Cerebral Palsy ALLIANCE

Cerebral palsy research news

Monday 24 February 2025

Cerebral Palsy Alliance is delighted to bring you this free weekly bulletin of the latest published research into cerebral palsy. Our organisation is committed to supporting cerebral palsy research worldwide - through information, education, collaboration and funding. Find out more at cerebralpalsy.org.au/our-research

Professor Nadia Badawi AM
CP Alliance Chair of Cerebral Palsy Research

Subscribe to CP Research News

Interventions and Management

Interventions and Management

1.Evaluation of a Game-Based Mechatronic Device for Rehabilitation of Hand-Arm Function in Children With Cerebral Palsy: Feasibility Randomized Controlled Trial

Mrudula Kanakapura Peramalaiah, Sanjay Tejraj Parmar, Nariman Sepehri, Saman Muthukumarana, Anuprita Kanitkar, Cherry Kit-Fong Hin, Tony Joseph Szturm

JMIR Rehabil Assist Technol . 2025 Feb 18:12:e65358. doi: 10.2196/65358.

Background: Children with neurodevelopmental disorders, such as cerebral palsy (CP), often experience motor impairments in manual dexterity, which hinder daily tasks and social interactions. Traditional rehabilitation methods require repetitive task practice, which can be difficult for children to sustain due to low engagement. Game-based rehabilitation devices and robots offer a promising alternative by combining therapy with digital play, improving motivation and compliance. However, many systems fail to incorporate actual object manipulation, which is essential for motor learning through sensory feedback. To address this limitation, a low-cost, easy-to-use robotic manipulandum device (RMD) was developed. The RMD enables real-time object manipulation during gameplay while providing assistive force, allowing the practice of a wide range of manual dexterity skills beyond gross reaching. This system offers an engaging and effective rehabilitation approach to enhance hand function in children with CP.
Objective: This study aimed to provide evidence for the feasibility and therapeutic value of the RMD game-based exercise program for children with CP.
Methods: In total, 34 children with CP, aged 4 to 10 years, were randomly assigned to the experimental group (XG) or the control group (CG). The XG received a computer game-based exercise program using the RMD, focusing on object manipulation tasks, while the CG received task-specific training similar to constraint-induced movement therapy. Both groups received their respective therapy programs 3 times per week for 8 weeks. Semistructured interviews with parents and children, along with qualitative analysis, were conducted to evaluate their experiences with the exercise program. The following outcome measures were used: (1) the Peabody Developmental Motor Scale-2 (PDMS-2) grasping and visual-motor integration subtests and (2) the computer game-based upper extremity (CUE) assessment of manual dexterity.
Results: No dropouts occurred during the 8-week program. Both groups showed significant improvements in the PDMS-2 subtests (P<.001) and the CUE assessment of manual dexterity, including success rates (tennis ball: P=.001; cone: P<.001; medicine ball: P=.001; and peanut ball: P<.001) and movement errors (tennis ball: P=.01; cone: P<.001; medicine ball: P=.04; and peanut ball: P<.001). The XG outperformed the CG, showing greater improvements in PDMS-2 grasping (P=.002) and visual-motor integration (P=.01). In the CUE assessment, the XG demonstrated higher success rates (medicine ball: P=.001 and peanut ball: P=.02) and fewer movement errors (cone: P<.001). Parents reported an increase in the children's independence in daily tasks.
Conclusions: This study demonstrates the feasibility, acceptability, and positive outcomes of the RMD game-based exercise program for improving hand function in children with CP. The findings support further research and development of computer game-assisted rehabilitation technologies.
Trial registration: Clinical Trials Registry - India CTRI/2021/07/034903; https://ctri.nic.in/Clinicaltrials/pmaindet2.php?EncHid=NTc4ODU.
PMID: 39964707

2.Comparison of EMG Waveforms versus Degree of Spread in Selective Dorsal Rhizotomy

Megan V Ryan, Khoa Nguyen, Willy Boucharel, Caley Dunn, Sarah Graber, Joyce Oleszek, William B Harris, Emily Cooper, Corbett Wilkinson

Neurodiagn J . 2025 Feb 18:1-19. doi: 10.1080/21646821.2025.2457293. Online ahead of print.

