Educational Status of Mothers: Implication for Preschoolers' Nutritional Intake in Ibadan Metropolis, Nigeria

By

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Abstract

The study was carried out to assess the impact of the educational status of mothers on preschooler's nutritional intake. The children in Ibadan Metropolis were used as a case study. Simple statistical analysis was employed to explain the socio economic characteristics of the mothers. The daily dietary intake of the children was recorded and weighed against the recommended dietary allowance given by the FAO/WHO.

The results showed that as the calorie intake increases, the protein also increases, sharing a positive relationship. Results also revealed that mothers with no formal education had children with the highest level of intake in both calorie and protein. The mothers with secondary school education were found to give the least to their children which will indeed be associated with the nature of their jobs. Male children were shown to consume more than the female children. On the average, 72.08% of the recommended for calorie was met and 96.8% for the protein was met. Regression results showed that protein intake and class of the child is positively related to the level of calorie intake. The age of the child and educational status of the mother was shown to be negatively related to the level of calorie intake.

It was therefore recommended that programmes on the nutritional needs of a child by the Government while mothers be encouraged to have vegetable gardens behind their houses, making it cheaper and more easily accessible. This will certainly improve the daily intakes and the nutritional status of children.

Introduction

Children are important in the development and future of every nation. Children had been abused for some time now and a lot of campaign is being made against it. Examples of these are children hawking by the road sides, bus conductors or motor boys, etc. referred to as child labour.

The growth of these children at the early stage is controlled by the type of diet they are being exposed to. This will also ensure, to some extent, some degree of life expectancy so that he grows up to contribute to his family, community and nation as a whole. It is therefore necessary that we see to their welfare especially now that Nigeria is going through a period of economic crunch. Okunmadewa (1995) stated that the concern for food security and nutritional well being of the populace in an economy is predicted on the crucial role of human elements in economic development. Poor nutrition is seen as a powerful constraint to realizing human potentials particularly in poor societies. Waterlow (1992), asserted that operating in synergism with diarrhea, respiratory and other infections, poor diets in early childhood lead to growth failure, delayed motor and mental development, impaired immune competence and increased risk of complications and death by infections. According to Pollitt (1990), children who grow up in environments of poverty and malnutrition in developing countries have a diminished capacity for learning and are not able to take full advantage of the limited educational opportunities to which they have access. The vulnerability of women, particularly during their reproductive ages, to adverse nutritional conditions and the consequences are of grave concern. Hence, the nutritional status of women is of utmost importance in view of their productive and reproductive responsibility in any economy.

Nutrition has been defined as the aspect of science that interprets the relationship of food to the functioning of living organism, it includes the uptake of

food, liberation of energy, elimination of wastes and biochemical syntheses that are essential for maintenance of normal physical growth and reproduction (Olapitan, 1991). Thus nutrition is concerned not only with food, but also with the factors which influence the quantity and availability of food to the body. Children, who at an early age are properly nourished, are likely to perform better at school, work better at their jobs, live longer and generally have an improved quality of life.

Dietary factors have been implicated in the centre of several diseases including heart disease, diabetes, cancer and several children's diseases. According to the FAO address to the international conference on Nutrition (ICN) in 1992, it is known that peoples' health, physical and mental development and thus their capacity to learn, work and play their full role in the society are wholly dependent on nutrition (FAO, 1992). The poor nutritional situation in Nigeria is caused primarily by the type of food. These factors include, the low purchasing power of people, high unequal income distribution in Nigeria, socio- cultural factors, poor nutritional education, poor implementation of food and nutrition policy, poor agricultural practices, poor incentives to farmers, ignorance, poverty, famine and poor dietary habit.

The calorie intake of children of different ages just obviously allow for satisfactory growth and physical development and for the high degree of activity, characteristic of healthy children. The calorie requirement for girls (10-12 years) are usually lower than those of boys of the same age, this may be due to the onset of the pre pubertal period, which usually occurs in girls of this age.

