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Knowledge about child nutrition among mothers of children with cerebral palsy

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ABSTRACT

Introduction: Nutrition and disability are intimately related. Both are global developmental priorities and for both the elimination of malnutrition with ensuring the health and well-being of children with disabilities can only be addressed by also tackling issues of poverty, stigma and discrimination toward a child with disability. **Objective:** To assess the knowledge of mothers about nutrition of their children with cerebral palsy (CP). **Materials and Methods:** This cross sectional descriptive study was conducted among 100 mother having children with cerebral palsy aged between 6 to 60 months. Face to face interviews were done to collect data using semi structured questionnaire containing both open ended and close ended questions. **Results:** Among the 100 children with cerebral palsy, 56% were boys and 44% were girls. Seventy seven percent of cases were underweight, while eighteen percent were within the normal weight and five percent were overweight and highest forty percent of them age in between 45 to 60 months of age. Among 100 mothers, seventy three percent in between 21 to 30 years of age and the rest of other above 30 years of age. Majority of the respondents (seventy five percent) are currently giving only normal diet including soft/mashed foods like infant's formula milk, dairy milk, Rice, Suji, infant's formula cereals etc. except homemade energy density foods to their children, while 19% are giving homemade energy density foods with complementary foods and the rest 6% are giving only breast milk. However among low literacy mothers, 100% of the children were underweight whereas it was 66% among high literacy mothers. Meanwhile, high literacy mothers had 18% normal weight child but low literacy mothers had no normal weight child. Duncan Multiple Comparison Test (DMRT) showed that except class 1-9, all mothers who passed at least SSC level have same nutritional knowledge. **Conclusion:** Study finding focuses low literacy mothers have less knowledge about food value of complementary foods. However, knowledge about nutrition among mothers with CP is directly related with education.

KEY WORDS: Knowledge, Child nutrition, Mothers of children, Cerebral palsy, DMRT.

Introduction

In Bangladesh, Cerebral Palsy (CP) is one of the common causes of childhood disability and poor nutritional status is often the commonest cause of early child mortality[1]. Their nutritional status depends on proper nutritional awareness, knowledge, and complementary feeding practice by the mothers[2]. Malnutrition is commonly considered as an important risk factor that can produce a negative influence on the prognosis of patients with Cerebral Palsy[3]. Research shows that there is a strong linkage between maternal education and children's health. Children born to educated women suffer less from malnutrition which manifests as underweight, wasting and stunting in children[4].

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Specific Objectives

i. To evaluate the knowledge of mothers about nutrition of children with CP.
ii. To assess the feeding practices.

iii. To assess the nutritional status of cerebral palsy patients.

Materials & Methods

Mothers who attended at paediatric unit of Centre for Rehabilitation of the Paralysed (CRP), Mirpur during the period of March 2013 to June 2013 were included in this study. Purposive sampling technique was used to collect data on the aspect of mothers having children with cerebral palsy. Mothers were given a semi-structured questionnaire and their responses were recorded. Data were compiled and analysis was done by using SPSS for windows version 16.0. Data collection tools were weighing scale, infantometer, stadiometer, measuring tape, scale and calculator. Height was measured in standing position without shoes, using a wall mounted height tape. Weight was measured when the subject wore light indoor clothes, without shoes and empty pockets.

To assess the knowledge on complementary food values mothers in which 10 different questions were asked to all mothers and their answers were evaluated instantly by the trained data collectors. They gave maximum 10 and minimum 0 marks for each question depending on the correct or incorrect respectively. The total accumulated marks obtained from 10 questions were calculated for each mother and this total marks were regarded as score. Finally, Z score, which is a standardized value, was computed using the following formula:

$$Z - score = \frac{Score - mean(Score)}{S.D.(Score)}$$

Body mass index (BMI) was calculated as weight in kilograms divided by height in meter square and 100 subjects were stratified into normal weight (BMI 18-24.9 kg/m^2), underweight (< BMI 18 kg/m^2) and overweight (BMI 25-29.9 kg/m^2).

