



A Preliminary Survey Of Nutritional Assessment And Quality Of Life In Children With Cerebral Palsy In Udaipur

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Abstract:

Introduction: Assessment of quality of life in children with Cerebral Palsy needs to be measure by CP-specific questionnaire.

Objectives: To describe the nutritional status in children (aged 5-12 years) and adolescents (aged 13-18 years) with cerebral palsy

Materials And Methods: The present cross-sectional study was conducted in the department of pediatrics, Geetanjali Medical College and Hospital (GMCH) The study population comprised of 85 children (aged 5-12 years) and adolescents (aged 13-18 years) diagnosed with cerebral palsy (CP) seeking treatment at GMCH, Narayan Seva Sansthan and Prayas School, Udaipur, Rajasthan.

Results: The most common type of CP in the present study was spastic quadriplegia followed by spastic diplegia. Children with CP aged 5-7 years and their care-givers have lower quality of life (QOL) compared to their older counterparts. Children with CP aged 5-7 years and their parents/guardian report lower QOL in speech and communication, fatigue and school activity domains. Adolescents with CP have lower QOL in the pain/hurt, speech and communication and school domains, while their caregivers report lower QOL in the fatigue, pain/hurt and movement and balance domains. Adolescents with CP have lower QOL in school functioning domain. Majority of children with CP have malnutrition.

Conclusion: every child with CP must be given a good supportive care, emotional support, proper physiotherapy and good nutrition. They should be followed up regularly to avoid severe sequelae of the disease, so that they can have a better quality of life.

Keywords: Cerebral Palsy, Quality Of Life, Nutritional Status, Quadriplegia, Monoplegia

Introduction:

Cerebral palsy (CP) has been described as a group of disorders of the development of movement and posture that are attributed to non progressive disturbances that occurred in the developing fetal or infant brain. The motor disorders of cerebral palsy are often accompanied by disturbances of behavior, seizure disorder, sensation, cognition, communication, perception.¹ In the developing world, the prevalence of cerebral palsy is not well

established but estimates are 1.5–5.6 cases per 1000 live births.² The prevalence of this disorder among preterm and very preterm infants is substantially higher.^{3,4} The incidence is higher in males than in females (ratio of 1.33:1). Lower socioeconomic status may be a risk factor for cerebral palsy.⁵

CP is divided into several syndromes that vary by the type of neurologic involvement, neuropathology, and etiology.

Aims And Objectives:

1. To add to Indian clinic based data on the nutritional problems and quality of life of children and adolescent with CP.

2. To describe the nutritional status in children (aged 5-12 years) and adolescents (aged 13-18 years) with cerebral palsy.

Materials And Methods:

The present cross-sectional study was conducted in the department of pediatrics, Geetanjali Medical College and Hospital (GMCH)

The study population comprised of 85 purposively selected children (aged 5-12 years) and adolescents (aged 13-18 years) diagnosed with cerebral palsy (CP) seeking treatment at GMCH, Narayan Seva Sansthan and Prayas School, Udaipur, Rajasthan.

The socio-demographic and clinical details were recorded on a pre-designed proforma. Nutritional status was assessed using the height, weight, body mass index, mid arm, head and chest circumferences, general physical examination, and symptoms/signs of vitamin A and D deficiencies.

The Gross Motor Classification System (GMFCS)⁶ was used to rate the motor abilities of the patients with CP. For the evaluation of quality of life (QOL) of patient with CP, the PedsQL Generic Module 4.0 (Hindi version) was used. Additionally, adolescent patients with CP were evaluated using Peds QL 3.0 (Hindi version). Written permission was obtained for the use of PedsQL instruments. A brief description of the PedsQL 3.0 and Peds QL4.0 is given below.

Data analysis:

Data analysis was done using the Statistical Package for Social Sciences (SPSS) for windows, version 16. Continuous covariates were expressed as mean with standard deviation and compared between groups using the unpaired student's test. Discrete covariates were expressed as frequencies, compared using Chi-square test to determine correlation between variables. All statistical analysis were done at 95% confidence interval and $P < 0.05$ were considered as statistically significant.

Results And Observation:

In the present study there were 85 CP children, out of which 47 (55.3%) were males and 38(44.7%) were

females. There were maximum 23 males in the age group 5 to 7 years and maximum number of 13 females in age group between 5 to 7 and 8 to 12 years.(Table1)

In the present study mean quality of score in children with cerebral palsy aged between (5-7) years is calculated and shown in table2. In this table highest mean score were observed in children in performing eating activities and min in speech and communication with significant difference between two groups.(Table2)

Table 3 shows mean quality of score in children with cerebral palsy aged between (8-12) years in the present study. Highest mean scores were observed in children in performing eating activities and min in speech and communication.(Table 3)

In this study Mean quality of score in children with cerebral palsy aged between (13-18) years is calculated. Mean score was highest in children performing eating activities, least in the group of children experiencing pain and hurt.(Table 4)

Table 5 shows Mean physical score and psychosocial health summary in teens with cerebral palsy. Highest mean score was seen in psychosocial health (Table 5)

In this study mean psychosocial health summary score in teens with cerebral palsy is calculated. Highest scores were seen in children performing social functioning. (Table 6)

In present study relationship between and quality of life in children with cerebral palsy and type of cerebral palsy is shown. There is significant difference in mean score in different type of cerebral palsy. Highest score in spastic monoplegia and lowest score in mixed type of CP.(Table 7).