Abstract
Selective dorsal rhizotomy (SDR) is a treatment for lower-extremity spasticity in disorders such as cerebral palsy (CP). "Selective" refers to sectioning nerve rootlets with the most abnormal responses on electromyography (EMG) upon intraoperative stimulation. EMG abnormalities can be classified by waveform appearance or by degree of spread throughout lower extremity muscles. We examine the relationship between different EMG waveforms and grades of spread. Intraoperative SDR EMG records from November 2009 through December 2021 were analyzed for waveform types and degrees of spread. Irregular, incremental, multiphasic, sustained, and clonic waveform patterns were considered more abnormal. Decremental, squared decremental, and squared waveforms were less abnormal. Degrees of spread were graded 0-4+, 4+ signifying the most abnormal spread. Distribution of grades of spread was compared between waveform patterns using pairwise Cochran-Armitage tests with Holm-Bonferroni correction. We hypothesized that more abnormal EMG waveform patterns would correlate with higher grades of spread. Sixty-three patients were included, with an average age of 8 years. Most had cerebral palsy (86%, n = 54). The remainder had brain malformations (8%, n = 5) and other etiologies (6%, n = 4). Higher grades of spread significantly increased the likelihood of multiphasic, sustained, or clonic patterns, compared to decremental, irregular, and squared patterns ($p < .05$). Squared waveforms decreased with higher grades of spread relative to other patterns ($p < .05$). Different EMG waveform patterns are associated with varying grades of spread in SDR, suggesting that evaluating both waveform pattern and degree of spread together can be useful in guiding rootlet sectioning.
PMID: 39965075

3.Gross Motor Function Measure-66 Item Sets for use with infants and toddlers at high risk for cerebral palsy: Construct validity and responsiveness

No authors listed

Dev Med Child Neurol . 2025 Feb 20. doi: 10.1111/dmcn.16289. Online ahead of print.

No abstract available
PMID: 39977107

4.General Movements Assessment and Hammersmith Infant Neurological Examination for early diagnosis of cerebral palsy in infants born at term treated with therapeutic hypothermia

Sara N Moss, Jennifer C Keene, Sarah L Winter, Mariana Baserga, Lauren Ayala, Wendy G Evans, Betsy E Ostrander

Dev Med Child Neurol . 2025 Feb 20. doi: 10.1111/dmcn.16277. Online ahead of print.

Aim: To establish if the General Movements Assessment (GMA) and Hammersmith Infant Neurological Examination (HINE) support the early diagnosis of cerebral palsy (CP) in a cohort of infants who have undergone therapeutic hypothermia.
Method: This was a retrospective cohort study from a large single center between 2018 and 2022. Sample size included surviving 112 infants with follow-up (68 males, 44 females) with a mean gestational age of 39 weeks (interquartile range 38-40), diagnosed with moderate or severe neonatal encephalopathy who underwent therapeutic hypothermia. Groups were compared using Fisher's exact and Mann-Whitney U tests.
Results: The absence of normal fidgety movements at the 3-month GMA was highly associated with CP ($p < 0.001$, sensitivity 89%, specificity 89%). HINE scores were associated with CP at 3 months, 6 months, and 9 months ($p < 0.001$; sensitivity 82%-90%, specificity 95%-100%). The HINE scores, which optimally differentiated those with and without CP, were less than 47 at 3 months, less than 51 at 6 months, and less than 64 at the 9-month follow-up.
Interpretation: The GMA and HINE were predictive of CP in infants born at term with neonatal encephalopathy who had undergone therapeutic hypothermia. Atypical (absent or abnormal) fidgety movements on the GMA at 3 months and the HINE score at 3 months, 6 months, and 9 months were all highly associated with CP diagnosis with more than 80% sensitivity and more than 90% specificity. The optimal HINE cutoff score for predicting CP may differ from infants born preterm and will benefit from further analysis.
PMID: 39977235

5.The effect of a low-load plyometric intervention on running kinematics in youth with cerebral palsy: A randomised controlled trial

Annie Chappell, Lilian Chen, Noula Gibson, Benjamin Mentiplay, Gavin Williams

Gait Posture . 2025 Feb 12:S0966-6362(25)00032-3. doi: 10.1016/j.gaitpost.2025.01.032. Online ahead of print.

