

Cerebral Palsy in the Faroe Islands: Birth Prevalence and Clinical Characteristics, 2005–2021

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Abstract

Objective

To estimate birth prevalence and describe the clinical characteristics of cerebral palsy among children in the Faroe Islands.

Methods

We conducted a nationwide, retrospective, population-based birth cohort study using electronic health records from the National Hospital of the Faroe Islands. Children born between 2005 and 2021 with confirmed cerebral palsy diagnoses, according to SCPE criteria, were included. Birth prevalence was estimated with 95% confidence intervals. We analysed demographic, perinatal, clinical, and functional characteristics descriptively, including cerebral palsy subtype, GMFCS level, comorbidities, and age at diagnosis.

Results

30 children were identified with cerebral palsy, corresponding to an estimated birth prevalence of 2.7 per 1,000 live births (95% CI 1.9–3.9). Boys accounted for 73.3% of cases. Median age at diagnosis was 1.9 years (95%CI 1.1–2.9). Spastic unilateral cerebral palsy was the predominant diagnosis (53.1%), followed by spastic bilateral cerebral palsy (30.0%). Most children were ambulatory (GMFCS I–II, 69.7%). A substantial proportion of cases were born at term, with perinatal adversity, including birth asphyxia and low 5-min. Apgar score. Intellectual disability (60.0%), sleep disorders (66.7%), visual impairment (36.7%), and epilepsy (30.0%) were common comorbidities.

Conclusion

This study provides the first birth prevalence estimates of cerebral palsy in the Faroe Islands. Prevalence was slightly higher than in comparable Scandinavian and European populations. The cohort was characterised by predominantly unilateral cerebral palsy, a high proportion of term-born children, frequent sleep problems, and substantial comorbidity. Strengthened surveillance and coordinated multidisciplinary follow-up may support improved long-term outcomes.

1. Introduction

Cerebral palsy is a group of permanent disorders affecting the development of movement and posture, causing physical activity limitation, attributed to non-progressive disturbances in the developing fetal or infant brain [1, 2]. Indeed, children, adolescents, and adults with cerebral palsy have reduced cardiorespiratory fitness, muscle strength, and habitual physical activity participation [3, 4], which

imposes significant risks for negative health outcomes and early all-cause mortality [5, 6]. Cerebral palsy is commonly associated with a range of sensory, cognitive, communicative and behavioural conditions, as well as epilepsy, secondary musculoskeletal problems and other comorbidities [1, 2, 7, 8]. Globally, cerebral palsy is the most common motor disability in childhood, with reported prevalence rates ranging from 1.3 to 3.4 per 1000 live births or children of a defined age range, varying across socioeconomic settings and geographical regions [2, 8, 9]. In high-income countries, prevalence estimates typically fall in the lower range, from 1.3 to 2.4 per 1,000 live births [2, 8]. In contrast, prevalence in low- and middle-income countries is often higher, ranging from 3.0 to 3.4 per 1,000 live births. A systematic analysis of global occurrence estimates suggests that socioeconomic country characteristics may contribute to these differences [2]. Despite significant advancements in perinatal and neonatal care over recent decades, the overall prevalence of cerebral palsy has remained relatively stable in many high-income countries [2, 9].

The severity of cerebral palsy can vary from mild, with minimal impact on daily function, to profound, necessitating lifelong comprehensive care and support [1, 2, 10, 11]. Consequently, cerebral palsy imposes a substantial and enduring burden on affected children, their families and society, influencing quality of life, educational and vocational opportunities, and healthcare resource utilisation [10, 12, 13, 14, 15]. Early and accurate diagnosis, followed by timely access to evidence-based interventions, is paramount for optimising developmental trajectories, managing associated health and medical conditions and enhancing overall well-being and societal inclusion for children with cerebral palsy and their families [16, 17, 18, 19, 20].

