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LINKING NUTRITIONAL HEALTH TO LEARNING OUTCOMES: THE CASE OF KANDAHAR PRIMARY SCHOOL PUPILS IN BAUCHI

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Abstract:

The research study was carried out in Kandahar Community in Bauchi Metropolis on assessing the relationship between nutritional status and academic performance among primary 3 pupils. The main objective of this study was to determine the relationship between nutritional status and academic performance among primary 3 pupils in Kandahar Primary School in MajiDadi B ward in Bauchi metropolis. Kandahar ward was purposely selected because the area is known for poor academic achievement among primary school pupils year after year. The school record of academic performance of the children was obtained with the help of three assistant. Other socio-demographics used were sex where the female and male ratio was 60%:40% and age of the pupils. The research design used in this study was a correlational research design. The total number of primary 3 school pupils used in this study was 200. From this population, sample of 50 primary 3 pupils representing 25% of the target population was used in this study, based on simple random sampling technique. The instrument for data collection used in the study was measuring or attitude scale using height and weight of the children. Simple percentage and Pearson product moment correlation coefficient were used for analyzing the research questions. The result revealed that 30 males and 20 females were assessed and summary of the outcome shows that, 50 % have normal growth pattern 30% are moderately stunted. It also reveals that children within the age of 8-10 years are mostly affected. The finding in this study also reveals a strong relationship between nutritional status and academic performance of children which implies poor state of undernutrition among the pupils who by these findings are liable to poor health outcome and compromise cognitive abilities. Improving the socio-economic status of parents will lend a helping hand in the academic performance of the students. Since balanced diet is associated with better academic and intellectual performance, which must be emphasized particularly to parents through health education. This calls for quick intervention measures on the side of the government and other stakeholder.

Keywords: Nutritional Status, Academic performance, Kandahar.

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INTRODUCTION

Nutrition is fundamental tool for growth, good health and wellbeing. Therefore a sound knowledge of the principles of nutrition and the requirement of children in health and illness is equally vital to the society.

Today's pupils are experiencing a lot of changes in their traditional culture due to exposure of younger generation of school children of urban settlement and in turn undergoing considerable transformation. Good nutrition helps students show up at school prepared to learn. Because improvement in nutrition make student's healthier, student are likely to have fewer absences and attend class more frequently, studies shows that malnutrition lead to behavior problem. UNICEF report highlighted that nutrition is an important factor affection growth, health and all round development of individual mostly children. Nutrition is the fundamental pillar human life, health and development across the entire life span.

Malnutrition is an imbalance between nutrients the body needs and those the body receives. Malnutrition can exist as under nutrition. Under nutrition also causes poor school attendance, reduce intelligence quotient (IQ) and increased morbidity. Malnutrition begins at preschool period and may progress into school age. If left untreated, it may significant negative effects on the academic and general wellbeing of school children.

Academic performance is the measurement of student achievement across various academic subjects. Teachers and education officials typically measure achievement using classrooms performance, graduation rates and result from standardized tests. Academic achievement is important for the successful development of young people in the society. Students who do well in school are better able to make transition into adulthood and to achieve occupational and economic success (Adekunle, 2015).

According to Kapoor, (2007) proper balance food and nutrition are essential for survival, physical growth, mental development, at birth, through infancy childhood, adolescence and into adulthood and old age.

Evidence has shown that physical growth, cognitive development in children are faster during early years of life and that by the age of four years, 50% of adult intellectual and before 13 years, 92% of adult intellectual capacity is attained.

The studies on effect of low nutritional status on cognitive ability indicated that chronic under nutrition is associated with lower achievement level in school children. (Robert and Nieman, 2016).

Good health and nutrition are needed to achieve ones full educational potential because nutrition affects intellectual development and learning abilities.

Multiple studies reports significance findings between the nutritional status and cognitive test scores of school performances. Studies have shown that children with more adequate diet score more higher on tests of factual knowledge than that of those with less adequate nutrition (Ijarotimi and Omotayo, 2016).

Also nutritional anemia particularly deficiencies of iron iodine and vitamin A are problem for school going children in low income countries such decencies can negativity impact growth, the mental development and training ability of school children (Oninla, 2017).

The fifth report on world nutrition status states that studies affect 419 million preschool children in developing countries while children in Nigeria are believed to have 10 million of such children (Ayub, 2013).