No abstract available
PMID: 39984352

6.Safety and efficacy of the novel subfascial with umbilicus detachment technique for intrathecal baclofen therapy in pediatric patients with cerebral palsy and low body mass index

Pier Francesco Costici, Rosa Russo, Paolo Brigato, Sergio De Salvatore, Andrea Vescio, Leonardo Oggiano, Fabrizio Donati

Childs Nerv Syst . 2025 Feb 22;41(1):118. doi: 10.1007/s00381-025-06772-x.

Purpose: Intrathecal baclofen (ITB) therapy is a key intervention for managing severe spasticity in pediatric cerebral palsy (CP) patients. However, standard surgical techniques for ITB pump placement pose challenges in low body mass index (BMI) patients, who have limited soft tissue coverage, increasing the risk of complications such as infections and skin erosions. This study compares three techniques-subcutaneous (SC), subfascial (SF), and a novel subfascial with umbilicus detachment (SFUD) approach-specifically aimed at reducing these risks and improving surgical outcomes in this vulnerable population.
Methods: Retrospective cohort study on 54 pediatric CP patients (BMI ≤ 18.5 kg/m2) who underwent initial ITB implantation from January 2004 to July 2018. Patients were divided into SC, SF, and SFUD groups, and outcomes such as surgical time, blood loss, length of hospital stay (LOS), complications, and pump explants were analyzed.
Results: The SFUD group had the highest successful implant rate (93.7%), compared to 79.2% for SF and 57.1% for SC ($p < 0.05$). SFUD also showed the lowest complication rates, with minimal infections and no skin erosions or pump removals. The SC group experienced the highest complications, including infections and skin erosions. Mean LOS was significantly shorter in the SFUD group.
Conclusion: The SFUD technique provides a safe and effective alternative for ITB pump implantation in CP patients with low BMI, reducing complications and improving implant stability. Further studies are warranted to confirm these findings and support broader clinical adoption.
PMID: 39985717

7.Mother's Sense of Coherence and Oral Health of Children and Adolescents With Cerebral Palsy-Matched Cross-Sectional Study

Vanessa Lira Siqueira, Valéria Bordallo Pacheco, Laura Costa Gonçalves, Natália Cristina Ruy Carneiro, Ana Cristina Borges-Oliveira, Maria Teresa Botti Rodrigues Dos Santos

Spec Care Dentist . 2025 Jan-Feb;45(1):e70010. doi: 10.1111/scd.70010.

Background: The sense of coherence (SOC) is important for the well-being, especially mothers of children and adolescents with cerebral palsy (CP).
Objective: This study aimed to investigate the relationship between Mother's SOC and oral health status in children/adolescents with and without CP.
Materials and method: A paired cross-sectional study was conducted with 102 children/adolescents with CP, 102 without CP, and their respective mothers. Participants were aged between 3 and 17 years, matched by sex and age. Antonovsky's SOC questionnaire (SOC-13) was answered by mothers from both groups, characteristics and the oral status of the children were investigated. Clinical type of CP, Gross Motor Function (GMFCS), oral hygiene quality (OHI-S), and dental caries experience (DMFT/dmft) were evaluated.
Results: The CP condition of the children was significantly associated with Mother's SOC ($P < 0.001$). Mothers of children with CP had lower SOC scores (mean: 27.6 [±3.0]) than mothers of children without CP (mean: 30.2 [±7.7]). In the CP group, level IV, V of Gross Motor function was associated with lower mother's SOC scores ($p = 0.001$). In both groups, dental caries experience was associated with lower mother's SOC scores, CP group ($p < 0.001$), without CP group ($p = 0.002$). Regarding the individual characteristics, CP group presented with lower-quality of oral hygiene ($p < 0.001$) and high prevalence of dental caries ($p = 0.001$). Regarding marital status, mothers of CP group were majority single, separated, or divorced ($p < 0.001$), and presented more difficulties in finding a dentist for their child ($p < 0.001$).
Conclusion: Mother's SOC was statistically significantly associated with the presence of dental caries in children/adolescents with and without CP. Mothers of children/adolescents with CP presented with lower values of SOC.
PMID: 39967481

8.Eating and drinking abilities and respiratory and oral health in children and young adults with cerebral palsy

Alexandra Sorhage, A Marie Blackmore, Catherine A Byrnes, Caitlin Agnew, Emily F M Webster, Anna Mackey, Jimmy Chong, Timothy M Hill, Dug Yeo Han, Ngaire Susan Stott

Dev Med Child Neurol . 2025 Feb 20. doi: 10.1111/dmcn.16262. Online ahead of print.

