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लोक कल्याणकारी ट्रस्ट, वाराणसी

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Dietary Pattern and Clinical Nutritional Survey of the Children Suffering from Encephalitis (With special reference to Muzaffarpur district)

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Abstract:

In the State of Bihar, particularly the Muzaffarpur district and Motihari, has been reporting cases of acute encephalitis among children since 1995. In 2019, near about 120 deaths in the district. Encephalitis is a dangerous and mysterious disease that even the researchers have not been able to find out the exact reason for it. Depending on the symptoms, the disease is still being treated and every year, in the summer. Several studies have shown the relationship between unhygienic condition and malnutrition with encephalitis. Therefore, keeping in mind above said, the present study has been done with the aim of finding the dietary pattern and nutritional status of the children. A total of 120 children (Age group – 6 -12 years) suffering from encephalitis were selected (from SKMCH, Muzaffarpur) for study through systematically random sampling. Data were collected from primary and secondary sources. Information about socio-economic details and dietary intake (using both 24-hour recall & food frequency method) were collected. It was found that near about three fourth (74.17%) of the respondents resident's area was rural. Majority of them not even meeting 75 percent of the RDA. Study also found that 24.17 percent of the children's general appearance is sunken or hollow cheeks; it indicates that low consumption of protein, energy & fluid. It was found that the only 30 percent of the children have normal hair, low consumption of protein; biotin & vitamin C rich food are the main reason for the hair problems. Overall it is concluded that dietary pattern of such children was not balanced and there is urgent need to special attention for child nutrition and health condition.

Keyword : Encephalitis, Consumption, Dietary Pattern, RDA, Appearance.

Background:

Encephalitis is such a serious problem that occurs every year in Bihar during the summer time, and thousands of children die due to this disease, many of the children who survive from this disease are now facing major or minor health problems. The encephalitis was clinically diagnosed in India for the first time in 1955 in the southern State of Madras/Tamil Nadu (Webb JK, Perreira SM, 1956). Acute Encephalitis Syndrome includes illness caused by many infectious as well as non infectious causes and most are considered as viral encephalitis (Jmor et al., 2008). JE has been considered as leading cause of Acute Encephalitis Syndrome in India (Gendelman and Persidsky, 2005; Das, 2005). In the State of Bihar, particularly the Muzaffarpur district and Motihari, has been reporting cases of acute encephalitis among children since 1995, in 2019, near about 120 deaths in the district. The age of the hospitalized cases ranged from six months to 16 yr. There have been more than ten thousands cases of Acute Encephalitis Syndrome in the last 10 years in Bihar. The exact cause of this disease is not yet known. Many research has been

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done on this disease, but no research has been able to find out the main cause of this disease, the result of which is that every year children are suffering from encephalitis and dying in the absence of the right medicine or treatment. A study has also postulated a relationship between consumption of litchi and acute encephalitis (Shrivastava A. et al. 2014). Encephalitis occurs with multiple symptoms, it's harder to detect some of these symptoms in infants, but important signs to look for include- Vomiting, a full or bulging soft spot (fontanel), crying that doesn't stop or that seems worse when an infant is picked up or handled, body stiffness. Depending on the symptoms, the disease is still being treated and every year, in the summer, children from different towns of Bihar especially in Muzaffarpur town face trouble from this disease. Several studies have shown the relationship between unhygienic condition and malnutrition with encephalitis. Study found that most children suffering from encephalitis had poor nutritional status and living in unhygienic condition. Therefore, keeping in mind above said, the present study has been done with the aim of finding the dietary pattern and clinical nutritional status of the children suffering from the encephalitis.

Methodology:

120 children (Age group 6 -12 years) suffering from encephalitis were selected (from SKMCH, Muzaffarpur) for study through systematically random sampling. Data were collected through both primary and secondary sources. Primary data were collected through interview schedule and observation method. Due to the under age of the respondents, information about the dietary pattern of the children was obtained from their parents or his/her guardian. Information about socio-economic details and dietary intake (using both 24-hour recall & food frequency method) were collected. Sample of local household dishes & utensils (spoons, cup, bowls and glasses) were used for exact amount of foods consumed by them. Cooked intake was converted to its raw equivalents. Nutrients were calculated through food composition table from the standard of ICMR & NIN (2010). The results were compared with RDA given by ICMR (2010).