Expert in nutrition at a national nutrition summit held in Abuja on February, 2012 pointed out a clear indication that low level of nutritional kills many children in Nigeria as the other entire known as child killer disease put together (Gemson and Kyamru, 2003) issued guide line that children who are admitted into the school should be properly screened for malnutrition and the need for further nutritional support these key activities issues much concern with helping children to eat and drink as much as the quality and quantity of food with which they are provided at home and school.

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According to WHO 2006, good nutrition is an adequate diet combined with regular physical activity which is a concern store of good health. Poor nutrition can lead to reduced immunity, increased susceptibility to disease, impaired physical and mental productivity.

STATEMENT OF THE PROBLEM

Proper nutrition is essential for growth development health and ones wellbeing. Nutritional programme facilitate the development of a child in all its dimension and have considerable long lasting effects on the child life (UNICEF, 2016).

It is known that children who are provided with balanced diet develop holistically, this is portrayed in how they engage in school activities, school play, interact with others just to mention a few. The area of study is prone to poor academic achievement with the lowest score of Kandahar primary health care always ranging from (9.5 to 10.0) respectively. School going children in this area of study often allocated to household duties, walk a long distance to school very often with an empty stomach and have an intensive school curriculum to grapple with and their nutritional status is compromised. These factors may therefore result to unmark need during this period leading to poor health and consequently poor academic achievement (F.O.A., 2018). As it was observed in the area, this worrisome that is what prompted tempted the researcher to assess the relationship between nutritional status and academic performance among primary 3 pupils in Kandahar community of Bauchi metropolis.

OBJECTIVE OF THE STUDY

The main objective of this study is to assess the relationship between nutritional status and academic performance among primary 3 pupils in Kandahar Primary School in Bauchi Metropolis.

1. To assess the nutritional status of primary 3 pupils in Kandahar Primary School in the Year 2021.
2. To find out academic performance of primary 3 pupils in Kandahar Primary School in the year 2021.
3. To determine the relationship between nutrition status and academic performance among primary 3 pupils in Kandahar Primary School in the year 2021.

RESEARCH QUESTIONS

1. What is the nutritional status of primary 3 pupils in Kandahar Primary School in the year 2021?
2. What is the academic performance of primary 3 pupils in Kandahar Primary School in year 2021?
3. What is the relationship between nutritional status and academic performance among primary 3 pupils in Kandahar Primary School in the year 2021?

SIGNIFICANT OF THE STUDY

The findings of this research work is hoped to be beneficial to Kandahar community government, health workers, researchers and other researchers in the following ways:

1. **To the Community:** It will educate children of the area about their cultural practices as good food to eat and to be given to them support on the growth and development.
2. **To the Government:** It will assist the government in making proper planning on how to provided information and sound knowledge on the important of balance and nutritional diet to children.
3. **To the Health Workers:** It will assist them in providing adequate counseling and health education on the classes of food that is supposed to given to children.

SCOPE OF THE STUDY

The study covers all primary 3 pupils in Kandahar Primary School of Bauchi Metropolis. The nutritional status of the pupil was assessed and the relationship between nutritional status and academic performance among the pupils are investigated, also type of school is examined.

OPERATIONAL DEFINITION OF TERMS

1. **Assessment:** A process of making a judgment about a person or situation.
2. **Nutrition:** The science of food, nutrients, substances and their action and balance in relation to health and disease.

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3. **Status:** The official legal position on condition of a person group country, etc.
4. **Performance:** The accomplishment of a given task measured against present known standards of accuracy, completeness, cost and speed.
5. **Relationship:** Connection or association the condition of being related.
6. **Pupils:** A person who taught by another, especially a school child or student in relation to the teacher.

RESEARCH METHODOLOGY

A correlational research design was used in this study, correlation design is used in establishing the relationship between variables that are not manipulated. (Mertens, 1998). The design help in collection of information that is objective and relevant to allow answers to the rising questions. Quantitative data was collected. This design was used to assess the relationship between malnutrition and academic performance among primary 3 pupils in Kandahar Primary School.

The area of the study was Kandahar Community of Bauchi Metropolis. Kandahar is located at the southern part of Bauchi Metropolis adjacent to the Eid Ground Bauchi. It is situated in a valley area surrounded by highland with humid temperature, about 50% of the people of Kandahar are business men and women, 30% are civil servants, 20% are farmers, the major tribe is Hausa in which about 99% are Muslims and 1% are Christian, Primary Health Care Centre located at the western part of the community.

The target population for the study comprises of primary 3 school pupils in Kandahar ward. The total number of primary 3 pupils in Kandahar Primary School was 200 according to the record obtained in the school (School record 2020-2021 academic session).

