CAUSE – EFFECT RELATIONSHIP OF EATING HABIT AND HEREDITARY ON STANDARD REFRACTION FOR VISUAL EFFICIENCY

Olukotun J.O.
Department of Early Childhood/Primary and Special Education
Kwara State University, Malete, Ilorin

Abstract
A vital predisposing factor for a healthy living, clear vision and improved visual efficiency IS good eating habit. Balanced food taking improved functioning mechanism of the body system, most especially the brain that controls all activation of the body system. This paper examined the cause-effect relationship that occurs between food taken and hereditary predisposing factor on standard refraction for visual efficiency of a sampled population in Oyo State. 150 undergraduate and postgraduate students were sampled for the study. Four hypotheses were tested at 0.05 level of significance. Hypotheses 1 and 2 were accepted as there were no significant relationship between eating habit and visual efficiency, and eating habit and hereditary. Hypotheses 3 and 4 were rejected because there were significant differences between males and females visual efficiency levels, and symptoms and visual efficiency.
Recommendations were made to the parents, the school and the governments at various levels to introduce school feeding to enhance visual efficiency.

Introduction
A living organism requires well balanced food for its normal growth, development and survival. The existence of plants as well as animals, lower or higher, is based on proper feeding, be it from the sunlight, soil or in case of homosapiens, from various sources of food supply. Feeding whether adequate or inadequate has implication on well being of a living creature. During formative and developmental stages of a foetus in the womb, supply of nourishment from the mother is very crucial. Undernourishment or poor eating habit of the pregnant mother will affect the development of the various organs in the body system. During these stages of development, the brain and the other senses organs such as the sight and hearing organs are at the risk of

malformation. The lens, cornea and the sensitive retina may be malformed which may lead to visual deficiency. In some more prominent cases of malnutrition of the pregnant mother, the foetus may become blind due to malformation or dislocation of any of the refraction media.

At the stage of infancy, good diet for winning the child is required for the baby to properly develop all organs and systems of the body including nerves, muscles and bones. The child needs a balanced diet to develop all senses including the brain which is the core of all body activities. A child requires good food for the brain to develop properly for the brain to develop for the future tasks of academic and other functional challenges.

Paul Gateh (2005) postulated seven habits of healthy eating. He asserted that the result of incorporating the seven eating habits will be amazing within a short period of time. The habits are:

- Drinking 8 glasses of water daily. This may be increased, especially if one is in a hot environment.
- Don't miss/skip lunch: Many people are tempted to skip lunch. Blood sugar levels drop, metabolism slows down to compensate for the missing fuel. Eating a light lunch daily is very important.
- Fruits and vegetables are very important daily. They must be served with each meal.
- It is advisable to eat snacks with the three main meals.
- Avoidance of late dinners. It is recommended that dinners must be eaten at least three hours before bed time. This will give the body a chance to digest most of the food before sleeping for the next eight hours.
- Records of what we eat daily must be kept. This will enable us to maintain good eating habit and choose good food and snacks anytime we want to eat. For the purpose of maintaining balanced food for a healthy living, Susan (2007) suggested sources of carbohydrates to be eaten which include: fruits, vegetables, grains, breads, cereals and dairy foods. She further asserts that they are also sources of vitamins, minerals, fibers and other important photochemicals.

Heredity, just like poor eating habit is predisposal to having vision problems. Without mincing word, heredity plays a major and

prominent role in the functional ability of a person's body parts. A child automatically inherits from the parents the genes that account for error of refraction. It is commonly observed in nursery/primary school in some parts of Nigeria where investigations on the subject matter were carried out on those children of between ages five and ten and who pairs of magnifying glasses for near and/or distance tasks. Without these lenses, the children could not effectively perform visual functions.

Olukotun (2003) noted that regular teachers who taught such children with vision difficulties were insensitive to the condition of the children. These regular teachers may probably not be held for their insensitivity to the effects of vision difficulties on functional abilities of the affected pupils in their classes. The teachers were not specialists in the area of education for the special needs children. they might be ignorant of the special services to render or what to do to assist the pupils to learn better. It was observed by the present investigator that such children whose visual acuity was as bad as to require contact lenses, their parents were encouraged to procure reading lenses for them. It was also observed that the visual condition had affected their functional abilities and performance levels. Further investigations on the family history of such children revealed that their parents had visual impairments as a result of cataract, strabismus and refractive errors such as myopia and hypermetropia.