Aim: To investigate the potential risk factors of respiratory illness (ethnicity, oral health, and eating and drinking ability) in children and young adults with cerebral palsy (CP).
Method: This was an observational study using a validated CP Respiratory and Oral Health questionnaire with 90 participants (median age 12 years [range: 1-26 years]; 51 males; and 26 New Zealand Māori).
Results: Multivariate analysis, accounting for ethnicity and Gross Motor Function Classification System (GMFCS) levels, showed that those participants who were classified in Eating and Drinking Ability Classification System (EDACS) levels III to V reported more previous respiratory disease episodes (odds ratio [OR] = 4.13, 95% confidence interval [CI] = 1.12-15.2, p = 0.033), increased daily/weekly respiratory symptoms (OR = 9.14, 95% CI = 2.03-41.2, p = 0.004), and increased mealtime respiratory symptoms (OR = 13.8, 95% CI = 2.48-76.8, p = 0.002). Both EDACS levels III to V and GMFCS levels IV and V were independently associated with increased propensity to reflux or seizures (OR = 8.16, 95% CI = 1.77-37.5, p = 0.007; OR = 3.37, 95% CI = 1.09-10.4, p < 0.034). Mealtime symptoms of vomiting or regurgitation (relative risk = 1.58, 95% CI = 1.17-2.13, p = 0.032) and daily coughing (relative risk = 1.55, 95% CI = 1.14-2.11, p = 0.023) were associated with a higher risk of reporting one or more oral health symptoms. Toothache was more common in participants classified in EDACS levels III to V ($\chi 2$, p = 0.021).
Interpretation: Children with CP classified in EDACS levels III to V are at a higher risk of respiratory disease and toothache and should be screened appropriately. Regurgitation or vomiting of food and daily coughing are linked with poorer oral health.
PMID: 39973209

9.Swallowing disorders in cerebral palsy: a systematic review of oropharyngeal Dysphagia, nutritional impact, and health risks

Andrea Calderone, David Militi, Davide Cardile, Francesco Corallo, Rocco Salvatore Calabrò, Angela Militi

Review Ital J Pediatr . 2025 Feb 22;51(1):57. doi: 10.1186/s13052-025-01903-1.

Abstract
Cerebral palsy (CP) is a permanent disorder affecting movement and posture due to nonprogressive brain issues, often leading to various sensory, cognitive, and musculoskeletal challenges. Among these complications, oropharyngeal dysphagia (OPD) is prevalent, impacting up to 85% of children with CP and resulting in significant nutritional deficits. This systematic review aims to explore the prevalence and types of OPD in CP patients, its effects on nutritional status, and its associated health complications, emphasizing the need for thorough assessment and intervention to mitigate risks. The review adheres to PRISMA guidelines, searching five major databases (PubMed, Web of Science, Embase, Cochrane Library, and Scopus) without time range restrictions to capture studies addressing swallowing disorders and their impact on nutritional status in CP. This review has been registered on Open OSF (n) 3KUQX. Individuals with CP often experience swallowing impairments, including delayed pharyngeal transit and aspiration. Research indicates that 81.5% of kids with CP suffer from dysphagia, commonly associated with reduced motor skills and general health. Moreover, as a result of these swallowing difficulties, nutritional complications may occur, with elevated levels of gastroesophageal symptoms causing malnutrition and growth delays, which require thorough evaluations and personalized interventions for successful treatment. Tools like the Videofluoroscopic Swallowing Study were identified as primary methods for evaluation, but assessment remains limited by methodological inconsistencies. This systematic review underscores the significant health impacts of OPD in children with CP, which affects nutrition and overall well-being. Future research should address the need for standardized evaluation methods and effective interventions to balance nutritional needs with practical mealtime strategies.
PMID: 39985076

10.Augmented Reality Exergames for Upcoming Cognitive-Motor Rehabilitation: User-Centered Design Approach and User Experience of Healthy Children

Maxime Balloufaud, Arnaud Boujut, Romain Marie, Aurélie Guinaldo, Laurent Fourcade, Julia Hamonet-Torny, Anaick Perrochon

JMIR Rehabil Assist Technol . 2025 Feb 19:12:e69205. doi: 10.2196/69205.

