academic performance of secondary school students in Ilorin metropolis?
- iii. Does accessibility to food at home by the students have significant influence on their academic performance?

Hypotheses

1. Provision of free meal by the government will not have any significant influence on the academic performance of secondary school students in Ilorin metropolis.
2. Availability of food at home will not have any significant influence on the academic performance of secondary school students in Ilorin metropolis.
3. Accessibility to food at home by the students will not have any significant influence on the academic performance of secondary school students in Ilorin metropolis.

Research Method

A descriptive research design of survey type was used for this study. The study population comprised all sixty-nine (69) public secondary schools with the estimated population of 17,205 students in Ilorin Metropolis. Ilorin metropolis consists of three local governments namely, Ilorin- East, West and South. A multi-stage sampling technique was used for sample selection. Simple random sampling technique was used to select two schools from each of the Local Government Area, using a fish bowl method totalling six schools with the target population of 3,603. Proportionate sampling technique was used to select ten percent (10%) of the target population totalling 360. Systematic random sampling technique was used to select ten students from each of the six classes (JSS 1-3 and SS 1-3) in each school. That is, sixty respondents from each school). Researchers' designed structured questionnaire validated by three experts from the Department of Health Promotion and Environmental Health Education, University of Ilorin was used for data collection. The reliability test was carried out using split- half method. Spearman-Brown Rank Order correlation was used, and a correlation coefficient of .76r was obtained. The researchers with the help of two trained research assistants administered the copies of the questionnaire. The three postulated null hypotheses were tested using the inferential statistics of chi-square at 0.05 alpha level of significance.

Results

Hypothesis One: Provision of free meal by the government will not have significant influence on the academic performance of secondary school students in Ilorin metropolis.

Table 1: Chi-square analysis showing influence of provision of free meal by the government on the academic performance of students in Ilorin Metropolis

s/n	Items	SA	A	D	SD	Row Total	Df	Cal- χ^2	Cri- χ^2	Dec
1	Provision of free meals by the government for the students make students come to school regularly and improve on their academic performance	72(20.0%)	144(40.0%)	72(20.0%)	72(20.0%)	360				
2	Provision of feeding allowance by the government for the students makes students concentrate better during lesson and improve in their academic performance	60(16.7%)	144(40.0%)	60(16.7%)	96(26.7%)	360	6	160.80	12.59	Ho Rej.
3	Provision of regular provision of mid-day meal by the government for the students improves their health status for better academic performance	84(23.3%)	120(33.3%)	96(26.7%)	60(16.7%)	360				
Column total		216	408	228	228	1080				

$$P < 0.05 \quad \text{cal}\chi^2 = 160.80 > \text{crit}\chi^2 = 12.59$$

Table 1 shows the perceived influence of food provision and students performance in Ilorin metropolis. Based on the analysis of the result, it indicated that the cal- χ^2 of 160.80 is higher than the cri- χ^2 of 12.59 with df at 6 at 0.05 alpha level of significance. Thus, the null hypothesis was rejected. Therefore that provision of free meal by the government will have significant influence on the academic performance of secondary school students in Ilorin metropolis.

Hypothesis Two: Availability of food at home will not have any significant influence on the academic performance of secondary school students in Ilorin metropolis.

Table 2: Chi-square analysis of perceived influence of availability of food at home for the students and their academic performance

s/n	Items	SA	A	D	SD	Row Total	Df	Cal- χ^2	Cri- χ^2	Dec.
4	Availability of regular food at home for the students prevents constant sickness that leads to absenteeism and reduce their academic performance	72(20.0%)	108(30.0%)	84(23.3%)	96(26.7%)	360				
5	Availability of regular meal at home for the students reduces truancy and improve academic performance of students	108(30.0%)	72(20.0%)	108(30.0%)	72(20.0%)	360	6	306.40	12.59	Ho Rej
6	Availability of meal at home for the students improves their level of concentration during lessons and in turn, improve their academic performance	168(46.7%)	60(16.7%)	72(20.0%)	60(16.7%)	360				
Column total		348	240	264	228	1080				

$P \leq 0.05$

Table 2 shows the perceived influence of availability of food at home and students' academic performance in Ilorin metropolis. Based on the analysis, the result indicated that the cal- χ^2 of 306.40 is higher than the cri- χ^2 of 12.59 with df 6 at 0.05 alpha level of significance. Thus, the null hypothesis was rejected. It means that availability of food at home will have significant influence on the academic performance of secondary school students in Ilorin metropolis.

Hypothesis Three: Accessibility to food at home by the students will not have significant positive influence on the academic performance of secondary school students in Ilorin metropolis.

Table 3: Chi-square analysis of perceived influence of accessibility of students to food at home and their academic performance.

s/1	Items	SA	A	D	SD	Row Total	Df	Cal- χ^2	Cri- χ^2	Dec.
7	When students have access to adequate food at home, they are healthier and improve in their academic performance	108(30.0%)	96(26.7%)	48(13.3%)	108(30.0%)	360	6	108.80	12.59	Ho Rej.
8	When students have access to adequate food at home, they concentrates and assimilates lessons better thereby improving their academic performance	96(26.7%)	84(23.3%)	108(30.0%)	72(20.0%)	360				
9	Accessibility to good food vendors by the students improves their feeding habits thereby improving their academic performance	84(23.3%)	168(46.7%)	48(13.3%)	60(16.7%)	360				
Column Total		288	348	204	240	1080				

 $P \leq 0.05$

Table 3 shows perceived correlation between accessibility to food at home and students' academic performance in Ilorin metropolis. Based on the analysis, the result indicated that the cal- χ^2 of 100.80 is higher than the cri- χ^2 of 12.59 with df at 6 at 0.05 alpha level of significance. Thus, the null hypothesis was rejected. It implies that accessibility to food at home by the students will have significant influence on the academic performance of secondary school students in Ilorin metropolis.