While the epidemiology of cerebral palsy has been extensively studied in many larger populations, often through well-established national registries and surveillance programs such as the Surveillance of Cerebral Palsy in Europe (SCPE) [2, 18, 19, 21, 22], reliable data from smaller, geographically distinct populations, such as the Faroe Islands, remain scarce [2, 23, 24]. The Faroe Islands are a self-governing North Atlantic archipelago with a historically relatively isolated population of approximately 55,000 (Statistics Faroe Islands), representing a unique genetic and environmental context [25, 26], alongside a universal public healthcare system. In the Faroe Islands, the absence of registry data on complicated deliveries limits the ability to assess whether birth-related injuries may contribute to cerebral palsy prevalence compared with other countries. Investigating cerebral palsy in such specific demographic settings may contribute to a more comprehensive global understanding of the condition, as it can reveal variations in prevalence, risk factor profiles, or clinical phenotypes that might be obscured in larger, more heterogeneous populations [23, 24]. Previous research in Northern European countries has provided valuable insights into cerebral palsy epidemiology [8, 27, 28, 29, 30], but data on paediatric conditions among the Faroese have been scarce.

Population-based epidemiological studies and disease registries are essential for monitoring disease patterns and occurrences, evaluating the timeliness of diagnostics and treatment, and informing evidence-based resource allocation in the health sector [31, 32, 33]. Such data enable policymakers, healthcare authorities, and clinicians to plan and implement appropriate management strategies,

support services, and preventive measures [31, 32, 33, 34]. In the context of cerebral palsy, early case ascertainment, combined with comprehensive documentation of functional status, comorbidity burden, and etiological indicators, is crucial for planning multidisciplinary care and benchmarking against quality indicators defined by SCPE [19, 20, 21, 33, 35].

Against this background, the present study provides the first comprehensive descriptive analysis of cerebral palsy in the Faroe Islands. The primary objectives were to estimate the birth prevalence of cerebral palsy using clinically ascertained cases from electronic health records (EHR) and to characterise perinatal factors, clinical function, and comorbidities for the Faroese paediatric cerebral palsy population.

2. Materials and Methods

2.1. Study Setting

The Faroese healthcare system is publicly funded and provides comprehensive healthcare services to all residents. Specialised paediatric care, including diagnostic assessment and ongoing management of children with neurodevelopmental disorders such as CP, is centralised at the National Hospital of the Faroe Islands in Tórshavn, which serves as the main referral centre for complex paediatric conditions. For highly specialised assessments and treatment, children are referred to Rigshospitalet in Copenhagen, Denmark. In addition, specialist teams from Rigshospitalet conduct scheduled visits to the Faroe Islands approximately three times per year to support local paediatric services. Preterm infants born before 30 weeks of gestation with extremely low birth weight (ELBW, < 1000 g) or very low birth weight (VLBW, 1000–1499 g) are routinely transferred to Rigshospitalet for advanced neonatal care. An electronic health record (EHR) system has been progressively implemented across the Faroese healthcare system since 2005, enabling centralised access to clinical data for both patient care and research.

2.2 Study design, population, data collection and variables

This study was conducted as a retrospective nationwide epidemiological study. All live-born children with cerebral palsy born between January 1, 2005, and December 31, 2021, who resided in the Faroe Islands during the study period were included. The start year (2005) corresponds to the implementation of the EHR system, ensuring complete case ascertainment. As the analysis was conducted in 2026, all included children fulfilled the four-year confirmation criterion recommended by the SCPE network [35]. Cases with cerebral palsy were identified through EHRs using ICD-10 diagnostic codes (G80.0–G80.9), covering all major cerebral palsy subtypes [<https://www.cdc.gov/nchs/icd/icd-10/>]. Diagnoses were validated according to SCPE criteria [35]. To ensure comprehensive case identification, paediatricians and neurologists recommended additional searches in diagnostic categories associated with possible cerebral palsy, including prematurity, perinatal asphyxia, failure to thrive, delayed psychomotor development, neurological disorders and syndromes, epilepsy, autism, ADHD, and intellectual disability (see Supplementary Table 1). All relevant medical records from the Child and Neonatal Department (n =

1,466) were reviewed by the first author in 2022 to identify confirmed cases of cerebral palsy and associated comorbidities. A follow-up validation was conducted in 2026 by the first author and two paediatricians, in accordance with the SCPE four-year confirmation window. Children with progressive neurological disorders or conditions incompatible with a cerebral palsy diagnosis were excluded (see flowchart Fig. 1).