Background: Traditional rehabilitation programs for children with cerebral palsy and acquired brain injuries aim to enhance motor and cognitive abilities through repetitive exercises, which are often perceived as tedious and demotivating. Extended reality technologies, including augmented reality (AR) and virtual reality, offer more engaging methods through exergames. However, to date, no AR exergames simultaneously integrate cognitive and motor aspects within navigational tasks. Developing these exergames necessitates rigorous methodological steps, especially when using emerging technologies such as AR. The MIDE (Multidisciplinary Iterative Design of Exergames) framework advocates a participatory design approach, involving users from the outset, the objective being to optimize the interface and validate game mechanics through user experience (UX) assessment. Some researchers initially test these mechanisms on healthy children before applying them to clinical populations.
Objective: This study aims to evaluate the UX of our AR exergames, consisting of two games (AR Corsi and AR Zoo), in typically developing children.
Methods: Typically developing children participated in two 1.5-hour sessions. During each session, they played one of two AR games using the Microsoft HoloLens 2 headset: AR Corsi and AR Zoo, both of which are designed to engage executive functions and motor skills through navigational capabilities. UX was assessed after each session using the following measures: System Usability Scale scores for usability, AttrakDiff for attractiveness and game quality, MeCue for emotional experience, and Rating scale of Perceived Exertion for Children for pre- and postsession mental and physical fatigue.
Results: A total of 27 participants (mean age 11.9, SD 1.2 years) were included in the study. Mean System Usability Scale scores were 79.9 (SD 11.4) for AR Corsi and 76.3 (SD 12.1) for AR Zoo, indicating good usability. The AttrakDiff questionnaire yielded favorable results, with scores between 1 and 3 for overall attractiveness, pragmatic quality, and stimulation for both AR games. However, the hedonic quality "identity" received neutral scores (mean 0.6, SD 0.5 for AR Corsi and mean 0.7, SD 0.8 for AR Zoo). The MeCue emotions module yielded average scores of 5.2 (SD 0.7) for AR Corsi and 5.3 (SD 0.8) for AR Zoo, significantly exceeding the theoretical mean of 4 ($P<.001$). We observed a significant effect of physical fatigue ($P=.02$) and mental fatigue ($P=.002$) after exposure to both games. A comparative analysis of UX between the two games showed no significant differences.
Conclusions: This study demonstrates that our exergame, comprising two AR games, is user-friendly and well-received by typically developing children, eliciting positive emotions and overall appeal. Although some children reported fatigue, favorable UX evaluation confirms the validity of the game's content and mechanisms, suggesting its suitability for use among children with cerebral palsy and acquired brain injuries.
PMID: 39970421

11.Training intensity of robot-assisted gait training in children with cerebral palsy

No authors listed

Dev Med Child Neurol . 2025 Feb 20. doi: 10.1111/dmcn.16283. Online ahead of print.

No abstract available
PMID: 39977110

12.Quality of life, physical activity, and social determinants in teenagers with cerebral palsy: A cross-sectional study in Sweden

Frida Degerstedt, Birgit Enberg, Nawi Ng, Britt-Inger Keisu, Martin Björklund

Disabil Health J . 2025 Feb 11:101785. doi: 10.1016/j.dhjo.2025.101785. Online ahead of print.

Background: The associations between physical activity and various social determinants with quality of life (QoL) among teenagers with cerebral palsy (CP) are inconclusive.
Objective: To explore associations between perceived QoL among teenagers with CP in Sweden and participation in physical leisure activity and physical education in school, as well as sex, gross motor function, pain and bother, caregivers' birth country and socioeconomic status.
Methods: A cross-sectional study with teenagers who have CP, aged 15-18 years. The survey, including the assessment form Cerebral Palsy Quality of Life-teenager (CP QoL-teen), was sent to all youths in the national patient registry held by the Swedish National Board of Health and Welfare (n = 900). Survey data was complemented with data from other national health registries containing information on demographics, physical leisure activity, physical education, and gross motor function. Multivariable linear- and quantile regression analyses were performed.
Results: The survey was answered by 149 participants. Physical leisure activity was positively associated with the QoL-domain Communication and physical health. Gross motor function was associated with domains referring to physical function and participation; more severe motor difficulties indicated lower QoL. Pain was negatively associated with all QoL domains. Low caregiver educational levels were associated with higher social well-being domain.
Conclusion: Minimizing pain and facilitating physical activity may enhance QoL for teenagers who have CP. To improve participation for teenagers with severe disabilities, with non-Nordic caregivers, and caregivers without postgraduate education, targeted measures to facilitate participation are needed.
PMID: 39966016

