Prevalence of Malnutrition and its Effects on Learning Process In Tetiary Institution

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ABSTRACT: This research project was titled "the prevalence of malnutrition and its effects on learning process in tetiary institution. Malnutrition has been identified according to research by WHO (2021) as a major factor that impedes learning and cognitive function among others .The aim of this research therefore was to determine the prevalence of malnutrition and its effects on tetiary institution students' learning process. The research design used in this study was correlational,50 respondents out of the 400 level students of the University of Benin FCE(T) Akoka, were selected from each department using the systematic random sampling. A well structured questionaire which comprised of respondents' anthropometric measurements, food frequency questionnaire, and a section for their scores or academic performance in Curriculum Studies and also their GP for the semester. The data was analyzed using Statistical Package for Social Sciences version (23). The result depicted that there was only a slight significance in the respondents nutritional status (food frequency questionnaire) and their cognitive performance (r=0.043)(p <0.05) and (r=0.032)(p<0.05)which implied that there was little or no significance in respondents anthropometric status and cognitive performance. Conclusively, this study asserted that malnutrition is not only the factor that impedes learning process in students, even though the nutritional status of the respondents are not so good. It therefore recommended the need for Nutrition Education to improve students Nutritional status for their overall wellbeing.

INTRODUCTION

Malnutrition is simply defined as imbalance of nutrients in the body. It could be over nutrition or under nutrition, according to the World Health Organization (2020) Malnutrition refers to deficiencies, excesses or imbalances in a person's intake of nutrients. The term malnutrition covers 2 broad groups of conditions. One is 'undernutrition 'which includes stunting (low height for age), wasting (low weight for height), underweight (low weight for age) and micronutrient deficiencies or insufficiencies (a lack of important vitamins and minerals). The other is overweight, obesity and diet-related non communicable diseases (such as heart disease, stroke, diabetes, and cancer WHO (2020).

Malnutrition is a condition that results from nutrient deficiency or overconsumption (lizzie streit 2018),the body needs a variety of nutrients, and in certain amounts, to maintain its tissues and its many functions. Malnutrition happens when the nutrients it gets don't meet these needs. You can be malnourished from an overall lack of nutrients, or you may have an abundance of some kinds of nutrients but lack other kinds. Even the lack of a single vitamin or mineral can have serious health consequences for your body. On the other hand, having an excess of nutrients can also cause problems. Malnutrition is simply defined as imbalance of nutrients in the body. It could be over nutrition or under nutrition, people who cannot have enough food will suffer from under nutrition. Under nutrition occurs in countries which cannot have enough food for all people living there, malnutrition is caused by inadequate diet and probably the excessive intake of nutrients.

Malnutrition enables an individual to be more vulnerable to diseases and less able to concentrate at school (OjoRotimi 2012). Nutrition also involves identifying how certain diseases, conditions or problems may be caused by dietary factors, such as poor diet (malnutrition), food allergies, metabolic diseases, etc. The human body requires seven major types of nutrients; nutrient is a source of nourishment, an ingredient in a food e.g protein, carbohydrate, fat, vitamin, minerals and water.

Malnutrition is also a dangerous condition that develops when your body does not get enough nutrients to function properly. Poor nutrition can be caused by a lack of food or an inadequate or nutrition diet that's missing or insufficient in one or more nutrients (Chinyoka and Naidu, 2013). Students who do not consume adequate amounts of key nutrients, including calcium, potassium and vitamin C may not be able to work to their full potential at their respective school. (Nabarro et al. 2012). A study by Connell (2012)

revealed that 34 percent of low birth weight children were either repeating grades or placed in special education classroom, another research also reports elevated levels of grade repetition as a result of low birth weight due to poor nutrition (Bray et al., 2010, Duncan et al., 2008). S

Knowing more about what nutritional deficiencies can lead to, in terms of learning, will help families to feed their children adequately to succeed in class. Research has established that poor nutrition in individuals can limit long term intellectual development (Lacour&Tissington 2011). Implicit to the above, students should not be exposed to malnutrition even at any point for it has detrimental effects to their academic performance and their holistic development.

According to WHO one of the basic cause of malnutrition is poverty, it amplifies the risk of malnutrition because when an individual or family do not have the financial capacity to afford adequate meal to meet the needs of the individual or family it can cause malnutrition because such individual will only eat to satisfy their hunger and may not still get satisfied, another basic factor that causes malnutrition is ignorance it is one of the major cause of many diseases of malnutrition. Most times malnutrition is not due to lack of economic resources but to the poverty of knowledge and information needed for food needs (Ecker and Nnene 2022).