Comorbidities were identified from the EHR and included: epilepsy, intellectual disability (based on formal psychoeducational assessment or clinical diagnosis), visual impairment (requiring correction or significantly impacting function), hearing impairment (requiring amplification or significantly affecting function), congenital brain malformations, congenital heart disease, chromosomal or genetic syndromes, autism, ADHD, sleep disorders, and PEG tube status. Sleep problems were identified through documented sleep-related diagnoses, use of sleep medication, and/or recorded sleep difficulties in the medical records. Children with sleep problems were invited to participate in a music intervention study aimed at improving sleep in children with cerebral palsy. The following variables were collected: demographic characteristics, including date of birth, sex, and age at data extraction (calculated from the date of birth through December 31, 2021). Birth characteristics: Gestational age (GA), birth weight (grams), birth asphyxia (yes/no), and Apgar scores at 1, 5, and 10 minutes, where available. Cerebral palsy diagnosis and clinical characteristics, age at first cerebral palsy diagnosis and GMFCS. GMFCS levels I–II were classified as ambulatory, while levels III–V were classified as non-ambulatory. GMFCS levels III–V were used to indicate higher motor support needs based on functional abilities documented in the clinical records.

2.3. Data Analysis

Descriptive statistics were used to summarise counts and proportions (n, %), measures of central tendency and dispersion as mean $\pm$ standard deviation [SD], or medians with interquartile ranges (IQR). The birth prevalence of cerebral palsy was calculated as the number of identified cerebral palsy cases divided by the number of live births in the Faroe Islands between January 1, 2005, and December 31, 2021 (N = 11,115), and expressed per 1,000 live births. Prevalence estimates and corresponding 95% confidence intervals (CI) were calculated in Microsoft Excel using the Wilson score method [36]. The denominator was obtained from national population data provided by Statistics Faroe Islands. The proportion of children with each comorbidity was calculated using the number of affected children as the numerator and the total number of children in the cerebral palsy cohort as the denominator. Counts fewer than five were suppressed in accordance with data protection guidelines to minimise the risk of indirect identification.

Age at diagnosis and sex-specific differences in selected perinatal and clinical characteristics were analysed descriptively and visualised graphically. Chi-square tests were used for selected subgroup comparisons, including those stratified by sex for prematurity and severe cerebral palsy. Statistical significance was defined as a two-sided p-value < 0.05 . Missing data were handled using complete-case analysis for each variable, with the number of available observations (n) reported for all analyses; see Supplementary Table 2. No imputation of missing data was performed. Prevalence and CI estimates

were calculated using Microsoft Excel for Microsoft 365 (Microsoft Corporation, Redmond, WA, USA), while all other statistical analyses and visualisations were performed using R version 4.1.2 (R Foundation for Statistical Computing, Vienna, Austria). The following packages were used: ggplot2 and scales for data visualisation, dplyr and tidyr for data management, openxlsx for data import, and the base stats package for descriptive and comparative analyses. All statistical code and analysis scripts are available from the corresponding author upon reasonable request.

3. Results

3.1. Birth Prevalence and Demographic Characteristics

Based on the selected diagnostic categories (see Supplementary Table 1), a total of 1,466 children were screened as potentially having cerebral palsy. Following the follow-up validation in 2026, thirty children met the diagnostic criteria and were included in the final cohort. At the data extraction date (1 December 2022), the mean age of the cohort was 8.6 years (range: 0.0–16.1 years). Fewer than five deaths were observed during the study period; detailed information is not reported to preserve confidentiality due to the small number of events. Based on 30 identified cases and a total Faroese live birth cohort of 11,115 children from 2005–2021 (Statistics Faroe Islands, December 2021), the estimated birth prevalence of cerebral palsy was 2.7 per 1,000 live births (95% CI: 1.9–3.9). The median age at cerebral palsy diagnosis was 1.9 years (IQR:1.1–2.9), with 83.3% of children diagnosed before four years of age. Boys were more frequently affected, with 22 cases corresponding to a prevalence of 3.9 per 1,000 live births (95% CI: 1.9–3.9), compared with 8 cases among girls, corresponding to 1.5 per 1,000 live births (95% CI: 0.7–2.9), yielding a male-to-female ratio of 2.8:1. (See Table 1).