13.Improving Register Ascertainment of Children With Post-Neonatally Acquired Cerebral Palsy Through Health Service Partnerships

Emma Waight, Adrienne Epps, Hayley Smithers-Sheedy, Shona Goldsmith, Sue Woolfenden, Simon Paget, Kerry Hanns, Kylie French, Heather Burnett, Anna Ward, Amy Shaw, Karen Bau, Leanne Diviney, Georgina Henry, Nadia Badawi, Maria Kyriagis, Sarah McIntyre

Paediatr Perinat Epidemiol . 2025 Feb 18. doi: 10.1111/ppe.70002. Online ahead of print.

Background: The New South Wales (NSW) and Australian Capital Territory (ACT) Cerebral Palsy (CP) Register is a database of clinical and demographic information from children with CP. A child with CP resulting from an insult to the developing brain sustained between 29 days and 2 years of age is classified as having post-neonatally acquired CP (PNN-CP). In clinical services, children may meet the criteria and timing for PNN-CP but have a singular diagnosis of acquired/traumatic brain injury.
Objectives: To implement and evaluate a new CP register ascertainment strategy focused on identifying children with PNN-CP attending acquired brain injury rehabilitation services.
Methods: Electronic medical records of children with an acquired brain injury attending the Sydney Children's Hospitals Network and John Hunter Hospital rehabilitation departments 2019-2024 were reviewed by researchers and rehabilitation paediatricians to identify children with PNN-CP. Children who fulfilled the criteria for CP were invited to participate in the CP Register. To evaluate this ascertainment strategy, we (i) ran descriptive statistics to analyse proportional changes of children with PNN-CP on the register and (ii) calculated temporal trends in prevalence per 10,000 live births for birth years 2003-2016, before and after the record ascertainment period.
Results: Of 1051 children with an acquired brain injury, 46 had PNN-CP (2003-2019) and had not previously been included on the register. This ascertainment strategy resulted in increased prevalence of PNN-CP in all 2-year time points between 2003 and 2016 and equated to a 31% improvement in ascertainment of children with PNN-CP on the register.
Conclusions: Ascertainment of children with PNN-CP for the NSW/ACT CP Register has been improved by systematically reviewing children with an acquired brain injury. This is now part of standard practice, and other registers should consider whether this strategy may improve ascertainment of PNN-CP in their regions.
PMID: 39966337

14.National Prescribing Practices for Pediatric Dystonia Among Providers in the United States

Sarah Paige W Davis, Natalie Kane, Haley E Botteron, Rose Gelineau-Morel

Clin Transl Sci . 2025 Feb;18(2):e70171. doi: 10.1111/cts.70171.

Abstract
While multiple oral medications are used to treat dystonia, limited information exists on current prescribing practices. This study analyzes real-world prescribing practices for pediatric dystonia in the United States, evaluating prescription frequency, dosing, and the impact of comorbidities. Oracle electronic health record real-world data were queried from 2014 to 2019 for encounters of patients under age 18 with a dystonia diagnosis and available medication records. Information was extracted on prescriptions for dystonia medications (baclofen, clonidine, carbidopa-levodopa, gabapentin, tetrabenazine, trihexyphenidyl, and select benzodiazepines), dosing, and comorbid diagnoses of cerebral palsy (CP), epilepsy, or spasticity. A total of 4010 pediatric patients with dystonia were included. Benzodiazepines were most commonly prescribed (midazolam in 53.5% of patients, diazepam 46.7%, lorazepam 41.9%, clonazepam 28.3%). This was followed by baclofen (33.4%), clonidine (26.3%), and gabapentin (19.7%). Dystonia patients with epilepsy were more commonly prescribed benzodiazepines than patients without epilepsy (diazepam 79.1% vs. 29%; clonazepam 50.9% vs. 16%) and baclofen was more often prescribed in patients with CP (59.4%) or spasticity (63.8%) than those without (17%). All medications showed decreased milligram per kilogram dosage as patient weight increased. Benzodiazepines, baclofen, and clonidine were the most common medications prescribed to pediatric patients with dystonia in the United States, although medical comorbidities impact prescribing practices. There was significant variability in weight-based dosing of all medications. There remains a need to determine which dystonia medications are most effective for each patient and the necessary drug exposure to maximize therapeutic efficacy and minimize adverse effects.
PMID: 39972534

15.Functioning and activity outcomes of the Akwenda Intervention Program for children and young adults with cerebral palsy in Uganda: A cluster-randomized trial

No authors listed

Dev Med Child Neurol . 2025 Feb 21. doi: 10.1111/dmcn.16290. Online ahead of print.