Unemployment is also a very big problem to the nutritional status of families According to Mashudat Adams, "only parents with good income can keep a well-fed and healthy child. "Many homes are suffering; they are finding it difficult to feed three-square meals per day. "Many are jobless, while some, who have something doing, underemployed, thus making it uneasy to provide for the children, particularly in this period of economic hardship "The poverty rate in the country has increased the risk of malnutrition. People are hungry; there is limited access to food and as a result, little care is given to children'.

According to (Ojukwu Emma 2022) Farmers out of fear of being killed (especially in the Northern parts of Nigeria), are scared to go to their farmlands for these insecurity reasons. The absence of farmers on farmlands has greatly affected food production and consequently increased the prices of food commodities in the market, which has led to food insecurity, and lack of farm practice can lead to scarcity of some food which are vital to the body which may lead to high percentage of malnutrition in the country because not everyone would be able to access these kind of foods. Some of the effect of malnutrition is as follows Undernutrition manifests in four broad forms: wasting, stunting, underweight, and micronutrient deficiencies. (WHO 2022) Malnutrition causes apathy, depression, various kinds of sickness, introversion, self-neglect and deterioration in social interactions (Bapben 2018), in which some of these causes can cause poor academic performance.

Malnutrition increases health care costs, reduces productivity, and slows economic growth, which can perpetuate a cycle of poverty and ill-health which can lead to high mortality rate or death in the county. According to (Joseph F.G 2015) there should be nutrition education everywhere country wide through different media, for example radios, cinemas, newspapers and posters in order to alert people on best feeding methods. Good habits of foods in the family should be encouraged while bad habits should be discouraged. This would help and reduce the rate of malnutrition in the Country. She said the state of the nation's economy was taking its toll on access to nutritious foods by mothers and children. Unemployment is a common factor that affects the nutritional status of individuals and also families, research has also found that in most cases, both the mother's working status and her bargaining power correlated with children's nutritional status (Roshita et al. 2013; Shroff et al. 2011; Toyama et al. 2010). When Parents or individuals are employed it will help influence the nutritional status of individuals and families at large.

Academic performance of students tends to cut across the cognitive domain, psychomotor domain and the affective domain; these three domains are of utmost importance to the learning factor of any child. Therefore, this study tends to examine impact of mal-nutrition in the learning process of students in tertiary institution.

Statement of the Problem

Students are affected by several factors that impede learning, according to Ecker and Nnene (2012) malnutrition is a key factor that hinders the learning process of students, Malnutrition also causes illness, brain damage, delayed physical growth, delayed development of motor skills and delayed intellectual development. Malnutrition being a major concern across the nation, it is quite important to note and study its impact, prevalence and effects in the learning process of students as well as how these impacts cuts across the several domains of learning for students in tertiary institutions. This study therefore aims to evaluate the prevalence of malnutrition and how it affects the learning process of students in tertiary institutions.

Research Questions.

1. What is the prevalence of malnutrition among students under study?
2. What is the effect of malnutrition on students learning process?
3. What is the relationship between students' nutritional status and learning?

Purpose of the Study

The purpose of this study is to examine the prevalence of malnutrition and its effects on learning in tertiary institution. The specific objectives are as follows:

1. To assess the Prevalence of malnutrition among students under study.
2. To evaluate the effect of malnutrition on student's learning process.
3. To determine the relationship between nutritional status and learning process.

Significance of the Study

The study helps to elucidate and educate the effect of malnutrition on the learning process of students and its effects on their academic performance. This study will help tertiary institution students to be aware of how proper nutrition and diet can affect their learning process and also their domains of learning.

Scope and Delimitation of the Study

The scope of this research is to elucidate the prevalence of mal nutrition and how it affects students in FCE (T)/UNIBEN.

Operational Definition of Terms

Malnutrition: This is a form of deficiency disease or nutritional disorder in the body.

Nutrition: Nutrition is the study of nutrients in food, how the body uses them, and the relationship between diet, health, and disease.

Micro nutrient: Nutrients needed by the body in only little quantity

Macro nutrient: Macronutrients, or macros, are essential nutrients the body needs in large quantities to remain healthy.

RESEARCH METHODOLOGY

The processes and procedures that were followed in carrying out the study are discussed under the following sub-headings: Research design, population of the study, sample and sampling techniques, instrument for data collection, validity of the instrument, reliability of the instrument, procedure for data collection and method of data analysis.

Research Design

The research design used for this study was the correlational research design because it studies the relationship between two variables with the help of statistical analysis.

Population of the Study

The population used in the study were the students of FCE (T) AKOKA in affiliation with the University of Benin.