Table 1

Birth prevalence estimates with 95% confidence intervals, demographic, perinatal, and clinical characteristics of the national cohort of children with cerebral palsy in the Faroe Islands from 2005 to 2021.

Birth prevalence of cerebral palsy	n/N	Birth prevalence (cases per 1000 live births)	95% Confidence interval*
		Or proportion (%)	
	30/11,115	2.7	1.9–3.9
Boys	22/5642	3.9	2.6–5.9
Girls	8/5473	1.5	0.7–2.9
Mean age	30/30	8.6	6.8–10.5
Tórshavn capital	7/30	23.3	11.8–40.9
Outside capital	23/30	76.7	59.1–88.2
GMFCS Ambulatory (I–II)	22/30	69.7	55.5–85.8
GMFCS Non-ambulatory (III–V)	8/30	26.6	14.2–44.4
Gestational age: Extreme preterm (< 28w)	2/30	6.7	1.8–21.3
Gestational age: Very preterm (28–31 weeks)	3/30	10.0	3.5–25.5
Gestational age: Moderate/late preterm (32–36w)	5/30	16.7	7.3–33.6
Gestational age: Term (37–41 weeks)	15/30	50.0	33.2–66.8
Gestational age: Post-term (≥ 42w)	4/30	13.3	5.3–29.7
Birth weight: ELBW (< 1000g)	3/30	10.0	3.5–25.6
Birth weight: VLBW (1000–1499g)	4/30	13.3	5.3–29.7
Birth weight: LBW (1500–2499g)	1/30	3.3	0.6–16.7
Birth weight: Normal (2500–3999g)	18/30	60.0	42.3–75.4
Birth weight: Macrosomia (≥ 4000g)	3/30	10.0	3.5–25.6
Abbreviations: CP=Cerebral palsy, GMFCS= Gross Motor Function Classification System, LBW = Low birth weight (< 2500g), VLBW=very low birth weight (< 1500g), ELBW= Extremely low birth weight (< 1000g). *Confidence intervals were calculated using the Wilson score method.			

Birth prevalence of cerebral palsy	n/N	Birth prevalence (cases per 1000 live births)	95% Confidence interval*
		Or proportion (%)	
	30/11,115	2.7	1.9–3.9
Perinatal asphyxia	10/30	33.3	19.2–51.2
Low Apgar (< 7 at 5 min)	10/30	33.3	19.2–51.2
Abbreviations: CP=Cerebral palsy, GMFCS= Gross Motor Function Classification System, LBW = Low birth weight (< 2500g), VLBW=very low birth weight (< 1500g), ELBW= Extremely low birth weight (< 1000g). *Confidence intervals were calculated using the Wilson score method.			

3.2. Clinical Characteristics

The predominant cerebral palsy subtype was spastic unilateral, accounting for 16 cases (53.3%), followed by spastic bilateral in 9 cases (30.0%) and dyskinetic cerebral palsy in 2 cases (6.7%). Three cases (10.0%) remained unclassifiable after quality review. We established an identifiable aetiology in 28 of 30 cases (93.3%), exceeding the SCPE target of 85% [35]. The most common aetiological categories were birth asphyxia (10 cases, 33.3%) and prematurity (10 cases, 33.3%), followed by prenatal causes (6 cases, 20.0%). Functional severity, as classified by GMFCS, was available for all 30 cases; non-ambulatory cerebral palsy (GMFCS III-V) was 26.7%, and in SCPE (GMFCS III-V) it was 28–35% [35] (see also Table 2). Females had a higher proportion of low birth weight (< 2500 g) and prematurity (< 37 weeks), whereas males showed higher proportions of asphyxia, epilepsy, and severe cerebral palsy (GMFCS III–V). A statistically significant sex difference was observed for prematurity ($p = 0.017$), while no significant sex difference was found for severe cerebral palsy ($p = 0.554$) (see Fig. 2).