The sample for the study consists of 50 Primary 3 pupils in Kandahar primary school. 25% represent of the population. This is line with Gemson, and Kyamru, (2013) who stated that is the population runs in hundred 25-50% could be used as sample for the study.

The sample for the study was randomly selected using sample random sampling technique of balloting with replacement. The technique was chosen because it gives equal chance or every student to be selected as sample (Kale, 2006).

The instrument used for data collection is measuring (or altitude scale) scales. The instruments consist of measuring of height, weight etc. therefore, the instrument used for data collection includes: Weighting scale, tape for measuring height also the school record of the pupils.

The reliability is made through using test and re-test method using the instrument twice to find out whether the same result will be obtained or not.

The data was collected by the researcher using the school record performance of the pupils and measuring instruments such as weighting scale and measuring tape for height. The researcher seeks the help of 3 researches assistant who will collect the data on anthropometric assessment.

The data was collected from the pass record and was presented using tables, charts, and frequency distribution in order to analyze and present the data collected. In this research, percentage was used for answering research questions 1 and 2 and a person correlation for coefficient for answering questions 3.

The anonymity and confidentiality of data was obtained from them, and that all information obtained was used for the purpose of this research only. The researcher assures the respondent.

RESULT

The research presents the result and its analysis. The research is present according to the research questions guiding the study. Measuring scale was used as instrument for data collection on 50 sample respondent.

DEMOGRAPHIC PROFILE OF THE STUDY POPULATION

This research convers a total of 50 primary school pupils, out of whom 30 boys and 20 were girls.

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TABLE 1: GENDER OF THE SAMPLE RESPONDANCE

	Frequency	Percentage
Male	30	60%
Female	20	40%
Total	50	100%



PRESENTATION OF RESULT
RESEARCH QUESTION 1

What is the nutritional status of primary 3 pupils in Kandahar Primary school in the year 2021?

Table 2: Nutritional Status of Primary 3 Pupils in Kandahar Primary School Bauchi

State of Growth	Ranges (Kg)	Frequency	Percentage
Wasting	Less than 15kg	0	0.0%
Severe Stunting	15-20kg	0	0.0%
Moderate Stunting	21-25kg	5	10%
Severe Under Weight	26-30kg	5	10%
Moderate Weight	31-35kg	15	30%
Normal Weight	36-40 and above	25	50%

Table two above shows that, 25 children have normal growth pattern which is the highest number of children in the growth pattern in relation to their weight representing 50% of the children. 5 out of the children are ranked as moderate stunting representing 10% which is the lowest number of children in the growth pattern in relation to their weight.

RESEARCH QUESTION 2

What is the academic performance of primary 3 pupils in Kandahar Primary School in the year 2021?

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Table 3: The academic performance of primary 3 pupils in Kandahar Primary School in the year 2021?

S/NO	TOTAL SCORE
1.	140
2.	870
3.	680
4.	420
5.	401
6.	270
7.	145
8.	828
9.	850
10.	191
11.	150
12.	173
13.	240
14.	327
15.	180
16.	255
17.	191
18.	542
19.	399
20.	722
21.	440
22.	800
23.	799
24.	794
25.	760
26.	375
27.	770
28.	710
29.	697
30.	584
31.	646
32.	182
33.	180
34.	330
35.	269
36.	761

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37.	741
38.	544
39.	191
40.	207
41.	510
42.	360
43.	342
44.	730
45.	240
46.	325
47.	251
48.	322
49.	312
50.	221

Table 4: Academic Performance of Primary 3 Pupil in Kandahar Primary School Bauchi.

Academic Performance	Class Interval	Frequency	Percentage
Poor	140-316	20	40%
Fair	317-493	10	20%
Good	494-670	5	10%
Very Good	671-847	13	26%
Excellent	848 and above	2	4%
Total		50	100%

The table above shows that, 20 students have poor academic performance which is the highest number of children representing 40% of the children. 2 out of the children ranked as having excellent academic performance representing 4% which is the lowest number of the children.

What is the relationship between nutritional status and academic performance among primary 3 pupils in Kandahar Primary School in the year 2021?

Decrease in nutritional status also decrease academic performance and also increase nutritional status also increase academic performance.

Table 5: The Relationship between Nutritional Status and Academic Performance of Primary 3 Pupils of Kandahar Primary School Bauchi.

