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Correlation of Gross Motor Function With Quality of Life in Cerebral Palsy Children of Madhya Pradesh, India

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Abstract: ***Aim: To examine the quality of life according to their gross motor functional measure in children with Cerebral Palsy of Madhya Pradesh, India. Methodology: 27 subjects were selected randomly. Children with all types of cerebral palsy aged between 4-12 years at any level of motor function were included in study, out of which 25 subjects consent to participate in the study. Result: correlation is significant at the 0.05. Conclusion: Children with cerebral palsy who are more functionally dependent were found to have worse quality of life.***

Keywords: Cerebral Palsy, Gross Motor Function, Quality of Life

1. Introduction

Cerebral Palsy is term used to describe a broad spectrum of motor disability which is non- progressive and is caused by damage to the brain at or around birth. Although the damage is non progressive, the clinical picture changes as the nervous system develops and the child grows [1]. The term cerebral refers to the brain; palsy refers to the loss or impairment of motor function. Prevalence of C.P. is in the range of 1.5 to 2.5 per 1000 live births. While exact figures are unavailable in India, it can be safely estimated that the cumulative figures for living population at any given point may be staggering. Cerebral palsy is a condition with multiple etiologies in the antenatal, natal and in the postnatal periods. [2]Caregiver's perception of their child's need and of effort related to the daily care of their child are likely to have correct selection and success of the child's rehabilitation. [3]

This act has specifically mentioned the importance of legal guardian in the life of children with cerebral palsy implying that quality of life is affected and co-related the motor impairments of such children to the extent of its impact on quality of their life. This is the biggest reason and basis behind the topic of this study. This study intends to correlate the extent of impairment to its implications on the daily life of persons affected with it.

This study has selected children to find out how the quality of their lives is affected. The findings of this study will be helpful to further derive strategies for planning interventions to improve quality of life based on the extent of functional impairments in affected children.

2. Subjects and Methods

Using questionnaire method to examine the quality of life and observation for Gross Motor Function. The Tools included were Gross Motor Functional Classification System (GMFCS) and Quality of Life of Cerebral Palsy (CP-QOL).CP-QOL having 2 version (1) Parent proxy versions-for parents of children age 4-12years comprising 65 items. (2) Child self report version-for children aged 9-12 years comprising 53 items.

Levels of Gross Motor Functional Classification System:-
Level I - Walks without Limitations
Level II - Walks with Limitations
Level III - Walks Using a Hand-Held Mobility Device
Level IV - Self-Mobility with Limitations; May Use Powered Mobility
Level V - Transported in a Manual Wheelchair

27 subjects were selected randomly. Children with all types of cerebral palsy aged between 4-12 years at any level of motor function were included in study, out of which 25 subjects consent to participate in the study. Firstly the purpose of the study and questionnaire were explained to the parents of children with cerebral palsy. Informed written consents obtained from the parents. Then observation and assessment of the children with cerebral palsy was done and they were graded on the gross motor function measure. Then the parents were interviewed individually for filling the Quality of life of cerebral palsy (CP-QOL) questionnaire. Completely calm environment without any disturbance was ensured during the same. Privacy was ensured during the parental interviews.

3. Discussion

The purpose of this study is to evaluate the quality of life according to their gross motor functional level in children with cerebral palsy. In this study, quality of life (QOL) is moderately affected in the two third of the children with cerebral palsy. Higher QOL is affected in quadriplegic and diplegic cerebral palsy is expected as they have significant activity limitation and associated conditions like epilepsy, communication deficits and cognitive deficits.

The main finding of the study is that there is positive correlation r=0.05 between the Gross Motor Functional Classification System (GMFCS) and Quality of Life of Cerebral Palsy (CPQOL).These finding suggest that the

children having Level IV and Level V are more independent in carrying out basic activities of daily living, feel good about their social life and their emotion according to their parents report. Children with GMFCS Level I and Level II are not having good quality of life because they are considered to be independent ambulators with sufficient postural stability and motor control to perform age appropriate ADL activities without caregiver assistance. The remaining children having GMFCS Level III, the functional ability to ambulate with assistance but also may need some degree of assistance in daily activities. So that Level III GMFCS children have moderately affecting their quality of life.