Median gestational age was 40.0 weeks (Q1-Q3: 32.0–40.0, IQR: 8); 50.0% of children were born at term, 16.7% were moderate/late preterm, 10.0% were very preterm, and 6.7% were extremely preterm. Median birth weight was 3490 g (Q1-Q3:1890–3850, IQR:1950), with 60.0% in the normal range and the remainder distributed across low-birthweight (3.3%), very-low-birthweight (13.3%), and extremely-low-birthweight (10.0%) categories. Females exhibited a broader distribution of gestational age and were more often born preterm and with lower birth weight compared with males, who were predominantly born at term with normal birth weight. Apgar scores varied across time points, with lower values at 1 minute and improvement at 5 and 10 minutes (See also Fig. 3).

3.3. Comorbidities

Associated comorbidities were common in this cohort. Sleep disorders were the most prevalent, affecting 20 children (66.7%), followed by intellectual disability in 18 children (60.0%) and visual impairment (strabismus, refractive errors, or hemianopia) in 11 children (36.7%). Epilepsy was diagnosed in 9 children (30.0%). Surgical tendon lengthening (tenodesis) had been diagnosed in 9 children (30.0%), indicating active orthopaedic management. Hydrocephalus, respiratory complications, cardiac disease,

ADHD/autism, and feeding difficulties were each observed in fewer than five children. No cases of hearing impairment were recorded. See supplementary Table 3 for comorbidities.

4. Discussion

This study provides the first population-based description of cerebral palsy in the Faroe Islands, based on data from electronic health records from 2005 to 2021. The overall birth prevalence was 2.7 per 1,000 live births (95% CI: 1.9–3.9), which is higher than pan-European estimates reported by the SCPE (1.77 per 1,000) [8, 9, 19, 33, 35] but more comparable to rates reported in other Nordic countries, including Denmark (2.1 per 1,000), Sweden (2.0 per 1,000), and Iceland (2.2 per 1,000) [22, 23, 27, 28, 29]. The wide confidence interval reflects the small population size and overlaps with most international estimates, precluding definitive conclusions regarding whether the Faroese prevalence is truly elevated. The male-to-female ratio of 2.8:1 observed in this cohort is higher than the approximately 1.3–1.4:1 ratio reported in large European and Australian cerebral palsy Registries (SCPE, ACPR) (2,9,33,35) and reported in Nordic cohorts [8, 23, 27, 29]. This difference may reflect random variation related to the small sample size; however, a genuine sex-related difference in susceptibility to cerebral palsy cannot be excluded. Continued monitoring across subsequent birth cohorts will be important to determine whether this pattern persists.

The clinical profile of cerebral palsy in the Faroese cohort differed from patterns reported in SCPE registries (2,30,33,35). Spastic unilateral cerebral palsy accounted for 53.1% of cases, exceeding the 20–35% typically reported in European populations, whereas spastic bilateral cerebral palsy constituted 30% of cases, below the expected range of 35–50% (2,30,33,34,35). The predominance of spastic unilateral cerebral palsy in this cohort likely reflects the relatively high proportion of children born at term, as unilateral cerebral palsy is more commonly associated with term or near-term birth. Conversely, the lower proportion of bilateral cerebral palsy is consistent with the relatively low rate of very preterm births in this population. These findings, representing a lower overall prematurity burden than typically reported in SCPE cohorts [2, 7, 32, 33, 34, 35], may suggest a cohort characterised by a higher contribution of term-born children exposed to focal hypoxic–ischaemic or vascular events [2, 7, 33, 34]. The perinatal risk profile supports this interpretation. A substantial proportion of children were born at term or post-term with indicators of perinatal adversity, including low 5-minute Apgar scores and birth asphyxia. The proportion of asphyxia-related CP (33%) was higher than typically reported in European cohorts (10–15%) [2, 9, 19, 34]. Together, these findings suggest a shift towards perinatal risk factors in term-born children, which may contribute to the observed subtype distribution.

The median age at cerebral palsy diagnosis was 1.9 years, with 83% of children diagnosed before four years of age. This is consistent with international estimates reported by SCPE and Australian registry data, indicating timely identification in the Faroe Islands despite the small size and geographic dispersion of the population. Continued integration of SCPE-aligned surveillance practices, together with access to Danish tertiary specialist services, may further support early diagnosis. The distribution of functional severity further supports the overall clinical profile. Approximately 70% of children were

classified as ambulatory (GMFCS levels I–II), compared with 60–65% reported in SCPE cohorts [2, 8, 9, 33, 34, 37]. Conversely, non-ambulatory cases (GMFCS III–V) were less frequent (26.6% vs. 28–35%). This relatively milder functional profile is consistent with the predominance of unilateral spastic cerebral palsy, which is generally associated with better motor outcomes (38).