S/N	NUTRITIONAL STATUS (X)	ACADEMIC PERFORMANCE (Y)	$X - \bar{X}$	$Y - \bar{Y}$	$(X - \bar{X})^2$	$(Y - \bar{Y})^2$	$(X - \bar{X}) \times (Y - \bar{Y})$
1.	20	140	-11	-306	121	93,452	3362.7

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2.	42	870	11	424	121	180,030	46673.3
3.	35	680	4	234	16	54,896	937.2
4.	32	420	1	-26	1	660	-25.7
5.	32	401	1	-45	1	1,998	-44.7
6.	29	270	-2	-176	4	30,870	351.4
7.	20	145	-11	-301	121	90,420	3307.7
8.	40	828	9	382	81	146,153	3440.7
9.	41	850	10	404	100	163,458	4043
10.	23	191	-8	-255	64	64,872	2037.6
11.	20	150	-11	-296	121	87,438	3252.7
12.	21	173	-10	-273	100	74,365	2727
13.	27	240	-4	-206	16	42,312	822.8
14.	27	237	-9	-209	16	43,556	384.8
15.	22	180	-9	-266	81	70,596	2391.3
16.	28	255	-3	-191	9	36,366	572.1
17.	26	191	-5	-255	25	64,872	1273.5
18.	33	542	-2	96	4	9,274	-192.6
19.	31	399	0	-47	0	2,181	0
20.	37	722	6	276	36	76,342	1657.8
21.	33	440	2	-6	4	32	-11.4
22.	40	800	9	354	81	125,528	3188.7
23.	40	799	9	353	81	124,821	3179.7
24.	39	794	8	348	64	121,313	2786.4
25.	39	768	8	322	64	103,877	2578.4
26.	38	375	7	-71	49	4,998	-494.9
27.	39	770	8	324	64	105,170	2594.4
28.	36	710	5	264	25	69,854	13.21.5

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29.	36	697	5	251	25	63,152	1256.5
30.	34	584	3	138	9	19,127	414.9
31.	35	646	4	200	16	40,120	801.2
32.	22	182	-9	-264	81	69,538	2373.3
33.	22	180	-9	-266	841	70,596	2391.3
34.	30	330	-1	-116	1	13,386	115.7
35.	29	269	29	-177	841	31,223	-5124.3
36.	38	761	7	315	49	99,414	2207.1
37.	38	741	7	295	49	87,202	2067.1
38.	34	544	3	98	9	9,663	294.9
39.	24	191	-7	-255	49	64,872	1782.9
40.	26	207	-5	-239	25	56,978	1193.5
41.	33	510	2	64	4	4,134	128.6
42.	31	360	0	-86	0	7,344	0
43.	30	342	-1	-104	1	10,754	103.7
44.	37	730	6	284	36	80,826	1705.8
45.	28	240	-3	-206	9	42,312	617.1
46.	33	325	-7	-121	49	14,568	844.9
47.	25	251	-5	-195	25	37,908	973.5
48.	22	322	2	-124	4	15,302	-247.4
49.	30	312	0	-134	0	17,876	0
50.	26	221	-1	225	1	50,490	224.7
Total	1,553	22,285	38	0	2,834	2,896,499	64684.4

Using the person's correlation coefficient(r):

$$r = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sqrt{\sum (x - \bar{x})^2 \sum (y - \bar{y})^2}}$$

Where

$\bar{x} = \frac{\sum x}{n}$ (Mean of Nutritional Status) and

$\bar{y} = \frac{\sum y}{n}$ (Mean of Academic Performance)

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$$x = \frac{1553}{50} 31.06 - 31.$$

$$y = \frac{22285}{50} 445.7 - 446$$

$$r = \frac{(64684.4)}{\sqrt{2834(2896499)}} = \frac{(64027)}{(90602)} = 0.713942075 - 0.7$$

Correlation coefficient (r) = 0.7 (positive correlation)

This indicates that the variables are moderately correlated.

The value of “r” here is too positive since it indicate positive relationship between nutritional status and academic performance implying that decrease in nutritional status also decrease academic performance and also increase nutritional status also increase academic performance.

DISCUSSION OF FINDINGS

Many studies have reported that children from poor families were usually malnourished, had poor performances and reduced intellectual achievement due to lack of access to food, poor feeding practice and healthcare (Adekunle, 2015). This study was designed to access the anthropometric status of children in public schools, where the pupils comprised children from poor background who cannot afford the relatively expensive private schools.

According to general findings of this study, the growth pattern associated with nutritional status of children in Kandahar Primary School revealed that out of 50 children selected in this study, 25 children representing 50% have normal growth pattern in relation to their weight, whereas 15 of the children representing 10% were ranked as severe underweight. Meanwhile 5 of the children representing 10% also are moderately stunted. The result shows that none of the children happened to be severely stunted and wasted (table 2).