Varni JW et al (2007) have reported that children with cerebral palsy and their carer's have impaired health related QOL.[4] [5] The degree of impairment of QOL correlated with the severity of the condition.[5] [6]Disabilities affect the children's independence significantly & consequently the lives of their caregivers.[7]Ring et al. (2007)[8]& Murrell (1999)[9] defined QOL as dynamic, multi-dimensional person-centered construct which includes an assessment of subjective well-being, determinants of which are age-specific, developmentally derived and experiential learning .Health and social outcomes in CP children depend on following 3 factors:[10] Schneider JW et al. (2001)[11] found lack of correlation between the Child Health Questionnaire (CHQ) and Wee-FIM. However health related QOL (HR-QOL) and function are different constructs that cannot be inferred from each other.

4. Results

The mean standard deviation of CPQOL questionnaire is 51.57 +- 2.5. The correlation is significant at the 0.05. In this study, quality of life (QOL) is moderately affected in the two third of the children with cerebral palsy. At each level of functional difficulty according to Gross Motor Function, quality of life is affected.

Table 1:

TYPES OF CEREBRAL PALSY	N=25
1.Spastic CP	17
2.Flaccid CP	3
3.Ataxic CP	2
4.Athatoid CP	2
5.Mixed CP	1

Table 2:

GMFCS LEVELS	*N*	*Minimum*	*Maximum*	*Mean*	*Std. Deviation(±)*
Level I	4	46	57	53.41	5.056
Level II	5	41	59	52.21	7.464
Level III	4	43	57	51.57	6.045
Level IV	6	44	57	48.88	4.709
Level V	6	38	52	46.91	6.751
Valid N (list wise)	4				

Above table describes the mean and standard deviation of the GMFCS at each Levels.

Table 3: One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
CP-QOL- SCORE 1	21.128	3	.000	53.413	45.37	61.46
CP-QOL- SCORE 2	15.641	4	.000	52.206	42.94	61.47
CP-QOL- SCORE 3	17.061	3	.000	51.565	41.95	61.18
CP-QOL- SCORE 4	25.427	5	.000	48.883	43.94	53.83
CP-QOL-SCORE 5	17.021	5	.000	46.912	39.83	54.00

Above table shows mean difference and 95% confidence interval of the difference in CP-QOL using T-test.

Table 4: Correlation between GMFCS and CP-QOL:

		CP_QOL_SCORE_1	CP_QOL_SCORE_2	CP_QOL_SCORE_3	CP_QOL_SCORE_4	CP_QOL_SCORE_5
Level 1	Pearson Correlation	1	.684	.837	-.917	.708
	Sig. (2-tailed)		.316	.163	.083	.292
	N	4	4	4	4	4
Level 2	Pearson Correlation	.684	1	.891	-.757	.226
	Sig. (2-tailed)	.316		.109	.138	.715
	N	4	5	4	5	5
Level 3	Pearson Correlation	.837	.891	1	-.974*	.207
	Sig. (2-tailed)	.163	.109		.026	.793
	N	4	4	4	4	4
Level 4	Pearson Correlation	-.917	-.757	-.974*	1	-.287
	Sig. (2-tailed)	.083	.138	.026		.581
	N	4	5	4	6	6
Level 5	Pearson Correlation	.708	.226	.207	-.287	1
	Sig. (2-tailed)	.292	.715	.793	.581	
	N	4	5	4	6	6

Above table shows correlation between GMFCS and CP-QOL in Children with Cerebral Palsy using Pearsons correlation. In GMFCS Level I, II, III ,IV and V correlation is significant is 0.8,0.8,1,-0.97 and 0.2 respectively. In

GMFCS Level IV having highly significant -0.97.The correlation is significant at the 0.05 level indicates that the quality of life is more affected having more motor disability.

5. Conclusion

Children with cerebral palsy who are more functionally dependent were found to have worse quality of life. Those children who were more functionally independent in their ADLs & participation in play & school activities felt better about their physical, social, emotional, educational & environmental well-being.

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