Results & Discussion:

FIGURE-1
DISTRIBUTION OF RESPONDENTS ACCORDING TO THE SOCIO-DEMOGRAPHIC CHARACTERISTICS.

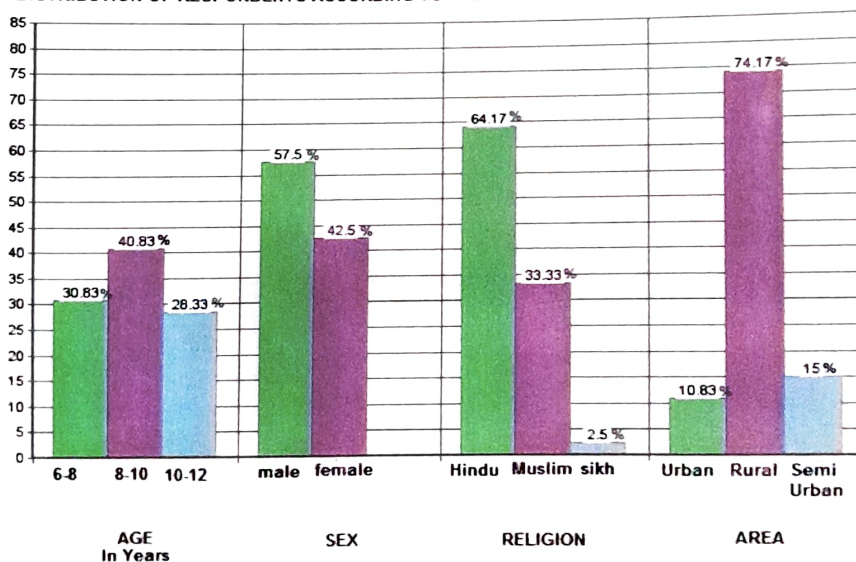


Figure-1 shows the distribution of respondents according to their socio-demographic characteristics. According to the data majority of the respondents 40.83 % were 6-8 years old, 30.83 % were 8-10 years while rest of them (28.33 %) were 10-12 years old. Out of total 120

respondents. female respondents were dominant with 42.50 % while male participants were 57.50%. it is also clear from the figure that more than half (64.17%) of respondents were Hindu while 33.33% and 2.50% of the respondents were Muslim and Sikh respectively. It is remarkable that near about three fourth (74.17%) of the respondents resident's area was rural while 15% of them were living in semi urban areas; few of them (10.83%) were living in urban areas.

Table-1
Pattern of consumption of cereals & grains, roots and tubers, legumes and pulses and oil seeds.

oil seeds.						
Sr. N.	Variables	Respondents				
		Daily	2-3 times a week	Monthly	Occasions/seasonal	Never
		%	%	%	%	%
Cereals & grains						
1	Rice	79.17	15.83	02.50	01.67	00.83
2	Wheat	84.17	15.00	00.83	-	-
3	Maize	-	-	-	94.17	05.83
Roots & tubers						
1	Onion	85.00	15.00	-	-	-
2	Garlic	75.83	23.33	-	-	00.83
3	Amala	-	-	-	99.17	00.83
4	Colocasia	-	-	10.83	83.33	05.83
5	Potato	93.33	14.17	-	00.83	-
6	Beet root	-	-	-	97.50	02.50
7	Carrot	-	-	-	98.33	01.67
8	Radish	-	-	-	100.00	-
Legumes, pulses & oil seeds						
1	Moong bean	00.83	06.67	09.17	80.83	02.50
2	Urd bean	-	02.50	22.50	70.83	04.17
3	Lentil (masoor)	73.33	10.83	07.50	08.33	-
4	Rajmash	-	-	17.50	81.67	00.83
5	Chick pea (chana)	-	05.83	67.50	26.67	-
6	Sem	-	-	00.83	95.00	04.17
7	Cajanusinus indicus (arhar)	50.83	40.00	05.83	03.33	-
8	Pisum arvense (matar)	-	09.17	75.00	15.83	-
9	Glycinemax (soyabean)	-	04.17	85.00	09.17	01.67

Above table-1 presented the pattern of consumption of cereals & grains, roots and tubers, legumes and oil seeds of the respondents suffering from the encephalitis.

Cereals & grains: According to the table data Rice (79.17%) and wheat (84.17%) are consumed daily or 2-3 times a week (rice 15.83% & wheat 15.00%). Rice and wheat (roti) are traditional food of Bihar so it was found that the consumption of such type of cereal are in large scale, while majority of the respondents (94.17%) consumed maize seasonally or occasions.