Geographically, approximately 23.3% of cases resided in the capital of the Faroe Islands, despite this area accounting for approximately 40% of the total Faroese population. This apparent under-representation may reflect regional variation in birth rates or demographic structure, although random variation due to the small cohort size cannot be ruled out. A formal comparison between the geographic distribution of cases and the underlying population structure was beyond the scope of this study. The cohort's comorbidity profile was broadly consistent with international findings. Intellectual disability was slightly more frequent than in SCPE cohorts (60% vs. 40–50%), whereas epilepsy was slightly less common (30% vs. 30–40%). Sleep disorders were identified in two-thirds of the cohort and may represent an under-recognised comorbidity in cerebral palsy populations. Overall, the observed burden of comorbidities in this cohort represents an additional challenge for children with cerebral palsy and underscores the importance of coordinated multidisciplinary care pathways across neurology, rehabilitation, and community-based services in the Faroe Islands. Given the small number of cases ($n = 30$), subgroup comparisons should be interpreted with caution. Observed differences may reflect random variation rather than true epidemiological differences. The relatively wide confidence intervals reported throughout the study reflect this inherent uncertainty. Continued collaboration with Nordic and European cerebral palsy registries will be essential for contextualising these findings and refining international comparisons.

Overall, the slightly higher prevalence observed in the Faroe Islands may reflect a combination of complete case ascertainment, population-specific risk profiles, and differences in perinatal care pathways [2, 26]. Strengthening perinatal review processes, including systematic documentation of delivery-related factors and multidisciplinary evaluation of adverse events, may help reduce preventable injury in term-born children and improve long-term outcomes.

Strengths and limitations

This study has several strengths. First, it provides the first comprehensive nationwide population-based birth cohort study of cerebral palsy in the Faroe Islands, including all identified cases born between 2005 and 2021. Second, the small and geographically well-defined population facilitated systematic electronic health record review, which may have enhanced case identification relative to studies relying primarily on registry data. Third, data completeness was high, with GMFCS classification available for all cases, and cerebral palsy subtype classification (93%) exceeding SCPE quality targets (85%).

Some limitations should be considered. The small cohort size ($n = 30$), inherent to the Faroese population, limits statistical power for subgroup analyses and results in wide confidence intervals. This also precludes more advanced analyses, such as multivariable modelling and limits the generalisability

of the findings. In addition, the retrospective, EHR-based design may lead to under-ascertainment of some comorbidities, particularly those not consistently coded using ICD-10 diagnoses (e.g., visual impairment, feeding difficulties, or not yet ascertained, for example, autism and ADHD). Missing data for selected variables, including the Apgar scores (at 5 minutes for 16.7%), may affect the completeness of perinatal risk factor analyses. Although the small and geographically well-defined population facilitated systematic case ascertainment through electronic health record review, the possibility of incomplete case ascertainment cannot be excluded. Despite these limitations, data quality was strengthened through systematic record review and data-cleaning procedures, ensuring high completeness of key SCPE variables and supporting the overall robustness of the findings. Future research should prioritise the establishment of a dedicated national cerebral palsy registry and a medical birth registry with systematic follow-up of birth cohorts. Such an infrastructure would enable accurate estimation of birth prevalence, facilitate direct international comparisons, and allow longitudinal monitoring of trends and outcomes over time. In small countries such as the Faroe Islands, the development of registry-based surveillance aligned with international standards appears both feasible and valuable [34, 35].

Overall, these findings highlight the importance of continued surveillance, targeted investigation of perinatal risk factors, particularly among term-born children, and longitudinal assessment of functional outcomes across GMFCS levels. Despite the inherent limitations, cerebral palsy remains a significant neurodevelopmental and neurological condition in the Faroese paediatric population, with prevalence estimates broadly comparable to those reported in other Nordic and European settings [2, 8, 9].

