REVIEW OF RESEARCH

"NUTRITIONAL STATUS AND ITS EFFECT ON INTELLIGENCE AND PROBLEM SOLVING ABILITY OF STUDENTS"

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ABSTRACT:

Nutrition is single great factor that plays a vital role in malnourishment and development of Central Nervous System (C.N.S.). Present study examines the Nutritional Status of students and its effect on cognitive development. The study is survey in nature. The sample consist of 400 students of age group 7 to 13 years from class 3rd to 7th from different public and private schools of Nagpur city. The sample was identified on the basis of Body mass Index (B.M.I.) and Gomez classification. The investigator divided the sample into 2 groups each 200 of healthy and malnourished students. The students were administered using group Intelligence test developed by Dr. R.K. Tandon and Problem solving ability test developed by L.N. Dubey. Data was analyzed using t-test . The study reveals that the Intelligence and problem solving ability of healthy students is better than malnourished students .

KEYWORDS:*Nutrition, Malnourishment , Problem solving, Intelligence.*

INTRODUCTION

Nutrition is a vital part of health and development better nutrition is related to improved infant, child and maternal health, stranger immune system, Safer pregnancy and childbirth. The word Nutrition is derived from the word 'Nutricus'. Nutrition is the process of taking food into the body and absorbing the nutrients in those foods.

The nutrient classes may be categorized as either, macronutrients and micronutrients. The macronutrients includes carbohydrates, fats, protein and water. The micronutrients are minerals and vitamins.

Poor nutrition after starts in utero and extends, particularly for girls and women, in adolescent and adult life. Underweight children tend to have more severe illness including diarrhea and pneumonia. There is strong exponential association between the severity of underweight and mortality. The nutrition and health of school age children in developing countries have recently began to receive attention.

NUTRIENTS AND COGNITIVE DEVELOPMENT :

All the body organs in our body along with our brain realize on food and nutrients. The human brain requires a large proportion of the energy that is consumed because of high energy demands made by neuronal tissue. The diet-contain hundreds of naturally occurring compounds that could impact number of physiological and neurological mechanisms that affects, everyday cognitive functions. Nutritional intake and dietary pattern are critical for brain health across the life span. Certain dietary patterns and intake of particular nutrients are associated with batch improved function and reduced risk of cognitive decline.

Nutrition is associated with numerous and complex mental processes involving in acquiring knowledge, learning, attention, memory, intelligence, reasoning,

and visuo spatial ability. Therefore Nutrition forms the most important predominant influence on the development of a school children.

SYMPTOMS OF NUTRITIONAL DEFICIENCY:

1. Weight loss
2. Fatigue
3. Decrease immunity
4. Loss of hair
5. Swelling of eyelids
6. Wrinkles on face
7. Infection – Diarrhea repertory and skin infection
8. Hepatomegaly – The is enlarged with rounded lower manger

RATIONAL OF THE STUDY:

Under Nutrition is more common in India. On in every three under nourished children in the world lives in India.

Majority of the children in India who lived below the poverty live in an environment of multi-deprivation and starvation have physical and developmental retardation. It has been, estimated that in India, 65% i.e. nearly 80 million children under 5 years of age suffer from varying degree of malnutrition.

In India around 46% of all school going children are too small for their age, 47% are underweight and 16% are severely malnourished.

In six states, at least one in two children are underweight namely Maharashtra, Orissa, Bihar, Madhya Pradesh and Rajasthan. Maharashtra in children is not affected by food intake above it is also influenced by access to health services, quality of care held for the pregnant mother as well as good hygiene practices. Girls are more risk of malnutrition than boys because of their lower social status.

OBJECTIVES OF STUDY :

1. To identify malnourished students of age group 7 to13.
2. To study the effect of nutritional status on intelligence of students.
3. To study the effect of nutritional status on problem solving ability of students.

HYPOTHESIS OF STUDY :

1. There is no significant effect of Nutrition on Intelligence of students.
2. There is no significant effect of Nutrition on problem solving ability of students.

DELIMITATIONS OF THE STUDY :

The study is limited to class age group 7 to 13 years.
The study is limited to schools of Nagpur district only.
The study is in English language only.

Design :

In the present study is survey in nature.. Non-probability, purposive random sampling technique was used for data collection..

Population :

In the present study the students of age group 7 to 13 years from 8 different public and private schools of Nagpur district were selected. The schools were selected randomly from East West, North and South of Nagpur District.

Sample:

A sample is a small proportion of a population selected for observation and analysis. By observing the characteristics of the population from which it is drawn.

In the present study a group of 200 malnourished and 200 healthy students of age group 7 to 13 years were identified from different public and private schools. The malnourished students were compared with healthy students in terms of Intelligence and Problem solving ability. The sample was identified on the basis of Body Mass Index (BMI) and Gomez classification. Purposive random sampling technique was employed to selected the sample for the study sample of 400 students (200 malnourished and 200 healthy students) were finalized from different public and private schools of east , west, north and south, zones of Nagpur district. The sample was selected from 8 CBSE Board and State Board Schools. The students of age group 7 to 13 from Class 3rd, 4th, 5th, 6th and 7th were identified. The medium of instruction was Hindi and English for all 400 students.