Roots & tuber: Table also gives the consumption pattern of roots & tuber. From the table, it is obvious that on a daily basis, onion (85.00%), garlic (75.83%) & potato (93.33%) were the most consumed and also most of the respondents were consumed it 2-3 times in a week. majority of the respondents reported that they consumed amala, colocasia, beet root, carrot and radish on seasonally/occasions.

Legumes, Pulses & Oil seeds: As shown in table respondents consumed moong bean 0.83% daily, 6.67% 2-3 times a week, 23.5% monthly and 2.5% never consumed it, while more

than half of the respondents consumed moong bean on occasions. It is clear from the data that more than half (50.83%) of the respondents consumed *Cajanus indicus* (Arhar or tuar) on daily basis. Consumption of Lentil (Masoor) was found Second large consumed pulses. Most of the respondents (81.67%) consumed rajmah and sem95% on occasions or seasonally. More than three fourth (85%) of the respondents reported that they consumed soyabean on monthly basis.

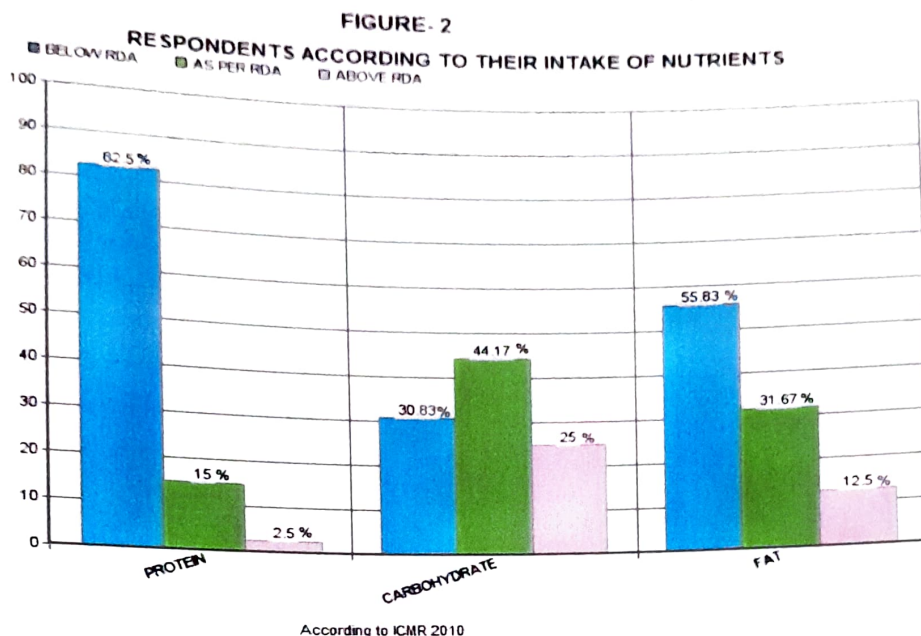


Figure-2 represents the data on intake of nutrients of the children. The description is as follows-*Protein intake*: -82.5 percent among the respondents were consuming less than the recommended value, while 2.5 percent respondents were consuming more the recommended value, only 15% of the respondents were consuming as per RDA. The amino acids that make up protein are the building blocks of the children. It's important to get enough protein throughout physical development.

Carbohydrate intake: -Figure also revealed that majority of the (44.17%) respondents consumed as per RDA, while 30.83% of them consuming below RDA, 25% of the respondents consumed carbohydrate above RDA. Carbohydrates are the main source of energy in children's diet. They are broken down into simple sugars like glucose, which pass easily across the placenta and provide energy to support growing body during physical and mental development.

Fat intake: -More than half (55.83%) of the respondents consumed below RDA, while only 31.67% percent of the respondents were consuming as per RDA. According to data 12% of the respondents consumed fat above RDA.

Table-2
Clinical Nutritional Survey Chart of Respondents.