Discussion:

Cerebral palsy (CP) represents a group of pathologies due to a non-progressive lesion of the developing central nervous system in a child less than three years old that leads to neurological and neuromuscular anomalies. In the present study, most of the patients with CP were males in the age group of 5-7 years, who were living with their parents/guardian.

A male preponderance in the diagnosis of CP has been reported by previous researchers.^{7,8,9} However, Yamada and colleagues¹⁰ reported higher number of females with CP in their study The most common

type of CP in the present study was spastic quadriplegia followed by spastic diplegia. Majority of the patients with CP had intellectual sub normality, comorbidities (seizures, speech and visual deficits), and were categorized V in the gross motor classification system (GMFCS). These observations are in accordance with previous reports.^{11,12}

A recent study¹³ found that approximately 75% of children with CP were underweight and more than 40% had more than one risk factor for malnutrition. Majority of the patients with CP in our study had pallor, around 19% had features of vitamin A deficiency and 46% had vitamin D deficiency. The present study revealed that around 50% of patients with CP had malnutrition in terms of underweight, weight for height and height for age. Improper growth was observed more in quadriplegic/mixed CP than in monoplegic/hemiplegic type of CP. These findings were consistent with the study conducted by Hariprasad *et al*¹⁴

In the present study, children with CP aged 5-7 years and their care-givers reported significantly lower QOL compared to their older counterparts. Children with CP aged 5-7 years and their parents/guardian reported lowest QOL scores in speech and communication, fatigue and school activity domains. In children aged 8-12 years self-reported lower QOL scores in the pain/hurt, fatigue and speech and communication domains, while in care givers' report lower scores were in movement and balance and fatigue domains. Teens (aged 13-18 years) reported lower QOL scores in the pain/hurt, speech and communication and school domains. While their caregivers reported lower QOL scores in the fatigue, pain/hurt and movement and balance domains. Children with CP were found to require more energy to maintain ambulatory capacity compared with normal controls.¹⁵ Pain severity and fatigue is inversely related with school functioning.^{16,17} The findings of the present study

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indicate that besides a significant health related quality of life (HRQOL) impairment in physical functioning, children with CP, experience impairment in their perceptions of their emotional, social, and school functioning.

With regard to psychosocial health summary scores, teens with CP had significantly lower QOL in school functioning domain. Similar finding was reported by earlier researchers.¹⁸⁻²¹ Children with spastic quadriplegia and diplegia had significantly lower QOL in comparison to children with other types of CP. The finding of lower QOL in children with GMFCS level V is consistent with previous reports.

Conclusion:

Children with CP aged 5-7 years and their care-givers have lower quality of life (QOL) compared to their older counterparts. Children with CP aged 5-7 years and their parents/guardian report lower QOL in speech and communication, fatigue and school activity domains. In children aged 8-12 years self-reported lower QOL scores are in the pain/hurt, fatigue and speech and communication domains, while their care-givers' report lower scores in movement and balance and fatigue domains. Adolescents with CP have lower QOL in the pain/hurt, speech and communication and school domains, while their caregivers report lower QOL in the fatigue, pain/hurt and movement and balance domains. Adolescents with CP have lower QOL in school functioning domain. Majority of children with CP have malnutrition.

Hence every child with CP must be given a good supportive care, emotional support, proper physiotherapy and good nutrition. They should be followed up regularly to avoid severe sequelae of the disease, so that they can have a better quality of life.

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TABLE 1. Age wise distribution of the cerebral palsy children in the study population

AGE GROUP	TOTAL (%)	MALE (%)	FEMALE (%)	CHI SQUARE VALUE	P VALUE
5-7	36(42.35)	23 (48.94)	13 (34.21)	4.282	0.118
8-12	29 (34.12)	16 (34.04)	13 (34.21)		
13-18	20 (23.53)	8 (17.02)	12 (31.58)		
TOTAL	85 (100)	47 (55.3)	38 (44.7)		
MEAN AGE ± SD	9.28 ± 3.89	8.69 ± 3.63	10.01 ± 4.12	T VALUE = 1.569	0.120

TABLE 2. Mean quality of score in children with cerebral palsy aged between (5-7) years in the present study