Tools:

1. Samoohik Mansik Yogyata Pariksha developed by Dr. R.K. Tandon.
2. Problems solving ability test (PSAT)Developmented by Dr. LN. Dubey

Methodology :

In the present study ,agroup of 200 malnourished and 200 healthy students were identified on the basis of BMI Index and Gomez classification. SamoohikMansikYogyataPariksha develop by Dr. R..K. Tandon was administered on 100 students of class 7th. The time limit of 30 minutes was given . The test consist of 91 questions and the scoring was done using answer key. Similarly after a gap of 30 min problem solving ability test develop by L.N. Dubey was administered on the same sample. The test consist of 20 questions and time limit from the test is 20 min. The scoring was done using scoring key. As the researcher wanted to test effect of Nutrition on Intelligence and Problem solving results of both the group was compared.

FINDINGS OF THE STUDY

Objective No.1 :

Identification of Nutritional status of students : with the help of BMI and Gomez Classification :

1) BMI Index :

The Body Mass Index (BMI) or Quetelet index is a value derived from the mass (weight) and height of person. The BMI is defined as the body mass divided by the square of the body height and is universally expressed in units of Kg/m^2 resulting from mass in Kilograms and height in meters. The calculated BMI is compared with percentile using India association pediatrics (IAP) growth charts for height, weight and body mass Index for 5-18 years old Indian Children. Children who measure at the 85th to 94th percentile are considered overweight. A child whose BMI is between 5th percentile to 85th percentile is healthy weight range and below 5th percentile is considered underweight.

GOMEZ CLASSIFICATION :

Gomez classification one of the earliest system for classifying protein energy malnutrition in children, based on percentage of expected weight for age : Over 90% is normal, 76-90% is mild (First degree) malnutrition, 61-75% is moderate (Second degree) malnutrition and loss than 60% is severe (third degree malnutrition. Measured weight is compared with percentage using IAP (Indian Association of Pediatrics) Growth Charts for 5-18 years old Indian Children.

Objective No. 2 :

To study the effect of Nutrition on Intelligence of students.

Sr. No.	Group	No. of Students	Mean	S.D.	Mean difference	Degree of freedom (df)	t- value
1	Malnourished students	200	23.49	3.10	14.65	3.98	44.393*
2	Healthy students	200	38.14	3.75			

*significant at 0.01 level
**significant at 0.05 level

FINDINGS :

Table reveals Intelligence score of malnourished and healthy students. Effect of Nutrition on intelligences of students was computed using t-value. The mean scores of malnourished students is 23.49 and healthy students is 38.14. Based on means scores it is founded that mean of healthy students was higher than malnourished students. S.D. of malnourished students is 3.10 and healthy students is 3.75. Mean difference of both the group is 14.65. Degree of freedom (df) value of both the group is 398. t-value of healthy and malnourished students is 44.393. The df at 0.05 level is 1.97 and 0.01 level is 2.58. It shows that there is a significant difference between intelligence of healthy and malnourished students. Hence Null hypothesis is rejected at 0.05 level and 0.01 level. This indicates that Intelligence of healthy students is found to be superior than malnourished students.

CONCLUSION :

The above discussion and findings reveals that Intelligence of healthy students is superior than malnourished students.

Objective 3 :

To study the effect of Nutrition on Problem solving ability of students.

Sr. No.	Group	No. of Students	Mean	S.D.	Mean difference	Degree of freedom (df)	t-value
1	Malnourished students	200	7.23	1.73	2.32	398	8.923*
2	Healthy students	200	9.55	3.38			

*significant at 0.01 level.
**significant at 0.05 level

FINDINGS :

Table reveals Problem Solving Ability scores of malnourished and healthy students. Effect of Nutrition on Problem Solving Ability of students was computed using t-value. The mean scores of malnourished students is 7.23 and healthy students is 9.55. Based on means scores it is founded that mean of healthy students was higher than malnourished students. S.D. of malnourished students is 1.73 and healthy students is 9.55. Mean difference of both the group is 2.32. Degree of freedom (df) value of both the group is 398. t-value of healthy and malnourished students is 8.923. The df at 0.05 level is 1.97 and 0.01 level is 2.58. It shows that there is a significant difference between Problem Solving Ability of healthy students and malnourished students. Hence Null hypothesis is rejected at 0.05 level and 0.01 level. This indicates that Problem Solving Ability of healthy students is better than malnourished students.

CONCLUSION :

The above discussion and findings reveals that Problem Solving Ability of healthy students is better than malnourished students.

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Table no.2 reveals that there is a significant difference in the means and S.D. of malnourished and healthy students. T- value has been found significant at 0.01 & 0.05 level. This indicates that intelligence of healthy students is significant than malnourished students.

Table No. 3 reveals that the mean & S.D. of healthy students is higher than malnourished students. T- value has been found significant at 0.01 and 0.05 level. This indicates that effect of nutrition is more better in healthystudents than malnourished students.

CONCLUSION:

The results of the study indicated that there exists significant difference in intelligence and problem solving ability of healthy students than malnourished students. Healthy students have better intelligence and problem solving ability of than malnourished students.

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