Results

An exploratory data analysis was conducted among 100 mothers to have a preliminary idea about the trends of data. Results are shown in Table-1 to 4. For the children with cerebral palsy, most of them belonged to the age 6 – 44 months were 62% (n=62) and rest of were 38% (n=38) belonged to the age 45-60 months. Among the children with cerebral palsy around 56% (n=56) were boys and 44% (n=44) were girls (Table-1). Out of the 100 participants, most of the respondents were at the age of 30 years or below and that was about 73% (n=73). Educational status of mothers showed that 25% (n=25) mothers completed master degree, 20% (n=20) completed graduation degree, 23% (n=23) completed HSC degree, 21% (n=21) completed SSC degree and 11% (n=11) completed class1-9 (Table-2). Majority of the respondents 75% (n=75) were giving only normal diet foods without homemade energy density foods to their children at the time of survey, while 19% (n=19) were given homemade energy density foods with complementary foods and the rest 6% (n=6) were given only breast feeding. About 36% (n=36) of the participating mothers started complementary feed at the age of 6 months, while 34% (n=34) started below 6 months of age. Meanwhile, only 14% (n=14) started in 7 to 12 months of age and 16% (n=16) started above 12 months of age (Table-3). Moreover, highest 43% (n=43) of the respondents were given fruits, khichuri and vegetables to their child with cerebral palsy as complementary feed, while 31% (n=31) of them were given rice, suji and infant formula cereals and 18% (n=18) of them chose to give pulses (dal), meat, fish and egg, 7% (n=7) of them were given infant formula milk as well as dairy milk and only 1% (n=1) was provided all kinds of foods (Table-4).

Table-1: Shows Age (Children) distribution among boys and girls

Age (Children)	N	%	Sex	N	%
6-44 months	62	62	Boys	59	59
45-60 months	38	38	Girls	41	41

Table-2: Shows age of mother and their educational status:

Age (Mother)	N	%
≤30 years	73	73
≥31 years	27	27
Educational Status (Mother)		
Class 1-5	3	3
Class 6-9	8	8
SSC	21	21
HSC	23	23
Bachelor	20	20
Master	25	25

Table-3: Shows Types of feeding and feeding practices of Mother

Types of Feeding	N	%	Feeding Practice	N	%
Solid	10	10	Breast Feeding	6	6
Semi Solid	50	50	Homemade energy density foods with Complementary food	19	19
Liquid	21	21	Normal Diet (Soft/mashed)	75	75
All kinds of food	19	19			

Table-4: Shows types of complementary Foods and Complementary Feeding starting time

Types of Complementary Foods	N	%	Complementary Feeding Starting Time	N	%
Fruits, Khichuri and Vegetables	43	43	Below 6 months	34	34
Rice, Suji and infant formula cereals	31	31	6 months	36	36
Infant Formula Milk and dairy Milk	7	7	7 – 12 months	14	14
All kinds of Food	1	1	Above 12 months	16	16
Pulse (Dal), Meat, Fish and Egg	18	18			

N=Participants, %=Percentage

This study shows that highest 77% (n=77) children with cerebral palsy were underweight, whereas only 18% (n=18) have normal weight and 5 % (n=5) are overweight. Among them highest 35% (n=35) children with cerebral palsy are underweight in the age group of 45 to 60 months (Table – 5). Mean weight of the children of cerebral palsy is 12.78 (± 3.93) kg and mean BMI is 16.20 (± 4.27). From data analysis, it was found that higher educated mothers had lower percentage of underweight children. Among the low literacy mothers 11% (n=11) children are underweight, whereas for high literacy mothers

66% (n=66) out of 89% (n=89) of the children are underweight. Moreover, all children with cerebral palsy of low literacy mothers are underweight or malnourished which gives us a reflection of an association between maternal education and nutritional knowledge. In addition among the high literacy mothers, 5% (n=5) children are overweight.