Discussion of Findings

The result of the tested hypothesis one showed that provision of free meal by the government will have significant influence on the academic performance of secondary school students in Ilorin metropolis. The result is in accordance with the findings of Alaimo, Olson and Frongillo (2001) who asserted that adequate feeding programme for school age students improved concentration, alertness and assimilation of lessons among them and these are factors that can influence academic performance positively. Bloom (2009) also reported that adequate and sufficient healthy food intake is essential to brain function.

The results obtained from the tested hypothesis two revealed that availability of food at home for the students will have significant influence on their academic performance. This result corroborates with Vijji (2012) who affirmed that adequate food and balanced nutrient intake at home are basic necessities for children in periods of rapid growth and development. Kleinma, (2002) affirmed that students who enrolled in a free school breakfast programme shows improved performance in Mathematics.

The result showed that accessibility to food by students will have significant influence on the academic performance of students. This was justified by Hunger, (2013), who affirmed that access to good food particularly breakfast at home can enhance students' psycho-social well-being, reduced aggression, school suspensions, decrease discipline problems and improve academic performance.

Conclusion

Based on the findings of this study, the following conclusions were drawn:

- i. Provision of free meals by the government have a significant influence on the academic performance of secondary school students in Ilorin metropolis.
- ii. Availability of food at home have significant influence the academic performance of secondary school students in Ilorin metropolis.
- iii. Accessibility to food at home by the students will have significant influence on the academic performance of secondary school students in Ilorin metropolis.

Recommendations

In view of the findings in this study, the following recommendations were made:

1. The state government should provide free regular mid-day meals for all secondary school students in Kwara state. Doing this will have a long-term positive impacts on their academic performances through

- reduction in the cases of truancy, absenteeism and aggression among students.
2. Parents should be encouraged by the school through the media to make food available at home at all times, as this will enable the students concentrate better on their studies and improve on their academic performances.
 3. Food should be located in a place where every child will have free access to it at home at all times as this will enable the students feed well, assimilate better and improve on their academic performances.

References

- Alaimo, K., Olson, C.M. & Frongillo, E.A. (2001). Food insufficiency and American School aged children's cognitive, *Journal of Academic and Psychosocial development. Paediatrics*, 108 : 44-53.
- Bloom, A. (2009). Fast food diet can result in slow-brain children. *A Journal of Education: Educational Supplement*, 80, 8-10
- Dauncey, M. J. (2009). New insights into nutrition and cognitive neuroscience. *Proceedings of the Nutrition Society* 6, 408-410.
- De Jager, C. A. & Kovatcheva, A. (2010). Summary and discussion: Methodologies to assess longterm effects of nutrition on brain function. *Nutrition Reviews*, 68, 53-56.
- Florence, M. D., Asbridge, M. & Veugeliers, P. J. (2008). Diet quality and academic Performance. *Journal of School Health*, 78(4), 209-215.
- Frongillo, E. A., Jyoti, D. F. & Jones, S. J. (2006). Food stamp program participation is Associated with better academic learning among school children. *The Journal of Nutrition*, 136, 107-108
- Gomez-Pinilla, F. (2008). Brain foods: The effects of nutrients on brain function. *National Review of Neuroscience*, 9(7), 568-578. doi: 10.1038/nrn2421.
- Hollar, D., Messiah, S. E., Lopez-Mitnik, G., Hollar, L., Almon, M. & Agatston, A. S. (2010).

Effect of a two-year obesity prevention intervention on percentile changes in body mass Index and academic performance in low-income elementary school children. *American*

Journal of Public Health, 100, 646-653.doi: 10.2105/AJPH.2009.165746

Paus, T. (2010). A primer for brain imaging: A tool for evidence-based studies of nutrition. *Nutrition Reviews*, 68, 29-37.

Shakuntala, N. M., Shadaksharaswamy, M. (2010) Foods, facts and principles world food programme. Food and nutrition handbook. (3rded) New Delhi, New Age publisher.

Vijji, M. (2013). Public health and health research. New Delhi, Random publications.

Nutrition (2014). Encyclopædia britannica. *Encyclopædia Britannica Ultimate Reference Suite*. Chicago: Encyclopædia Britannica.

Catherine G. (2015). Food security. The food and nutrition technical assistance III project (FANTA). FHI360, USA 1 (1) 1.

Kleinman, R.E, Murphy, J.M, Pagano, Wehler, C.A, Regal, K & Jellink, M.S (1998). Hunger in children in the United States: potential behavioural and emotional correlates. *Paediatrics*, 101 (1)

Wahlstrom, K.L, Begalle, M.S (1999). More than test scores: Results of the universal school breakfast pilot in MN. *Topics in clinical nutrition* 15 (1), 17-29

Coleman, A.J, Gregory C, Singh A (2013). Household food security in the United States 2013. United State Department of Agriculture 173 (1) 1-41

FAO (2008). An introduction to the basic concepts of food security. EC-FAO food security programme 3-3