Malnutrition is defined as a pathological state resulting from a relative or absolute deficiency or excess of one or more essential nutrients, this state being clinically manifested or detected only by biochemical, anthropometric or physiological test (Jelliffe, 1986). Malnutrition is often aggravated by lack of knowledge about the most beneficial way of allocating food within the household, in appropriate infant feeding practices and inadequate food hygiene, storage, preparation and safety.

Childhood malnutrition has serious consequences. It increases the rate of illness and death and can permanently damage physical and intellectual development. Irreversible intellectual impairment is not so much caused by under development of the brain from lack of nutrients, as from insufficient intellectual stimulation at an early stage. Prolonged periods of illness and lethargy, consequences of early childhood malnutrition, limit the possibilities for the child to play (Jelliffe, 1986).

Preschool children have been found to be the most vulnerable persons because it is difficult to protect them from nutritional hazards (Jelliffe, 1986). There is, therefore, a need for this type of work which involves preschoolers i.e. children in their formative years. This paper then examines the adequacy of the dietary intake of preprimary school children, as well as, the effect of the educational status of mothers on the daily nutritional intake of these children.

Methodology

The study was carried out in Ibadan metropolis of, Oyo State. Ibadan comprises of 5 Local Government Areas. There are many big markets in Ibadan which makes it advantageous over many other cities. The people are engaged in diversified occupations, such as trading, teaching, driving, carpentry, farming etc.

Data collection

Structured questionnaires were used during the survey with mostly open-ended questions. The questionnaires used were made up of 2 parts, section A for the mother and section B for every child under the age of 6 years in every household. Section A comprised of questions relating to the socio economic characteristics of the mother while section B was used to collect information on each child's feeding

pattern. The dietary recall method was used.

The use of 24-hour dietary recall for children

The use of this was first described by Burke in 1947, as the dietary history method and this has been extensively used by other investigators like Beal in 1953, during the longitudinal study of nutrition and growth of infants from birth. Rasanen (1979) composed the 24- hour dietary recall and the dietary history interview, confirming that 24 hour recall is preferable for food consumption surveys in children, concluding that it gives a highly reliable result for food consumption.

The 24 hour dietary studies tend to overestimate the proportion of inadequate diet in population. Some households limit theirs to between Monday and Friday, because they alter food on week- ends. In view of all short- comings of the 24- hour recall, the method has been known to be valid for measuring intakes of people with normal weight and using a detailed self report of food intakes, accuracy of the method is known to be improved (Stunkard and Wavem,en, 1981). This technique was used to identify the type of meals normally consumed by the pre schoolers in this study.

Analytical procedure

Basically, the data collected on section A was analyzed using descriptive analysis. This is presented in tables and percentages. The second part, giving information on children, each of the food items was taken and weighed on a scale. This was then compared with the composition table (Olusanya, 1977).

Food composition table

This was used to carry out analysis on the chemical composition of food items. It will help to know if the nutrients are sufficient to prevent the likelihood of diseases, and also to decide if the calorie intake will supply the energy required for work without weight loss.

Regression models

Regression analysis was carried out to examine the influence of mothers' educational status on preschoolers' nutritional status. The multiple regression was used, in which we have the four functional forms.

Models of different functional form:

Linear: $Y = b_{o+} X_1 b_1 + X_2 b_2 + X_3 b_3 + X_4 b_4 + e_i$

Semi-log: $Y = \log b_o + b_1 \log X_1 + b_2 \log X_2 + b_3 \log X_3 + b_4 \log X_4 + e_i$

Exponential: $\mathbf{Log}\, y = b_o + X_1 b_1 + X_2 b_2 + X_3 b_3 + X_4 b_4 + e_i$

Double-log: $\mathrm{Log} Y = \log b_o + b_1 \log X_1 + b_2 \log X_2 + b_3 \log X_3 + b_4 \log X_4 + e_i$

Y = dependent variable (calorie intake)

B_0, b_1, b_2, b_3, b4 are parameters to be estimated

X_1 = protein intake

X_2 = age of child

X_3 = educational status of mother

X_4 = class of child

ei = residual error.