Table 5: Correlation of the respondents by child Age with BMI and Mother Literacy (N= 100)

	Body Mass Index(BMI)			
	Underweight %(n)	**Normal Weight %(n)**	**Overweight %(n)**	Total %(n)
Age (Months)				
6-18	9 (9)	4 (4)	2 (2)	15 (15)
19-31	14 (14)	4 (4)	1 (1)	19 (19)
32-44	23 (23)	1 (1)	2 (2)	26 (26)
45-60	35 (35)	4 (4)	1 (1)	40 (40)
Mother Education Level				
Low literacy (Class 1-9)	11 (11)	-	0 (0)	11 (11)
High Literacy	66 (66)	18 (18)	5 (5)	89 (89)

n=Participants, %=Percentage

To assess the knowledge on complementary food values, total accumulated marks obtained from 10 questions were calculated for each mother and this total marks were regarded as score. Finally, Z score, which is a standardized value, was computed for better understanding of score.

Our main research question is whether the knowledge of mother on child nutrition varies among different factors and Z score is the measure of nutritional knowledge among mothers. We believe that education is one of the important factors and Z score varies in different educational levels. Among 100 participants, low literacy mothers (class1-9) showed less knowledge about food value of each item of complementary foods, whereas high literacy mothers who passed at least SSC level were able to answer correctly about food value of complementary foods and their scores were much better than low literacy mothers (Table 6).

Table 6: Level of mother's knowledge about nutritional value in Complementary foods

Educational Status	Total Number of Mothers	Average of Z Score
Class 1-5	3	-2.33
Class 6-9	8	-2.33
SSC	21	0.36
HSC	23	0.39
Bachelor	20	0.45
Masters	25	-0.01

Table data reflected the above believe (Table 6). We formulated a hypothesis. So our hypothesis may be formulated as follows:

Since education level is a multivalued attribute, we have to use F statistic to test this hypothesis and test results presented below (Table 7):

$$H_0: Z\ score\ of\ mother_6\ are\ equal\ for\ all\ eduacation\ level$$

Table 7: ANOVA

Z SCORE	Sum of Squares	df	Mean Square	F	Significant
Between Groups	70.059	5	14.012	46.876	.000
Within Groups	28.098	94	.299		
Total	98.157	99			

ANOVA table shows that test statistic F value is too high and its zero p-value indicates education groups are not equal in terms of Z score. That is, mother's knowledge on child nutrition among different education level varies significantly and the certainty of this statement is true with 100% confidence.

Duncan multiple comparison test (DMRT) were performed and it shows that except class 1-9 all education levels are equal (Table 8). That is, mothers who passed at least SSC level have same nutritional knowledge.

Table 8: Duncan Multiple Range Test (DMRT) for Z score

Education level	N	Groups(α = 0.05)	
		1	2
Class 1-5	3	-2.3300	
Class 6-9	8	-2.3300	
Masters	25		-0.0140
S.S.C	21		0.3638
H.S.C	23		0.3880
Bachelor	20		0.4525
Significant		1.000	0.095

Discussion

Higher percentage of educated mothers had lower percentage of underweight child. Children with cerebral palsy are more vulnerable to suffer from nutritional deficiencies. Among the low literacy mothers, all of the children (100%) are underweight. In case of high literacy mothers, this percentage is

reduced to two thirds (66%) (n=66). Nutritionally educated mothers can bring up their children in a healthier way[5]. Among the mother of children with cerebral palsy, it was found that educational status below secondary was 11% (n=11) but among them about 100% mother have underweight baby. However in general, mother education has significant impact on the nutritional status of the children with cerebral palsy that was about 66% (n=66). This findings support with the studies in various countries like Bolivia and Kenya[5]. They found that maternal education was associated with nutrition outcomes among children with CP. Moreover, the percentage of normal weight child is also increased according to higher level of mother's education. We also found that except class 1-9, nutritional knowledge of mother are same in all education levels i.e. mothers who passed at least SSC level have same nutritional knowledge.

Limitation of the study

Because of retrospective nature of this study, it was not possible to divide mothers into two groups.

Conclusion

Important finding is that mother's education is associated with the nutritional status of the children with cerebral palsy. More educated mothers had lower percentage of underweight child with cerebral palsy than low literacy mothers.

Recommendation

Further multicenter and different geographical region with larger sample size is recommended to assess knowledge about nutritional status as well as feeding practice among mothers of children with cerebral palsy about child nutrition.

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Conflict of Interest: None

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