AGE GROUP (N = 36) (5 – 7)YEARS	Child score		Parent score		T VALUE	P VALUE
	Mean	SD	Mean	SD		
DAILY ACTIVITY	69.2	14.6	61.0	14.3	2.41	0.019
SCHOOL	53.4	12.1	44.2	17.9	2.56	0.013
MOVEMENT AND BALANCE	67.1	16.7	75.1	14.5	2.17	0.033
PAIN AND HURT	57.2	12.7	58.5	2.7	0.60	0.550
FATIGUE	54.1	12.0	55.8	12.8	0.62	0.540
EATING ACTIVITIES	74.3	17.3	84.7	11.8	2.98	0.004
SPEECH AND COMMUNICATION	51.6	12.8	40.6	12.7	3.66	<0.001
F VALUE	14.61		51.68			
t VALUE	<0.001		<0.001			

TABLE 3. Mean quality of score in children with cerebral palsy aged between (8-12) years in the present study

AGE GROUP (N = 29) (8 – 12)YEARS	Child score		Parent score		T VALUE	P VALUE
	Mean	SD	Mean	SD		

DAILY ACTIVITY	63.9	12.4	56.9	11.8	2.202	0.032
SCHOOL	57.5	12.6	55.2	10.2	0.764	0.448
MOVEMENT AND BALANCE	65.2	14.1	54.5	11.1	3.211	0.002
PAIN AND HURT	50.3	12.7	59.8	12.5	2.871	0.006
FATIGUE	55.9	16.6	50.3	12.3	1.460	0.150
EATING ACTIVITIES	72.4	14.5	61.4	11.6	3.190	0.002
SPEECH AND COMMUNICATION	55.0	12.5	64.4	12.8	2.829	0.006
F VALUE	8.7		4.68			
t VALUE	<0.001		<0.001			

TABLE 4. Mean quality of score in children with cerebral palsy aged between (13-18) years in the present study

AGE GROUP (N = 20) (13 – 18)YEARS	Child score		Parent score		T VALUE	P VALUE
	Mean	SD	Mean	SD		
DAILY ACTIVITY	65.3	2.6	58.9	1.8	2.33	0.025
SCHOOL	58.1	2.9	59.4	2.8	2.19	0.034
MOVEMENT AND BALANCE	69.3	1.6	58.3	1.1	2.48	0.017
PAIN AND HURT	50.3	2.9	50.9	2.1	2.44	0.019
FATIGUE	59.4	2.4	50.0	2.5	2.45	0.019
EATING ACTIVITIES	70.3	1.9	65.5	1.9	1.36	0.180
SPEECH AND COMMUNICATION	56.9	2.8	58.8	2.9	0.48	0.634
F VALUE	3.84		5.49			
t VALUE	0.001		<0.001			

TABLE 5. Mean physical score and psychosocial health summary in teens with cerebral palsy

	TEEN SCORE (N = 20)		t VALUE	F VALUE
	MEAN	SD		
PHYSICAL FUNCTIONING	61.56	30.88	0.397	0.694
PSYCHOSOCIAL HEALTH SUMMARY SCORE	65.28	28.35		
TOTAL SCORE	66.42	29.61		

TABLE 6. Mean psychosocial health summary score in teens with cerebral palsy

PSYCHOSOCIAL HEALTH SUMMARY SCORE	TEEN SCORE (N = 20)	
	MEAN	SD
EMOTIONAL FUNCTIONING	72.5	2.92
SOCIAL FUNCTIONING	73.75	29.22
SCHOOL FUNCTIONING	49.6	27.89
F VALUE	4.60	
t VALUE	0.014	

TABLE 7. Relationship between and quality of life in children with cerebral palsy and type of cerebral palsy

CP TYPE	CHILD SCORE		PARENTS SCORE		t VALUE	P VALUE
	MEAN	SD	MEAN	SD		
DYSTONIC	66.80	21.20	61.60	21.65	0.384	0.711
SPASTIC DIAPLEGIA	53.93	11.89	57.07	17.84	1.197	0.242
SPASTIC HEMIPLEGIA	62.98	12.08	59.13	22.10	0.374	0.716
SPASTIC MONOPLLEGIA	79.9	11.23	64.50	11.82	1.889	0.108
SPASTIC PARAPLEGIA	68.18	22.16	62.86	7.62	0.454	0.666

SPASTIC QUADRIPLEGIA	45.20	14.48	50.73	18.59	1.574	0.119
SPASTIC TRIPLEGIA	54.44	11.89	50.78	11.23	0.686	0.502
MIXED	37.77	6.59	37.23	6.30	0.214	0.833
HYPOTNIC	58.05	11.78	54.76	12.87	0.788	0.490
F VALUE	9.85		2.68			
P value	<0.001		0.014			