Results and Discussion

Socioeconomic characteristics of the Mothers

Table 1(in the appendix below) shows that most of the mothers with children less than 6 years are below the age of 40 (97.6%). There were no relatively young mothers with ages less than 20 years. This shows that, about the age of 40 years, most women have done away with preschoolers except for a few.

The proportion of literates in this study is very high, 9.5 percent of the population did not receive any formal education 2.4% and 11.9% respectively did not complete primary and secondary school education, while a total of 76.2% of the population had the opportunity of completing formal education at secondary school level.

Most women were married while only 9.5% of the population was separated from their spouses and 2.4% of them being widows.

The table also revealed that none of the women was found to be a full time housewife, for the sake of these children but everyone is actively involved in one thing or the other, so as to supplement the family income, providing better nutrition to their wards. About 57.1% of the respondents were either into trading or self employment, hence being away from home for a larger portion of the day, claiming they make more sales in the evenings. It is obvious the children are left in the hands of minders, no wonder the high incidence of child abuse.

Furthermore, the table shows that majority of households surveyed had between 5 and 7 members, 33.3% of the proportion had between 2 and 4 members while 14.3% had between 8 and10 members. This might have had an effect on the amount of food a child is entitled to, hence reducing the required calorie and protein intake of the children.

Majority of the mothers fall within the first two groups, representing 57.5%, that can be classified as low income earners while only 22.5% of the women earn between #2,000 and #2,999 every month with just 20% earning above #3,000, categorized into the high income group.

Socioeconomic characteristics of the children

The children whose ages ranged between one and three years were about 13.3% while 41.34% of them were aged between four and six years. 43.1% of the children were male while 56.9% were female. Twenty-four children had not started school at all. Only 2 of which were taken to day care with 22 (91.7%) of them staying at home with either grand mothers or other relatives. It is certain that these children do not have a choice of food but will eat anything they are provided with, especially in the absence of their mothers. This will also show that children below the age of six years are mostly found at home, day cares or nursery schools where this survey had been carried out.

Calorie and protein intake analysis

The relationship between the calorie intake and protein intake was shown in table 3. It shows that as the average calorie intake of a pupil increases, the protein intake level per pupil also increases. This also shows that both the calorie and protein consumed by the pupils are positively related. The first group of children consumed 289.49 k cal with 10.45 grammes of protein, those in the second group have an average of 800.42 kcal with 24 grammes of protein while those in the third group had 1208.10 kcal and 36.10 grammes of calorie and protein respectively and the last group had 1636.85 kcal and 49.80 grammes of protein consumed on the average.

Effects of the Occupational Status of Mothers on the daily intake of children.

Table 4 shows the result of the Occupational classification of Mothers. Children of the unemployed had met about 75.25 per cent and 89.23 percent of the recommended by the WHO/FAO, and it decreases with the salary earners which could be due to the bulk of their responsibilities. Furthermore, to the group of teachers there had been an increase in the percentage met of both calorie and protein intake. It also shows the effect of how much time, they have to spend with the children and to feed them. The traders and self employed are more in number, while the average intake in their children show it has fallen. This, of course could be attributed to their way of life, being too busy to attend to the growing kids.

Effect of the Educational Status of Mothers on the daily intake of Children

The daily intake of the children, based on the educational status of the mothers was illustrated in table 4. Those who had no formal education had the highest average daily intake in both protein and calorie i.e. 36.52 and 1236.77 respectively. This could be due to the fact that they do not really know much on nutrition, so that they just feed their children until they feel they have had enough. The parents that had secondary school education have the least, which can be linked to the struggling nature of their jobs i.e. they constitute the low cadre staff, do not see themselves as illiterates and yet they are not fully amongst the educated, so they take up jobs like cleaners, typists, sweepers. After which there is a rise again, in the daily intake of children whose mothers are known to have had higher school opportunities.

Daily intake of children based on their sexes

The result above reveals that the fewer male children consumed more than the female children on the average. It could be seen that the male children are more active at this age and require a lot more than the female children. It could also be said that mothers or parents generally tend to give more food to the male children due to their beliefs and culture.