Error of refraction is an error in the focusing of light by the human eye. These errors occur in the refractive media of cornea, acquous humor, lens and the vitreous body. Errors of refraction are presented in two types: spherical error and cylindrical errors. Both can be corrected by wearing pair of magnifying glasses or contact lenses. Spherical errors occur when the optics of the eye (the dioptric power) are either too powerful or too weak to focus light on the retina. It then appears as if the overall lens is more or less spherical than it is expected to be. Vision therefore appears blurring in this case. Myopia and hyperopia or hypermetropia are examples of these errors of refraction. Cylindrical errors occur when the optics of the eye are too powerful or too weak across one meridian of the optics. The overall lens therefore tends to be cylindrical in shape along the meridian. This error does occur in the cornea of the eye. A viewed object appears blurring but object viewed at right angles appears clear. Astigmatism is an example

of this type of refractive error. Standard refraction refers to ability of an eye to clearly view objects at the normal viewing distance. The normal reading distance is approximately 36cm (14inches).

Statement of the Problem

It was observed as a common phenomenon among the University students sampled for this study different symptoms of visual impairments. This condition accounts for difficulty in performing near or distance tasks. Many students who could afford a pair of reading lenses wore magnifying lenses for improved performance in visual functioning. Since visual impairment is rampant among the students in the University, this study was interested in establishing the cause-effect relationship between the students' eating habit and their visual efficiency. The study also found out the relationship that exists between heredity and the students' visual functioning. The effects of these variables on near, distance and social activities were also established.

Hypotheses Tested

The following four null hypotheses based on the cause-effects of eating habit and heredity traits of the students were tested at 0.05 level of significance.

1. There is no cause-effect relationship between students' eating habit and their visual efficiency.
2. There is no cause-effect relationship between students' hereditary traits and their visual efficiency.
3. There is no significant difference in visual efficiency levels of male and female students with refractive errors.
4. There is no significant relationship between exhibited symptoms of visual impairment and students' visual efficiency.

Methodology

Design

The study adopted a descriptive survey, where no variable was manipulated or controlled but studied. Analysis was based on responses from the subjects on the variables studied.

Population/Sample

Students selected from various halls of residence of the University constituted the population for the study. The criterion used for qualification to participate in the study was having a refractive error and wearing a pair of +lens.

One hundred and fifty (150) students were randomly sampled for the study. Ten (10) students were selected from each male/female hall of residence. Twenty (20) students, 10 males, 10 females were selected from each hall where males and females were residents and lived together. The ages of the sampled subjects ranged between 16 and 35years with a mean of 22.23 and SD = 4.528.

Research Instrument

A questionnaire was developed for the purpose of eliciting information from the subjects on their eating habit, hereditary traits and impact of the variables on visual performance/efficiency of the students. The Questionnaire was tested using Chronbach Alpha reliability test. 0.05 reliability coefficient used established for the questionnaire.

The questionnaire was rated on a 5-point rating scale of Strongly Agree (5), Agree (4), Strongly Disagree (3), Disagree (2) and Neutral (1). The questionnaire was tested on a similar sample in a pilot study previously conducted by the researcher. The test items accurately measured the desired variables.

Procedure

The researcher who himself was a hall warden in one of the male halls of residence the cooperation of his other warden colleagues in reaching out to students in various halls of residence. Arrangements were made to meet with the eligible students for the study. Notices of meetings with students who have refractive errors and wear a pair of corrective lenses were pasted on the notice boards of each hall, stating time and dates of meetings with each group in their respective halls. Arrangements were made to complete questionnaires. Oral interviews were conducted on the participating subjects to elicit responses on time of on-set of the visual problem, family history, etc. direct observation was made on each sample for presentation of overt and covert behaviours contingent upon poor eating habit and vision problems. Raw scores of their responses were recorded and analyzed

for interpretation of the effects of poor eating habit and heredity on standard refraction of the students.

Analysis of Data

The study used Analysis of Covariance to analyze the group scores.

Results

Pearson correlations were computed to show the cause-effect relationships that existed between the variables of eating habit and visual efficiency, hereditary traits and visual efficiency of male/female and exhibited symptoms and visual efficiency. The results of the tested hypotheses were analyzed and presented in the following tables.

Hypothesis 1: There is no cause-effect relationship between students' eating habit and their visual efficiency.

Table 1: The cause-effect relationship between students' eating habit and their visual efficiency

	Mean	Std. Dev.	N	r	P	Sig.
Visual Efficiency Eating Habit	19.400 34.5400	2.17058 4.35602	150	-.068	.410	n.s.

Table 1 above shows that there was no significant relationship between the visual efficiency and the eating habit of the students (R=-.068, P > 0.05). It is also observed that the correlation value is negative (-.068), that is, while the eating habit had a mean score of 34.5400, the mean for the visual efficiency is as low as 19.400.The null hypothesis is accepted.

