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Effectiveness Of Planned Feeding Interventions On Quality Of Life Among Children With Cerebral Palsy Having Feeding Difficulties: A Prospective Quasi-Experimental Study

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Abstract

Background: Cerebral palsy (CP) often causes feeding difficulties, leading to malnutrition and reduced quality of life. Although structured feeding interventions show promise, their long-term impact remains underexplored in resource-limited settings. The objective of the study was to assess the effectiveness of planned feeding interventions on quality of life among children with CP having feeding difficulties, In the present study the research methodology was A prospective quasi-experimental pre-test/post-test study was conducted with 100 children (aged 3–12) Using Cochran's formula and purposive sampling, participants underwent eight 45-minute feeding training sessions. Outcomes—feeding difficulty scores, caregiver feeding practices, anthropometric measurements, and CPCHILD© quality of life scores—were measured at baseline, 40 days, and at 1, 3, 6, and 12 months. Data were analyzed using paired t*-tests, repeated measures ANOVA, and chi-square tests (*$p < 0.05$*).*

The result indicated that Post-intervention, feeding difficulty scores improved significantly, with only 6% showing moderate issues and none severe ($t = 7.03$*,* $p < 0.001$*). Mean BMI rose from 13.6 ± 2.8 to significantly improved levels over 12 months (*$p < 0.05$*). Caregiver practices shifted from 73% poor to 71% good (*$t = 12.36$*,* $p < 0.001$*). Quality of life improved: 78% had poor ratings at baseline, with 73% achieving good scores at one year (*$F = 15.96$*,* $p < 0.001$*). Pre-intervention quality-of-life scores were significantly associated with parental education, occupation, income, and birth order (*$\chi 2$*,* $p < 0.05$*). The study concluded that planned feeding interventions result in improved feeding competence on quality of life among children with CP. These findings support the integration of multidisciplinary, caregiver-focused feeding strategies in routine care and highlight the need for larger multicentre studies.*

Key word: *Cerebral palsy, feeding difficulties, quality of life, feeding intervention, CPCHILD*

INTRODUCTION

Cerebral palsy (CP), a non-progressive neurological disorder, is the leading cause of motor disability among children, affecting 2.4 to 3.3 per 1,000 live births (CDC). In India, approximately 3.8% of the population lives with disabilities, and CP constitutes a significant subset of physical impairments. Common feeding challenges in CP—including oromotor dysfunction, swallowing disorders, gastrointestinal issues, and postural instability—frequently result in malnutrition and hindered growth. Children with cerebral palsy (CP) often experience significant feeding and swallowing difficulties, which can lead to malnutrition, respiratory complications, and reduced quality of life. In Egypt, there is limited access to structured caregiver training or advanced medical interventions such as gastrostomy feeding. Omar et al. (2017) conducted a study to evaluate the effectiveness of a caregiver training program aimed at improving feeding practices in children with moderate to severe CP. The intervention included a 10-session program over five days for 20 caregivers and their children aged 1–5 years, with a three-month follow-up. Post-intervention results demonstrated significant improvements in feeding positions, meal duration, use of utensils, and caregiver and child feeding skills. However, no significant changes were observed in nutritional status or overall feeding problem prevalence. The study concluded that caregiver education is a viable, low-cost method for improving feeding outcomes in CP and emphasized the need for further research into sustainable nutritional interventions in resource-limited settings.

Undernutrition is a common consequence of feeding difficulties in children with cerebral palsy (CP), with caregiver perceptions and quality of life (QoL) playing a crucial role in nutritional and developmental outcomes. This analytical cross-sectional study conducted in a Sri Lankan tertiary care setting aimed to explore the relationship between caregiver QoL, perceptions of feeding, and the nutritional status of children with CP. Using an interviewer-administered questionnaire, which included clinical data, caregiver perspectives, and the Pediatric Quality of Life Inventory (PedsQL), data were collected from 226 caregivers through convenience sampling. Findings revealed that 50% of children under five years had Severe or Moderate Acute Malnutrition (SAM + MAM), and 41.2% of children aged 5–19 were underweight. Malnutrition was more prevalent among children with severe CP. Interestingly, many caregivers of undernourished children did not perceive feeding as problematic and believed their children received adequate calories. The majority also rejected non-oral feeding methods. Statistical analysis showed that while the severity of CP significantly affected caregiver QoL ($F = 10.4$, $p < 0.05$), the child's nutritional status did not ($F = 0.58$, $p > 0.05$). The study highlights the need for targeted caregiver education and support to address both nutritional deficits in children with CP and the emotional burden on families.