Sample and Sampling Techniques

The sample and sampling techniques used in this research was the systematic random sampling technique in which 50 sample members of the 400level students of University of Benin FCE (T) Akoka were selected from each department.

RESEARCH INSTRUMENT

The instrument that was used for this research was a well-structured questionnaire which comprised of various sections including the respondent's anthropometric measurements, their food frequency questionnaire, also a section for their scores or academic performance in curriculum studies and also their GP for the semester.

Validity of the Instrument

The validity of the questionnaire was determined by analysing whether the variables the research under study are measurable or not, which was reviewed by the project supervisor.

Reliability of the Instrument

The data collection instrument (questionnaire) was pretested on undergraduate student in Federal college of education in affiliation with the University of Benin Akoka. The sample size for the reliability was 40, which is equivalent to 10% of the sample size of the study.

The sections in the questionnaire the questionnaire has tended to be valid and reliable across several researches

Method of Data Collection

A total of 50 copies of the questionnaire were administered on undergraduate student in Federal college of education in affiliation with the University of Benin Akoka. Appropriate instructions on the completion of the instrument was provided in the questionnaires agreed

Method of Data Analysis

Data was analyzed with the use of statistical Package for the Social Sciences (SPSS version 23), simple percentage used for the data analysis.

RESULTS
Analysis of respondent biodata
Demographic Data
Table 1: Distribution of Respondents by Gender

Gender	Number
Male	17
Female	33
Total	50

Table 1 shows the distribution of the respondents by gender. It indicated that out 50 students 17 respondents were male students while 33 respondents were female students which signify that the female respondents are more than the male respondents.

Table 2: Distribution of Respondents by Departments of the students

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Math	8	16.0	16.0	16.0
	Physics	1	2.0	2.0	18.0
	Technical	7	14.0	14.0	32.0
	Biology	6	12.0	12.0	44.0
	Home Eco	1	2.0	2.0	46.0
	Chemistry	4	8.0	8.0	54.0
	Business	15	30.0	30.0	84.0
	Computer	4	8.0	8.0	92.0
	Agric	3	6.0	6.0	98.0
	Fine Art	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

The **Table 2** above shows the departments and the number of students in the department that participated and responded to the questionnaire. According to the table 8 participated from Mathematics department, 1 student in Physics department, 7 students in technical department, 6 students in Biology department, 1 student from home economics department, 4 students from Chemistry, 15 students from Business department, 4 students from Computer department, 3 students from Agric department and 1 student from Fine Art which signifies that the students from business studies department are more than the other departments.

Answers to research Questions
Research Question 1
What is the prevalence of malnutrition among students under study?
Table 3

Between-Subjects Factors

		Value Label	N
Consumption of Adequate diet	0	Never	1
	1	Once	28
	2	2 times	14
	3	3 times	6
	4	4 times	1

According to the data represented on **Table 3;** only 1 of the students had an adequate meal through out the week, the other students had poor feeding habit which indicates almost all of the students have poor feeding habit which implied that malnutrition is definitely prevalent among students.

Breakdown of diets consumed by students during the week
Table 4

consumption of carbohydrate

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	1	2.0	2.0	2.0
	once	26	52.0	53.1	55.1
	2 times	14	28.0	28.6	83.7
	3 times	6	12.0	12.2	95.9
	4 times	2	4.0	4.1	100.0
	Total	49	98.0	100.0	
Missing	System	1	2.0		
Total		50	100.0		

The **table 4** shown above represents the number of students that consumed carbohydrate during the week and how frequently they consumed it. According to the table only student one student (2.0%) didn't consume carbohydrate during the week, 26 students consumed carbohydrate once during the week (52%), 14 students ate carbohydrate 2 times during the week (28%), 6 (12.0) students ate carbohydrate 3 times during the week (4%), 2 students ate carbohydrate 4 times in a week which indicates that the intake of carbohydrate amongst the students is quite which could be responsible for the underweight status.

Table 5

consumption of protein

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	2	4.0	4.0	4.0
	once	19	38.0	38.0	42.0
	2 times	18	36.0	36.0	78.0
	3 times	7	14.0	14.0	92.0
	4 times	3	6.0	6.0	98.0
	6times	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

As shown above **Table 5** represents the number of students that consumed protein in a week and how frequently they consumed it. According to the table, 2 students (4.0%) did not eat protein at all, 19 (38.0%) students ate protein during the week, 18 (36.0) students ate protein frequently twice during week. 7 (14%) students ate protein 2 times during the week. 3 students ate protein 4 times during the week, (3%) 1 student ate carbohydrate 6 times in a week only, this certainly indicates that almost all of the students do not take protein as often as they should.