Sites	Sign	Frequency	Percentage
General appearance	Loss of subcutaneous fat	53	44.17
	Sunken or hollow cheeks	29	24.17
	Normal	38	31.67
		16	13.33
Hair	Easily, plucked hair, alopecia	59	49.17
	Dry, brittle hair	09	07.50
	Corkscrew hair	36	30.00
	Normal		

Nails	Spooning	13	10.83
	Transverse lines	05	04.17
	Normal	102	85.00
Skin	Dry and scaly flaky paint	51	42.50
	Nasolabial seborrhea	03	02.50
	Psoriasis from rash	13	10.83
	Pallor	01	00.83
	Easy bruising	03	02.50
	Hyperpigmentation	02	01.67
		47	39.17
	Normal	01	00.83
Eyes	Night blindness	03	02.50
	Photophobia, xerosis, conjunctival inflammation	02	01.67
	Retinal fields defect	114	95.00
	Normal	01	00.83
Mouth	Glossitis	34	28.33
	Bleeding gums	01	00.83
	Angular stomatitis	01	00.83
	Decreased taste or smell	01	00.83
	Tongue fissuring	01	00.83
	Tongue atrophy	-	-
	Loss of tooth enamel	03	02.50
	Normal	79	65.83
Neck	Goitre	01	00.83
	Parotid enlargement	01	00.83
	Normal	118	98.33
Heart	High output failure	01	00.83
	Normal	119	99.17
Chest	Respiratory muscle weakness	11	09.17
	Normal	109	90.83

Table-2, shows the percentage distribution of the nutritional deficiency signs amongst children. The description is as follows-

General Appearance: 24.17 percent of the respondents appeared sunken or hollow cheeks while 31.67 percent appeared normal. Maximum 44.17 percent of the respondents appeared loss of subcutaneous fat.

Hair: 30 percent of the respondents had normal hair. However, 7.5 percent had corkscrew hair or hair without luster. Near about half (49.17 percent) of the respondents had dry and brittle hair and 13.33 percent had plucked hair.

Nails: 10.83 percent of the respondents had spooning nails while maximum 85 percent of the respondents had normal nails. Minimum 4.17 percent of the respondents had transverse lines nails.

Skin Appearance: The skin appearance 39.17 percent of the respondents were normal. 10.83 percent of the respondents had psoriasis from rash skin and only 2.5 percent had easy

bruising. 0.83 percent had pallor skin. 1.67 percent had hyper pigmentation and maximum 42.5 percent had dry and scaly flaky paint skin which could be a result of the stringent climatic considerations.

Eyes: 95 percent of the respondents had healthy eyes with no discharge and only 0.83 percent had night blindness. 1.67 percent of them were suffering from retinal field defect and 2.5 percent xerosis also.

Mouth: 65.83 percent of the respondents exhibited normal condition of mouth and 0.83 percent and 28.33 percent of them had angular stomatitis and bleeding gums respectively. Minor 0.83 percent of the children had golssitis, while also a minor fraction 0.83 percent had tongue fissuring and also 0.83 percent had decreased taste or smell indicating lack of mouth care awareness.

Neck: Majority of the respondents (98.33 percent) had normal neck. However, 0.83 percent had goitre and similarly only 0.83 percent of the respondents had parotid enlargement neck.

Heart: Almost all the respondents had normal hearts only one respondents suffered from high output failure heart.

Chest: Maximum number of the respondents (90.83 percent) had normal chest only 9.17 percent had respiratory muscle weakness.

Conclusion:

Present study indicates that the most of the children were not consuming legumes, pulses & oil seeds regularly or daily basis so it is the major problem of dietary pattern, nutrition and health. The food consumption pattern indicated that most of the children consumed rice & wheat at a very high frequency. On both the QFFQ and 24 hr recall rice and bread (roti) are on top of the list. It is also concluded that majority of them not even meeting 75 percent of the RDA for nutrient intake. The data indicate that 24.17 percent of the children's general appearance is sunken or hollow cheeks; it indicates that low consumption of protein, energy & fluid. It was found that the only 30 percent of the children have normal hair, low consumption of protein; biotin & vitamin C rich food are the main reason for the hair problems. More than half of the respondents have skin problems; it shows the inadequate dietary pattern such as low consumption of vitamin A, Zink, niacin, vitamin K & C and fatty acid rich food.

Finally it is concluded that the dietary pattern of such children of Muzaffarpur district is inadequate and also have poor nutritional status.

Recommendation:

1. Under nutrition is the major problem of the children who were suffering from encephalitis. Hence Government should provide necessary nutrients through health programmes.
2. Sustainable nutrition education & promotion programmes should be developed to raise public knowledge of the importance of good nutrition in children.

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