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Research Article

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Correlation of functional independence and quality of life in school aged children with cerebral palsy

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ABSTRACT

Background: Cerebral palsy is one of the most common chronic disabling conditions of childhood having a tremendous impact on the child's capacity to carry out activities of daily living. Reduced activity levels and participation restrictions due to multiple impairments may lead to a reduced quality of life (QOL) compared to their typically developing peers. Objective of the study was to examine the correlation between functional independence and quality of life in school-aged children with cerebral palsy.

Methods: A correlational study was conducted at neuro-paediatric department of college of physiotherapy, Ahmedabad with 46 subjects who included school-aged (4-12 years old) children with all clinical types of cerebral palsy & GMFCS level I to V. Children presenting with disorders of non-cerebral origin, ADHD, autistic traits and specific syndromes were excluded. The outcome measures taken were Functional Independence Measure (FIM) & quality of life. The outcome measures used were FIM, Wee-FIM & Cerebral Palsy Quality Of Life Questionnaire for Children (CP QOL-Child). Procedure: Children with cerebral palsy (4-12 years, GMFCS level I-V) were recruited as per selection criteria. Nature and purpose of the study was explained to their parents. Informed written consent was taken from them. Parents were asked to fill Gujarati translated version of CP QOL-Child questionnaire. Demographic data was collected.

Results: Statistical analysis was done using SPSS 20.0 & MS excel 2007. Spearman's correlation test was used between Wee-FIM & CPQOL scores. There was direct strong correlation (r = 0.81, P < 0.01) between them which was statistically significant. Quality of life was significantly correlated with self-care (r = 0.75, P < 0.01), mobility (r = 0.80, P < 0.01) and cognition (r = 0.79, P < 0.01) domains of Wee-FIM.

Conclusion: School-aged cerebral palsy children who were more functionally dependent were found to have worse quality of life.

Keywords: Cerebral palsy, Functional independence, Quality of life

INTRODUCTION

Cerebral Palsy (CP) is one of the most common chronic disabling condition of childhood. ¹⁻³ A prevalence of 1.2 to 2.5 per 1000 school aged children has been quoted. ¹⁻⁵

Variable rates exist from country to country and also within countries. 1-5

Cerebral palsy is a group of permanent disorders of the development of movement & posture⁶ causing activity limitations, which are attributed to non-progressive

disturbances that occurred in the developing fetal or infant brain. The motor disorders are often accompanied by disturbances of sensation, perception, cognition, communication, behavior & by epilepsy & secondary musculoskeletal problems.⁶ The nature of functional impairments may change as the child develops. Evolving limitations in Activities of Daily Living (ADLs) & participation restrictions may lead to a reduced Quality Of Life (QOL) compared to their typically developing peers.⁷⁻⁹

QOL is a broad concept encompassing many components of overall health and well-being¹⁰ including physical, psychosocial, economic & cultural components. QOL is influenced by the context of the culture and value systems in which the individual lives and relates to the individual's goals, expectations, standards & concerns.¹⁰

Objective of the study was to examine the relationship between Functional independence & QOL in school-aged children with cerebral palsy.

METHODS

A correlational study was conducted at neuro-paediatric department of S.B.B. College of physiotherapy, Ahmedabad using convenience sampling.

46 subjects were selected. School-aged (4 to 12 years old) children with all clinical types of cerebral palsy & GMFCS level I-V were included in the study. Children with disorders of non-cerebral origin, ADHD, autistic traits and specific syndromes were excluded.

Description of the outcome measures

CP QOL-Child¹¹ is a condition-specific outcome measure intended to assess quality of life in children with cerebral palsy. It consists of 66 items divided into 7 domains. Internal reliability $\alpha = 0.74$ -0.92 (caregivers). The parent proxy version of the CP QOL-Child, suitable for parents of children with cerebral palsy aged 4-12 years was used.

Wee-FIM & FIM¹² are designed to assess & track development of functional independence in children with disabilities. It consists of 18 items divided into 6 domains. Inter-rater reliability coefficients range from 0.74-0.96. Wee FIM was used for children in age group 6 months to 7 years. FIM was used for children above 7 years.

Procedure

Children were selected according to inclusion & exclusion criteria. Nature & purpose of the study was explained to parents. Informed written consent was taken from parents/guardians. Parents were asked to fill CP QOL-Child questionnaire. Wee-FIM & FIM scoring was done. Demographic data was collected.

RESULTS

Data was analysed using SPSS 20.0 Inc. & Microsoft excel 2007. Data was tested for normal distribution using Kolmogorov-Smirnov test. Table 1 shows the demographic data. Figure 1 is a pie-chart showing distribution of different types of cerebral palsy children. Figure 2 is a pie-chart showing distribution of children according to their GMFCS level. Table 2 shows mean scores of FIM & quality of life.