Similarly the study conducted in Kanya by (Ayub, 2013), related that 54% of the children under 5 years are malnourished out of which 30.6% are stunted, 4.8% wasted and 19.1% are underweight. Another study conducted among 728 primary school children in Akure, Ondo State Nigeria, showed 35.6% were severe wasting (Gemson and Kyamru, 2003).

The findings in this study related to research questions 2 was on academic performance of the children in the Kandahar Primary School which was obtained from the school shows that 40% of the children have poor academic performance, 20% were fair, 10% were good, 26% were very good and 4% were excellent.

The result in table 4 shows, the relationship between nutritional status and academic performance of the children in Kandahar Primary School which yielded a correlation coefficient of 0.7. This signifies positive relationship between nutritional status and academic performance.

Another study of nutritional status and academic performance of primary school children in Zaria, Kaduna State Nigeria (Jan, 2016) showed that a high percentage of population has health weight, while only a small proportion was abuse. This could be as a result of imbalance in the food intake of the population, and from the result, it was observed that the total number of children who were overweight performed better academically than the other, which could mean that the children who are will feed tend to do better academically than that who are not.

NURSING IMPLICATION

The topic of this research study is timely and challenging to the government, community families, nursing profession and other health professionals. It has been observed that there is high level of malnutrition among children and girls are found to be the gender mostly affected with malnutrition. The following will be the implication to nursing profession. The high level of malnutrition in the area will affect the following:

1. Cognitive development of the pupils in the school.
2. Lack of concentration and possibly low academic performance of pupil in the school.

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3. Lack of understanding and possibly low academic performance of pupils in the school.
4. Social isolation of the pupils by their peer group from high income families.

SUMMARY

The research work was written on the assessment of relationship between nutritional status and academic performance of children in Kandahar Primary School within Bauchi Metropolis.

Related literatures are reviewed on the general overview and concept of nutritional status, factors affecting nutritional status of children. Assessment of nutritional status (Anthropometric and dietary assessment). Education of the mothers in relation to the nutritional status, concept of academic performance, concept of the relationship between nutritional status and academic performance of primary school children, empirical status and academic performance was discussed, data were obtained using some instrument like measurement tape for measuring, weighing scale for weight and school pass record of the children's performance, after collecting, it was presented in tabular form and analyzed using frequency simple percentage.

Similarly, the finding of the research revealed the case of malnutrition mostly affects children within the age of 8-10 years. It also discovered that there is also a very high relationship between nutrition status and academic performance of the children in Kandahar Primary School.

In theory if there is decrease in nutritional status there will be decrease in academic performance. In this research a correlational research design was used, correlational design is effective in establishing the relationship between variables that are manipulated. (Mukundi, 2018). The instrument for data collection in the research is measuring (or attitude scale) it consists of measuring of height, weight etc.

The target population for this study comprises of primary 3 pupils in Kandahar ward. A simple random sampling technique of balloting with replacement was used for the study. The sample for this study were 50 primary 3 school pupils in Kandahar primary school record of performance of pupils, weighing scale and height measuring scale. The validity and reliability of instrument that were used in this research were school record of performance of pupils, weighing scale and measuring scale.

CONCLUSION

In conclusion the assessment of relationship between the nutritional status and academic performance among primary 3 pupils in Kandahar Primary School in Majidadi "B" ward in Bauchi Metropolis reveals that "There is relationship between nutritional status and academic performance" because in the theory and practice, pupils with low nutritional status mostly have low academic performance.

Moreover, the finding in this study revealed that children between the ages of 8-10 years are mostly affected with malnutrition in Kandahar Primary School. The major finding of this study reveals that 50% of the children have normal growth pattern, 3% have moderate underweight, 10% are severe underweight and also 10% are moderate stunting. This implies a very disturbing nutritional problem which calls for immediate intervention or measures by the government and other interested groups. The information emanating from this study confirms the result obtained by (Shamssain, 2018) which shows that nutritional status among most Nigerians were below the WHO reference standard.

RECOMMENDATIONS

In light of the finding of the study, I recommend that the prevalence of underweight among school children is alarming. Therefore, state and Federal Government should consider evolving policy framework that would enforce school feeding program especially in public schools. Furthermore, children within the age group 8-10 are found to be the age group mostly affected with malnutrition; therefore, government, community, family and parent should monitor their children especially by providing them with balance and nutritious diet, maintain personal hygiene and provide adequate health and services.

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