Table 6

consumption of vegetables

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	15	30.0	30.0	30.0
	once	19	38.0	38.0	68.0
	2 times	8	16.0	16.0	84.0
	3 times	2	4.0	4.0	88.0
	4 times	5	10.0	10.0	98.0
	5 times	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

The table 6 as shown above the number of students consumed vegetable in a week and how frequently they consumed it. According to the table, 15 students (30%) did not eat vegetables at all during the week, 19 (38.0%) students consumed vegetable once during the week, 8 (16.0%) students ate vegetables frequently twice during the week, 2 (4%) students ate vegetables 3 times during the week, 5 (10%) students ate vegetables 4 times during week (3%), 1 student ate carbohydrate 5 times during the week, Since only 1 of the students ate protein 5 times during the week, this indicates that almost all of the students do not take vegetables as often as they should. According to Ifebajo 2019, vegetables are rich in vitamins like folate and riboflavin which enhances the performance of the nervous system. Deficiencies in these vitamins could affect student's cognitive development.

Table 7

consumption of fruits

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	7	14.0	14.0	14.0
	once	30	60.0	60.0	74.0
	2 times	10	20.0	20.0	94.0
	3 times	2	4.0	4.0	98.0
	4 times	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

The table 7 shows the number of students that consumed fruits in a week and how frequently they consumed it. According to the table 7 students (14%) did not eat vegetables at all during the week, 30 (60.0%) students' vegetable frequently once during the week, 10 (20.0%) students ate fruits frequently twice in a week, 2 (4%) students ate fruits 2 times during the week, only 1 of the students ate vegetables 4 times frequently during week. which indicates that almost all of the students don't take vegetables as often as they should.

Answers to research Questions
Research Question 2
What is the effect of malnutrition on students learning process?
Table 8

Dependent Variable: Grade in curriculum studies

Consumption of Adequate diet	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Never	3.000	1.140	.704	5.296
Once	2.571	.215	2.138	3.005
2 times	2.821	.305	2.207	3.434
3 times	3.167	.465	2.229	4.104
4 times	2.000	1.140	-.296	4.296

The **Table 8** above represents the result (mean) between the students that consumed adequate diet and those who didn't consume adequate diet and also their grade in their curriculum study, The result showed that those who consumed adequate
Diet didn't perform better than those who didn't consume adequate diet, in other words those who consumed inadequate diet performed better in their learning process than those who consumed adequate diet more also, those who ate adequate diet three times a week, did perform better than those who consumed adequate diet twice a week according to **Table 8**

Table 9

Tests of Between-Subjects Effects

Dependent Variable: Grade in curriculum studies

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2.549[a]	4	.637	.490	.743	.042
Intercept	80.852	1	80.852	62.214	.000	.580
Diet	2.549	4	.637	.490	.743	.042

Error	58.481	45	1.300				
Total	428.180	50					
Corrected Total	61.029	49					

a. R Squared = .042 (Adjusted R Squared = -.043)

The **Table 9** showed the significance of the student's diet and their grade in curriculum studies is 0.043 (4 percent) which was low, this therefore indicates that the diet of students did not necessarily affect their grade. This is in agreement with Ewela (2016) who stated that prevailing factors affecting student's cognitive development can be caused by several factors which include students' learning skills, parental background, peer influence, teachers' quality, learning infrastructure, Socio-economic factors and among several others.

Answers to research Questions
Research Question 3
What is the relationship between students' nutritional status and learning?
Table 10

Dependent Variable: Grade in curriculum studies

Gender of students	BMI	Mean	Std. Deviation	N
Male	Underweight	4.00	.	1
	Overweight	3.30	1.923	5
	Normal	2.60	1.075	10
	Obese	3.00	.	1
	Total	2.91	1.325	17
Female	Underweight	3.00	.816	7
	Overweight	2.00	1.000	3
	Normal	2.58	1.121	19
	Obese	2.50	.577	4
	Total	2.61	.998	33
Total	Underweight	3.12	.835	8
	Overweight	2.81	1.688	8
	Normal	2.59	1.086	29
	Obese	2.60	.548	5
	Total	2.71	1.116	50

To review the relationship between the students' nutritional status and their learning the data revealed the gender of students, their BMI and their mean score in curriculum studies was collected as shown in the table above **(Table 10).** The table further reviewed the relationship between the BMI of the students and how it affects the learning process of the students, the results showed that the

underweight students performed better in their studies that is to say the nutritional status of the students does not necessarily impede learning. According to a BMC public health Journal published in 2020, it was stated that Cognitive development is affected by several types of factors including but not limited to; biological (child birth weight, nutrition, and infectious diseases), socio-economic (e.g., parental assets, income, and education), environmental (e.g., home environment, provision of appropriate play material, and access to healthcare) and psychosocial (e.g., parental mental health, parent-child interactions, cognitive stimulation, and learning opportunities).