Results of regression

The double log model has been chosen as the lead equation. In the double log model, its R- square is relatively high, when compared to other forms, showing that 80 percent of the variation in calorie intake was explained by the variable. Protein intake is positively related to the calorie intake. This is due to the fact that the more of calorie consumed is as a result of the protein level consumed. The age of the child has been shown to be negatively related to the calorie intake of the child. As the child grows, the level of calorie reduces. Educational status of mother is also negatively related. They move in opposite directions. As the mother becomes more knowledgeable, the level of Kcal drops. This could be due to the fact that she does not overfeed the child but due to the fact that they get too busy with their work, giving lesser attention to their wards.

The constant value (1.81) from the table indicates that whatever the case, the child would consume a level of calorie that is equal to 1.81 kcal.

The Elasticity shows the change in the level of kcal consumed, as a result of 1 unit change in the level of protein intake, age of child, educational level of mothers and educational level of child. In this lead equation (double log), it has been shown that the elasticity of Y with respect to X_1---- X_4 is the constant b_1----------b_4.

Therefore, 1 unit change in the protein intake of the child will bring about a 0.828 change (increase) in the level of calorie consumed. It is less than unitary (E<1) i.e this change is inelastic.

A change in the level of education of the mother will certainly change the level of calorie intake of the child by 0.0853 in the opposite direction, showing that it is an inelastic change.

Conclusion

The educational status of the mothers contributed significantly to the child's level of protein and calorie intake. The result revealed that 9.5% of the mothers had no formal education, 19.1% had primary school education while 2.4% percent of this total did not complete it. 34.3% had secondary school education, 11.9% of which did not complete while 38.1% of the mothers had their tertiary education. Results also revealed that children in the first group had sufficiency in protein intake and just 17.55% deficiency in their level of calorie; this could be due to the act that these mothers are illiterate and just feed their children. 2.4 percent of mothers were below the age of 20 years, 31% between ages 20 and 29, while mothers that fell between ages 30 and 39 accounted for the majority (64.2%) while 2.4% were found to be between 40 and 49.

Females accounted for 56.7% of the total children used in this study while 43.1% were boys. The results of the regression revealed that the double log function was found to be the best. The protein intake was found to be positively related to the calorie intake. Educational status of the mother was found to be negatively related to the calorie intake in the children.

The study has shown that a protein and calorie deficiency is still very much present in Nigeria. Children are very much underfed and there is still deficiency in the level of protein and calorie intake, according to WHO Standards. This emphasizes the fact that our children still need more nutrition.

Recommendations

There are several recommendations that can be made in relation to children's nutritional intake as well as the mothers' knowledge and exposure.

- Programmes on the nutritional needs of a child, should be organized for mothers and ensure that they fully participate in such.
- Feeding in schools can also be introduced so that the level of protein intake would be improved upon as well as encourage schooling amongst children.
- Establishment of nutrition centers should be embarked upon by the Government.
- Mothers should be enlightened on the use of locally produced crops for dishes as good substitutes for nutrients in children.
- Mothers should be encouraged to have vegetable gardens behind their houses, making it cheaper and more easily accessible.

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APPENDIX

Table 1: Socio-economic characteristics of Mothers

Variable	Frequency	Percentage
Age		
20	1	2.4
20-29	13	31
30-39	27	64.2
40-49	1	2.4
50 and above	-	-
Total	42	100
Level of education		
No formal education	4	9.5
Primary uncompleted	1	2.4
Secondary uncompleted	5	11.9
Primary completed	7	16.7
Secondary completed	9	21.4
Tertiary	16	38.1
Marital status		
Married	37	88.1
Separated	4	9.5
Divorced	-	-
Widow	1	2.4
Mothers occupation		
Unemployed	1	2.4
Schooling	1	2.4
Trader	18	42.8
Teacher	9	21.4
Salary earner	7	16.7
Self employed	6	14.3
Family size		
2-4	14	33.3
5-7	21	50
8-10	6	14.3
11-13	-	-
14-15	1	2.4
Income group		
0-999	6	15
1000-1999	17	42.5
2000-2999	9	22.5
3000-3999	4	10.0
4000 and over	4	10.0