Hypothesis 2: There is no cause-effect relationship between students' hereditary traits and their visual efficiency.

Table 2: The relationship between students' hereditary traits and their visual efficiency

	Mean	Std. Dev.	N	r	P	Sig.
Visual Efficiency Eating Habit	19.4000 25.8600	2.17058 5.01679	150	.075	.359	n.s.

Table 2 above shows that there was no significant relationship between the visual efficiency and the hereditary traits of the students (R = .075, P > 0.05). The correlation value is negative (0.75) while the mean scores of the visual efficiency and hereditary traits were 19.400 and 25.8600 respectively. The null hypothesis is accepted.

Hypothesis 3: There is no significant difference in visual efficiency levels of male and female students with refractive errors.

Table 3: Significant differences in the visual efficiency levels of male and female students with refractive errors

Variable	N	Mean	Std. Dev.	Crit. t	Cal. T	DF	P
Visual Efficiency:							
Male	100	19.100	2.611				
Female	50	20.001	.0001	1.96	2.433	148.359	Sig.

The above table shows that there were significant differences found between the male and female students of their visual efficiency (Crit. T =1.96, Cal.t =2.433, df = 148, P < 0.05).

The null hypothesis is therefore rejected.

Hypothesis 4: There is no cause-effect relationship between exhibited symptoms and their visual efficiency.

Table 4: The relationship between exhibited symptoms and their visual efficiency

	Mean	Std. Dev.	N	R	P	Sig.
Visual Efficiency	19.400	2.17058	150	.829**	.000	sig.
Exhibited Symptoms	21.600	2.50444				

**Sig. at 0.01.

Table 4 above shows that there was significant relationships between the efficiency and the exhibited symptoms of the students (R = .829**, P < 0.01). The mean scores of the visual efficiency and exhibited symptoms are 19.400 and 21.600 respectively. The null hypothesis is not accepted.

Discussion of Findings

Hypothesis 1 sought to know the cause-effect relationship that exists between students eating habit and their visual efficiency. Eating habit as observed from the levels of visual efficiency among the sample however revealed no significant relationship. This implies that students eating habit was not poor. Balanced foods were regularly eaten which improved their vision as well as their mental abilities. This corroborates the researcher's earlier submission and that of Paul (2005) and Susan (2007) that a child requires good food for the brain to develop properly for the future tasks of academic and other functional challenges. Hypothesis 2 found out the relationship between students' hereditary traits and their visual efficiency. The study found no significant relationship between the two variables. The study actually established the fact that parents of the samples who have refractive errors also have errors of refraction. This means that the errors could be traced to genetic factor. The effects of additional lenses worn by all respondents while completing the questionnaire actually interfered with the result. This accounts for no relationship between the two variables. Hypothesis 3 found out whether there was a significant difference in the visual efficiency levels of male and female students with refractive errors. The study found significant difference in male and female students' visual efficiency. Female students with 20.001 mean score had better visual efficiency than male respondents with 19.100 mean score whose total number doubled the females. From the students' responses to item on eating habit, female students were seen to feed better and more regularly on balanced food than their male counterparts. This is why female students in the study had better visual efficiency. Hypothesis 4 sought the relationship that exists between exhibited symptoms and visual efficiency. The study upheld that there was a relationship between the two variables. All respondents showed symptoms of refractive errors. This condition was contingent upon wearing + lenses by all the sampled students. Once the errors were corrected with appropriate contact lenses, standard refraction was secured and improved visual efficiency levels were secured.

Conclusion and Recommendations

Visual efficiency of school children and students alike will improve if balanced diet is introduced to them early enough particularly during

their formative stages. Good eating habit tends to improve their developing body cells, hence improved visual tasks performance. Heredity plays a major role in visual deficiencies of offsprings. It is however recommended that parents should endeavour to give their children including those in secondary and tertiary institutions of learning balanced food. Pregnant mother, especially in their first trimester of pregnancy, must feed well on balanced diet.

The Local government council, the State government and the Federal government through their Ministries of Education, State Universal Basic Education Board (SUBEB) and allied agencies must introduce and encourage school feeding where balanced diet and food supplements would be given to young children early enough.

References

Olukotun, J.O. (2003). Teaching Children with Blindness and Visual Impairment: A Basic Text. Ibadan; Codat Publications.

Paul, G. (2005). Healthy Lifestyle Programmes with Expert. Healthy Menu Mailer Retrieved 20th October, 2010 from http://www.healthymenumailer.com/articles/healthy-eating-habit. html.

Susan, K. (2007). Power Eating. Microsoft ® Encarta ® 2008, [DVD]. Redmond, WA: Microsoft Corporation 2007.