Table 1: Demographic data.

Demographic data	
Age in years (Mean ± SD)	7.26 ± 2.51
No. of males	34
No. of females	12

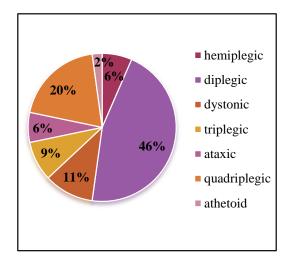


Figure 1: Types of CP.

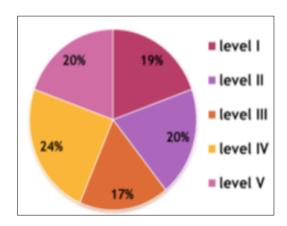


Figure 2: GMFCS level.

Table 2: Mean values of outcome measures.

	Mean ± SD
FIM score	73.59 ± 36.85
OOL score	55.37 ± 14.21

Spearman's correlation test was used to find correlation between Wee-FIM & QOL as shown in Figure 3. Wee-FIM had a strong direct correlation with QOL (r = 0.81, P <0.01) indicating that more functionally independent the child was better was his quality of life.

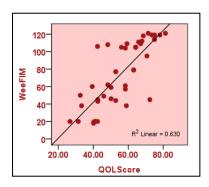


Figure 3: Correlation between functional independence and QOL scores.

Spearman's correlation test was also used to find correlation between individual domains of FIM & QOL. Strong direct correlation was obtained between Self-care domain & CPQOL (r=0.75, P<0.01) as shown in Figure 4.

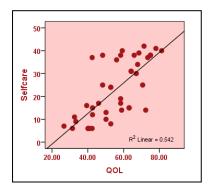


Figure 4: Correlation between self-care domain and QOL scores.

Strong direct correlation was obtained between mobility domain & CPQOL (r = 0.80, P < 0.01) as shown in Figure 5.

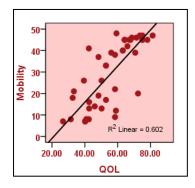


Figure 5: Correlation between mobility domain and QOL scores.

Strong direct correlation was obtained between cognition domain & CPQOL ($r=0.79,\,P<0.01$) as shown in Figure 6

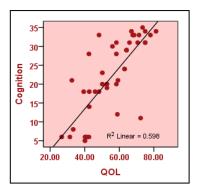


Figure 6: Correlation between cognition domain and **QOL** scores.

DISCUSSION

The Main finding of the study was that there was strong positive correlation between functional independence & QOL. These findings suggest that school-aged children with CP who are more independent in carrying out basic activities of daily living, with less pain and a good energy level, feel better about their social life, community interaction, school functioning, and their emotions, according to parent-report.

Varni JW et al (2007) have reported that children with cerebral palsy and their carer's have impaired health related QOL. The degree of impairment of QOL correlated with the severity of the condition. Disabilities affect the children's independence significantly & consequently the lives of their caregivers. The consequently the lives of their caregivers.

QOL of CP children can be impacted at 3 different levels: 17

- 1. Physical [physical health & independence in basic functional activities]
- Psychological [mental status & positive selfperception]
- 3. Psychosocial dimensions [Forming friendships & leisure time]

Ring et al. (2007)¹⁸ & Murrell (1999)¹⁹ 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.²⁰ Health and social outcomes in CP children²¹ depend on following 3 factors:

- ✓ Severity of the cerebral palsy
- ✓ Medical interventions

✓ Child's environment

Schneider JW et al. (2001)²² 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.

There is fair correlation between the caregiver questionnaire (CQ) and Wee-FIM. CQ may be a more specific measure of HR-QOL as it reflects the impact of the child's condition on the caregiver. Soyupek et al. (2010)²³ found that GMFCS level was significant predictor of QOL. In the present study spastic diplegic CP children constituted majority of the population. So the results of this study cannot be generalized for a whole class of other clinical types of CP children.

Clinical implication

Factors that are associated with better or poorer QOL can be used to guide program planning and the allocation of resources, thus optimizing the well-being of these children. Their quality of life can be improved by making them as much functionally independent as possible through proper exercise & appropriate use of assistive devices.

Limitations

Socio-economic status of the children, psychological status of the parents & personal variables were not taken into account.

CONCLUSION

School-aged cerebral palsy children who were 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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Ethical approval: The study was approved by the institutional review board ethics committee (Reference No. PTC/IEC/36/2013-14)

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