Studies show that there is a positive association between a nurturing home and optimal learning environment which can affect cognitive health and development; therefore it is important to know that the prevalence of these several other known factors can affect the learning process of a student/individual.

Table 11

Tests of Between-Subjects Effects

Dependent Variable: Grade in curriculum studies

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	1.965[a]	3	.655	.510	.677
Intercept	255.343	1	255.343	198.863	.000
BMIinterpretation	1.965	3	.655	.510	.677
Error	59.065	46	1.284		
Total	428.180	50			
Corrected Total	61.029	49			

a. R Squared = .032 (Adjusted R Squared = -.031)

The Table 11 showed the significance of the student's diet and their grade in curriculum studies is 0.032   (3 percent) which was low, this therefore indicates that the body mass index of the students does not necessarily affect their grade.This could be due to the undeniable fact that several other factors comes in play when educationist are to analyze the learning process of students; these factors such as Intelligence, motivation, self-concept, attitude, interests, learning styles, emotions, and so on are all important psychological elements influencing learning. Similarly, socio-cultural aspects influencing learning include family, home environment, neighborhood, community, peer-group, and so on (Edeh Chukwuemeka ACMC, 2022)

DISCUSSIONS OF FINDINGS

In the data analysis carried out in the study it was shown that a great proportion of the students have poor feeding habit as shown in Table 1 in the chapter 4 of this study, it was later observed that students eat more of junks which has little or no value which would definitely expose them to the risk of several other health issues which at the long run would affect their mental state later in life; risk such as an increased risk of death, An increased risk of hospitalization. A weakened immune system, which can increase the risk of infections, decreased bone mass and muscle weakness, which can lead to falls and fractures which has been scientifically proven. (Williams 2019). Therefore, it is important to note and understand that the importance of malnutrition cannot be over-emphasized in both students and individuals alike

In the data analysis carried out by the researcher it was found out that nutritional diet is not a factor that impedes learning in tertiary institution students, the data also pinpointed that the nutritional status of the students had very little or no influence over the learning process of the students, this could be due to the undeniable fact that several other factors comes in play when educationist are to analyze the learning process of students; these factors such as Intelligence, motivation, self-concept, attitude, interests, learning styles, emotions, and so on are all important psychological elements influencing learning. Similarly, socio-cultural aspects influencing learning include family, home environment, neighborhood, community, peer-group, and so on (EdehChukwuemeka ACMC, 2022)

SUMMARY, CONCLUSION AND RECOMMENDATION
Summary of findings
Based on the analysis of data the following findings emerged:
- That malnutrition is definitely prevalent among the students.
- The nutritional status of the students isn't necessarily a factor that affects/impedes learning.
- That the diet of students does not necessarily affect their grade and learning process

Implications of the Study

This study has various practical implications to the teaching and education field of home economics and nutrition, this study reviews the impact malnutrition has on domains of learning such as the psychomotor, cognitive and affective domain of learning. It has also provided the awareness needed for both educationist and students to view malnutrition as a factor that may impede the learning process of students along with other factors if not taken cognizance of.

Conclusion

Malnutrition remains one of the major obstacles to human well-being in developing countries such as Nigeria (Ecker & Nene 2012, Stevens et al., 2012) therefore it is important to note that malnutrition along several other factors can and will impede learning process in student if ignored most especially the psychomotor domain of learning which is also quite very important in the teaching learning process of students.

Recommendation

Based on this research carried out the following are recommended by the researcher.

- It is recommended that all people and stakeholders should work hard to minimize the root causes of poor nutrition
- Nutrition support programs, such as food support programs for students in tertiary institutions and children in schools should be introduced to combat malnutrition
- The teachers need to be supportive and nurturing and open towards learners who are psychologically unstable due to poor nutrition so as to raise their self-confidence, self-direction, self-esteem and self-image.

Suggestion for further study

This research study could be further exploited into various phases such as how malnutrition and along several other factors can be a hindrance to the learning process of students in both tertiary, secondary and primary school levels of education and also how malnutrition at the early stage of children can be a factor that hinders the learning process of the students/ pupils.

Furthermore, the study can also be further investigated on the impact of malnutrition on elderly individuals to further enlighten the younger individuals on the causes and effect of nutrition itself if ignored during their youthful chronological age.

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