No abstract available
PMID: 39982972

16.Outpatient Management of Clinical Comorbidities in Children With Cerebral Palsy in Low- and Middle-Income Countries

Bruno Leonardo Scofano Dias, Lenamaris Mendes Rocha Duarte, Daniela Fava, Fernanda Marinho de Lima

Review Child Care Health Dev . 2025 Mar;51(2):e70052. doi: 10.1111/cch.70052.

Abstract
Background: Cerebral palsy (CP) is the most common physical disability of childhood. Its prevalence in low-and middle-income countries (LMICs) is over 3/1000 live births, about double the 1.6/1000 in high income countries (HICs). Multimorbidity is highly prevalent in CP. In LMICs, there are higher rates of prevalence, severity, comorbidities and mortality in children with CP. The evidence base for the recommendations in CP emanates overwhelmingly from studies conducted in HICs. Research conducted in LMICs settings, involving local clinicians, considering local context and investigating local solutions are urgently needed.
Methods: This scoping review aimed to identify and synthesise current evidence on management of clinical comorbidities in children with CP in LMICs. The Joanna Briggs Institute guidelines were followed for the data extraction and analysis phases. The following questions guided the scoping review: What are the main clinical comorbidities in children with CP? What are the gold standards for diagnosis and treatment of these comorbidities? What options do we have to diagnose and treat these comorbidities in LMICs when gold standards are not available?
Results: A total of 22 188 citations were identified by our search strategy, with 21 380 remaining after the removal of 808 duplicates. After screening titles and abstracts, 1918 citations progressed to full text review. A total of 194 articles met the eligibility criteria and were included in the review. The guiding questions of the review were answered for the following morbidities: respiratory impairments, dysphagia and aspiration, gastroesophageal reflux disease, drooling, obstructive sleep apnea syndrome, malnutrition, constipation, epilepsy, sleep disorders, spasticity, dystonia, pain, hip disorders, scoliosis and osteoporosis.
Conclusion: This article highlights the need for interventions adapted to the realities of LMICs. Empowering paediatricians and healthcare professionals in LMICs is crucial for early diagnosis and proactive interventions. Specific guidelines for LMICs can better guide professionals in managing these complex conditions.
PMID: 39985221

17.Trends in Postneonatally Acquired Cerebral Palsy: Insights From a CP Surveillance Network

Hayley Smithers-Sheedy, Sarah McIntyre

Paediatr Perinat Epidemiol . 2025 Feb 18. doi: 10.1111/ppe.70004. Online ahead of print.

No abstract available
PMID: 39965786

18.Daily life situations and participation of siblings of children with childhood-onset disabilities: a scoping review

Johanna Linimayr, Judith Graser, Selina Gredig, Hubertus J A van Hedel, Anne Tscherter, Sebastian Grunt, Christina Schulze

Review BMJ Paediatr Open . 2025 Feb 19;9(1):e003189. doi: 10.1136/bmjpo-2024-003189.