Alvarez Zaragoza et al. showed that children with quadriplegic CP (GMFCS V) often exhibit low bone mineral density and malnutrition, especially when tube-fed. Mouilly et al. observed that over 78% of children with CP lacked lip prehension, and more than 60% had swallowing difficulties—both strongly linked to poor nutrition. Caramico-Favero et al. noted that dysphagia and gastrointestinal symptoms significantly reduce caloric intake, worsening physical development. These studies underscore the critical link between feeding dysfunction and health in CP. However, structured feeding interventions remain underutilized, especially in resource-limited contexts. Although international research has explored nutritional status in CP, there is a notable gap in evaluating personalized feeding interventions and their effects on quality of life, especially in India. This study addresses this gap by implementing and assessing tailored feeding strategies aligned with each child's functional limitations.

METHODOLOGY:

This evaluative, prospective quasi-experimental pre-test/post-test study was conducted at Index Medical College Hospital, Indore, involving 100 children with CP (3–12 years). Sample size was calculated using Cochran's formula at a 95% confidence level; participants were selected via purposive sampling. Inclusion criteria: CP diagnosis within the specified age range and informed caregiver consent. Exclusion criteria: major congenital anomalies or serious medical conditions. Data collection tools included validated demographic and clinical profiles, feeding difficulty checklists, anthropometric measures (height, weight, BMI, head and mid-arm circumference, knee height, skinfold thickness), caregiver feeding practice checklists, and the CPCHILD© quality-of-life questionnaire (Cronbach's alpha ≥ 0.82). A pilot study confirmed feasibility. The intervention comprised eight 45-minute feeding sessions over four weeks, focusing on positioning, oral-motor exercises, menu planning, and caregiver education. Follow-up assessments occurred at 40 days and at 1, 3, 6, and 12 months. Ethical clearance and informed consent were obtained, and confidentiality was maintained. Data were analyzed using SPSS v22, employing descriptive statistics, paired *t*-tests, repeated measures ANOVA, and chi-square tests for demographic associations ($p < 0.05$).

RESULTS

Among the 100 children, baseline feeding difficulty levels were moderate in 64%, mild in 30%, and severe in 6%. Following intervention, 27% achieved normal feeding, 65% had mild difficulties, and 6% had moderate difficulties ($t = 7.03$, $p < 0.001$). Initial anthropometry indicated undernutrition (mean BMI = 13.6 ± 2.8, weight = 17.2 ± 6.1 kg, height = 112.1 ± 17.6 cm). Over 12 months, repeated-measures

ANOVA demonstrated significant improvements across all anthropometric parameters ($p < 0.05$), reflecting nutritional recovery.

Caregiver feeding practices also improved dramatically: initially, 73% were classified as poor, 24% average, and 3% good. Post-intervention, 71% were rated good, 29% average, and none poor ($t = 12.36$, $p < 0.001$).

Health-related quality of life improved significantly: initially, 78% of children had poor scores and 22% average; after 12 months, 73% had good scores, 27% average, and none poor ($F = 15.96$, $p < 0.001$).

Pre-intervention quality-of-life scores were similarly associated with family type, parental education and occupation, income, and birth order ($\chi 2$, $p < 0.05$).

DISCUSSION

This study demonstrates that a well-structured feeding intervention significantly improves feeding competence, nutritional status, and quality of life among children with CP—confirming and extending findings from similar studies (e.g., Camden et al., 2020; Lee et al., 2017). Improvements in feeding difficulty scores and caregiver practices underscore the importance of caregiver-oriented training for sustainable behavior change.

Anthropometric gains over 12 months mirror the findings of Budd et al. (2019), demonstrating that sustained intervention supports long-term nutritional recovery. The marked improvement in CPCHILD© scores supports evidence by Palisano et al. (2014) and Willems et al. (2023), showing that better feeding practices contribute to enhanced child well-being and social participation.

Significant associations with socioeconomic factors echo previous research (Adair et al., 2018), highlighting the need to tailor feeding interventions to account for family education and income. Future research should build on these findings through rigorous randomized controlled trials to strengthen the evidence base and support broader implementation.

This study highlights several implications for nursing service, education, administration, and research. Nurses should prioritize nutritional assessment, individualized feeding plans, and caregiver education in daily practice, effectively collaborating with interdisciplinary teams. Nursing curricula must prepare practitioners in pediatric feeding interventions and family-centered care. Administrators should integrate feeding programs into clinical services, ensuring adequate staffing, caregiver support, and staff training. Nurse-led research should further investigate intervention efficacy, long-term outcomes, and the influence of socioeconomic determinants.

CONCLUSION

The planned feeding intervention led to significant and sustained improvements in feeding ability, nutrition, and quality of life for children with CP. These findings reinforce the value of multidisciplinary, caregiver-focused feeding strategies and call for their integration into routine care and larger, more rigorous studies.

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