Source: Field Survey

Table 2: Socio-economic characteristics of Children

Variable	Frequency	Percentage
Age		
0-11 months	10	13.33
12-23 months	11	14.67
24-35 months	8	10.67
36-47 months	15	20.0
48-59 months	14	18.67
60-71 months	14	18.67
72-83 months	3	4.0
Sex		
Male	28	43.1
Female	37	56.9
Class		
Play group/Daycare	2	3.1
Home	22	33.8
Nursery 1	20	30.8
Nursery 2	13	20.0
Nursery 3	8	12.3

Source: Field Survey

Table 3: Relationship between Calorie and Protein intake of children

Calorie class	Frequency	Calorie per pupil (KCAL)	Protein per pupil (gm)
0-499	2	289.49	10.45
500-99	24	800.42	24.0
1000-1499	28	1208.10	36.10
1500-1499	10	1636.85	49.80
All	65	1081.14	32.55

Source: Author's Computation

Table 4: Effect of the occupational status of mothers on the daily intake of children

Mothers occupation	Numbers of observations	Numbers of observation		Percentage Met (%)	
		Calorie (Lcal)	Protein (g)	Calorie (Lcal)	Protein (g)
Unemployed	3	1143.78	30.0	76.25	89.23
Salary earners	13	877.01	27.52	58.47	81.86
Teachers	14	1278.73	39.27	45.25	116.81
Traders	26	1077.93	33.0	71.86	98.16
Self employed	9	1057.01	28.87	70.47	85.87
		1500*	33.62*		
All	65	1081.14	32.54	72.08	96.80

Source: Author's Computation

Table 5: Effect of the educational status of mothers on the daily intake of children

Educational level	Numbers of observations	Numbers of observation		Percentage Met (%)	
		Calorie (Lcal)	Protein (g)	Calorie (Lcal)	Protein (g)

None	5	1236.77	36.52	82.45	108.63
Primary	6	1163.79	30.19	77.59	89.80
Secondary	25	952.59	29.69	63.51	88.31
Tertiary	29	1148.02	34.83	76.53	103.60
All	65	1081.14	32.54	72.08	96.80

Source: Author's Computation

Table 6: Daily intake of children based on their sexes

Sex	Numbers of observations	Numbers of observation		Percentage Met (%)	
		Calorie (Lcal)	Protein (g)	Calorie (Lcal)	Protein (g)
Female	37	1076.01	32.09	71.73	95.45
Male	28	1087.92	33.17	72.52	98.66
All	65	1081.14	32.55	72.08	96.8

Source: Author's Computation

Table 7: Relationship between the ages of children and their daily intake

Age group	Numbers of observations	Numbers of observation		Percentage Met (%)	
		Calorie (Lcal)	Protein (g)	Calorie (Lcal)	Protein (g)
1-3 years	30	1004.20 1300*	 29.40*	77.25	102.07
4-6 years	35	1147.68 1700*	34.73 38.10*	67.47	91.15
All	65	1081.14	32.55	72.08	96.8

Source: Author's Computation

Regression coefficients and related statistics of multiple models

	(B) Constant	X_1	X_2	X_3	X_4	R^2	Std error	F. Stat
Linear	357 (2.99)	24.6* (12.85)	-10.9 (-0.45)	-32.3 (-1.27)	21.7 (0.70)	0.744	188.9	43.59
Exponential	2.64 (37.40)	0.0113* (10.03)	0.0099 (0.74)	-0.111 (-0.01)	-0.0001	0.649	0.1116	27.75
Double log **	1.81 (20.76)	0.828* (14.46)	-0.0067 (0.10)	-0.0853 (-1.31)	0.0368 (0.42)	0.800	0.08432	59.90
Semi log	-1207 (-6.21)	1626.1* (12.73)	-241.6 (-1.60)	-243.2 (-1.68)	277.9 (1.43)	0.746	199.1	44.08

** lead equation

- sig at 1%
- X_1 = protein intake X_2 = age of child X_3 = educational status of mother X_4 = class of child
- X_4 = class of child R^2 = coefficient of multiple determination β = Constant term.

Source: Author's Computation