Background: Siblings of children with disabilities or childhood-onset chronic conditions (eg, autism, cerebral palsy or congenital heart disease) often face challenges in mental health, quality of life and psychosocial adjustment. However, comprehensive knowledge of their participation in daily activities remains limited. Understanding their participation patterns and potential restrictions can help clarify their needs.
Aims and methods: This scoping review aims to summarise current research on the participation of siblings of children with childhood-onset chronic conditions. Following the Joanna Briggs Institute methodology, we systematically searched MEDLINE, CINAHL, AMED, PsycINFO and ERIC for peer-reviewed studies published in English between 2001 and 2024. Eligible studies focused on siblings of children with disabilities or early-onset chronic conditions (population) and their participation, including attendance and involvement in daily activities (concept) across children's homes, communities and schools (context). The review adheres to the Preferred Reporting Items for Scoping Reviews guidelines.
Results: A total of 62 articles met the inclusion criteria: 45 qualitative (73%) and 7 quantitative (11%) studies, 7 reviews (11%) and 3 meta-studies (5%). The studies covered various chronic conditions (eg, cancer, chronic kidney disease and Down syndrome), with autism being the most common (22 studies). Key participation themes identified include family life, home participation, school involvement, leisure activities, social interactions with peers, information-seeking and continuous meaning-making. Factors such as normalcy, advocacy, identity, gender, age, culture and socioeconomic status were found to intersect with participation.
Conclusions: This review provides a comprehensive overview of current research and contributes to our understanding of how participation in daily activities has been studied so far in the population of siblings of children with disabilities. It reveals a gap in research specifically measuring participation among siblings. The identified themes enhance our understanding of potential participation restrictions in this population.
PMID: 39971614

19.Assessment of cortical activity, functional connectivity, and neuroplasticity in cerebral palsy using functional near-infrared spectroscopy: A scoping review

No authors listed

Dev Med Child Neurol . 2025 Feb 20. doi: 10.1111/dmcn.16286. Online ahead of print.

No abstract available
PMID: 39977238

20.Long-Term Outcomes After Neonatal Acidemia

Mehreen Zaigham, Karin Källén, Tiia-Marie Sundberg, Per Olofsson

Am J Obstet Gynecol . 2025 Feb 19:S0002-9378(25)00109-7. doi: 10.1016/j.ajog.2025.02.028. Online ahead of print.

Background: Sustained intrauterine hypoxia causes some four million perinatal deaths annually worldwide. The condition is predicated by neonatal acidemia, as determined by pH in umbilical cord blood at birth. We aimed to evaluate the association between umbilical cord arterial pH and long-term outcomes up to 20 years of follow-up.
Study design: Using a retrospective cohort design, umbilical cord arterial pH values from singleton births at Skåne University Hospital Malmö, Sweden, from 1997-2012 were cross-linked to data from the Swedish Medical Birth Register, Swedish Patient Register, and Cause of Death Register. The Hazard Ratio (HR) for developing disease later in life, as defined organ-wise with the International Classification of Diseases version 10 with codes 00-99, was calculated relative to umbilical cord arterial pH <7.05 and ≥7.05, respectively. In addition, umbilical cord arterial pH thresholds at 6.95, 7.00, 7.05, 7.10, 7.15, and 7.20 were evaluated for mental and behavioral disorders.
Results: Of the 35931 births that met the inclusion criteria of complete and validated data, 912 (2.5%) had acidemia (umbilical cord arterial pH <7.05) at birth, while 35019 (97.5%) had non-acidemic values (pH ≥7.05). Acidemia was associated with higher mortality (P=0.043). Among groups of organ system diseases, a pH <7.05 was not associated with increased risk of disease. At the group level, the risk was not significantly increased for mental and behavioral disorders (crude HR 1.05, 95%CI 0.75-1.46), however, sub-analysis showed an increased risk of cerebral palsy (crude HR 4.30, 95%CI 2.16-8.58) and epilepsy (crude HR 1.70, 95%CI 1.02-2.86). After adjustment for maternal age, parity, smoking, body mass index, and gestational age, the associations strengthened (cerebral palsy adjusted HR 4.35, 95% CI 2.17-8.73), (epilepsy adjusted HR 1.71, 95% CI 1.02-2.88). The threshold of umbilical cord arterial pH <6.95 was significantly associated with increased risk of cerebral palsy (HR 18.38, 95%CI 7.34-46.08), epilepsy (HR 8.16, 95%CI 4.18-15.92) and intellectual disability (HR 4.19, 95%CI 1.73-10.17), whereas thresholds 7.00, 7.05, 7.10, and 7.15 were not.
Conclusions: Neonatal acidemia, defined as cord arterial pH<7.05, was associated with an increased risk of death, cerebral palsy and epilepsy, but not of other types of mental and behavioral disorders or other organ system diseases. An umbilical cord arterial pH <6.95 was significantly associated with cerebral palsy, epilepsy and intellectual disability whereas pH <7.00 and other thresholds between 7.05 and 7.20 were not.
PMID: 39983887