5. Conclusion

The birth prevalence of cerebral palsy in the Faroe Islands was slightly higher than that reported in comparable Scandinavian and European populations. The cohort was characterised by a predominance of unilateral cerebral palsy, milder motor impairment, a high proportion of term-born children, and a substantial burden of co-occurring conditions. Sleep problems were particularly frequent, affecting 66.7% of the cohort, highlighting sleep as an important aspect of clinical care and a finding of potential relevance beyond the Faroese setting. Strengthened surveillance, timely diagnostic pathways, and coordinated multidisciplinary follow-up, including greater attention to sleep problems, may support improved long-term outcomes for children with cerebral palsy.

Abbreviations

GMFCS, Gross Motor Function Classification System

HIC, high-income country

LMIC, low- and middle-income countries

SCPE, Surveillance of Cerebral Palsy in Europe

Declarations

Acknowledgements:

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Author Contributions:

T.O. conceptualised the study, conducted data collection and extraction, performed prevalence and confidence interval analyses in Excel, prepared the corresponding tables, and drafted the manuscript. M.M., M.S. and M.S.P. supervised the study design, statistical methodology and provided critical methodological guidance. P.B. and E.Ó. provided clinical expertise, validated diagnoses, and reviewed medical records. J.S. contributed to statistical analysis and data pipeline development. All authors reviewed, revised, and approved the final manuscript.

Conflicts of interest:

The authors declare no conflicts of interest.

Data Availability:

Individual-level data cannot be shared publicly due to privacy regulations governing the Faroese health registry and the small population size that could enable re-identification. Aggregated summary data supporting the findings are available in the manuscript tables and supplementary materials. Requests for additional aggregated data can be directed to the corresponding author (torunno@setur.fo) and will be evaluated by the Research Ethics Council of the Faroe Islands (Vísindasiðseminevndin).

Ethics:

The Research Ethics Council of the Faroe Islands (Vísindasiðseminevndin) approved this registry study (approval no. 30.03.23), in accordance with the Declaration of Helsinki. All data were de-identified before analysis. Individual informed consent was waived under Faroese national legislation governing secondary use of anonymised health registry data for research purposes.

Given the small Faroese population and the specific focus on a paediatric cohort—a vulnerable population requiring enhanced privacy protection—strict confidentiality measures were implemented. Data were accessed exclusively through secure, password-protected systems at the National Hospital of the Faroe Islands and the University of the Faroe Islands, with access restricted to authorised study personnel. All data storage and analysis procedures complied with Faroese and Danish data protection

regulations. Individual-level data remain confidential and are not publicly shared to prevent re-identification.

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Figures

Children identified through EHR screening for possible CP-related conditions (2005–2021 birth cohorts)

N = 1,466. Diagnostic categories used for case ascertainment (overlapping categories)

— Prematurity and perinatal asphyxia (n = 363), Cerebral palsy identified n=40

└ Included: n = 33

— Cerebral palsy diagnoses (n = 39)

└ Included: n = 32 (already included)

— Syndromes/genetic neurological disabilities (n = 44)

└ Cerebral palsy-like symptoms: n = 8

Excluded due to genetic aetiology

— Epilepsy (n = 58)

└ Cerebral palsy identified: n = 9 (already included)

— Intellectual disability (n = 56)

└ Cerebral palsy identified: n = 18 (already included)

— Autism (n = 282) and ADHD (n = 284)

└ Cerebral palsy identified: n = 3 (already included)

— Failure to thrive (n = 313)

└ Cerebral palsy identified: n = 7 (already included)

↓

Confirmed cerebral palsy cases in 2022 after record review and removal of duplicate cases n = 33

↓

SCPE validation review (2026)

Excluded: n = 3 (Genetic disorder identified as the underlying cause)

↓

Final study cohort

Children with confirmed cerebral palsy

born 2005–2021

n = 30

Figure 1

Flowchart of cerebral palsy case ascertainment in children in the Faroe Islands born between 2005 and 2021.

A total of 1,466 children were identified through electronic health record screening of diagnostic categories potentially associated with cerebral palsy. Following medical record review, 33 children with confirmed cerebral palsy were identified in 2022. During the 2026 SCPE validation review, three children

were excluded because a genetic disorder was determined to be the underlying cause of their cerebral palsy-like presentation. The final cohort consisted of 30 children with confirmed cerebral palsy born between 2005 and 2021.

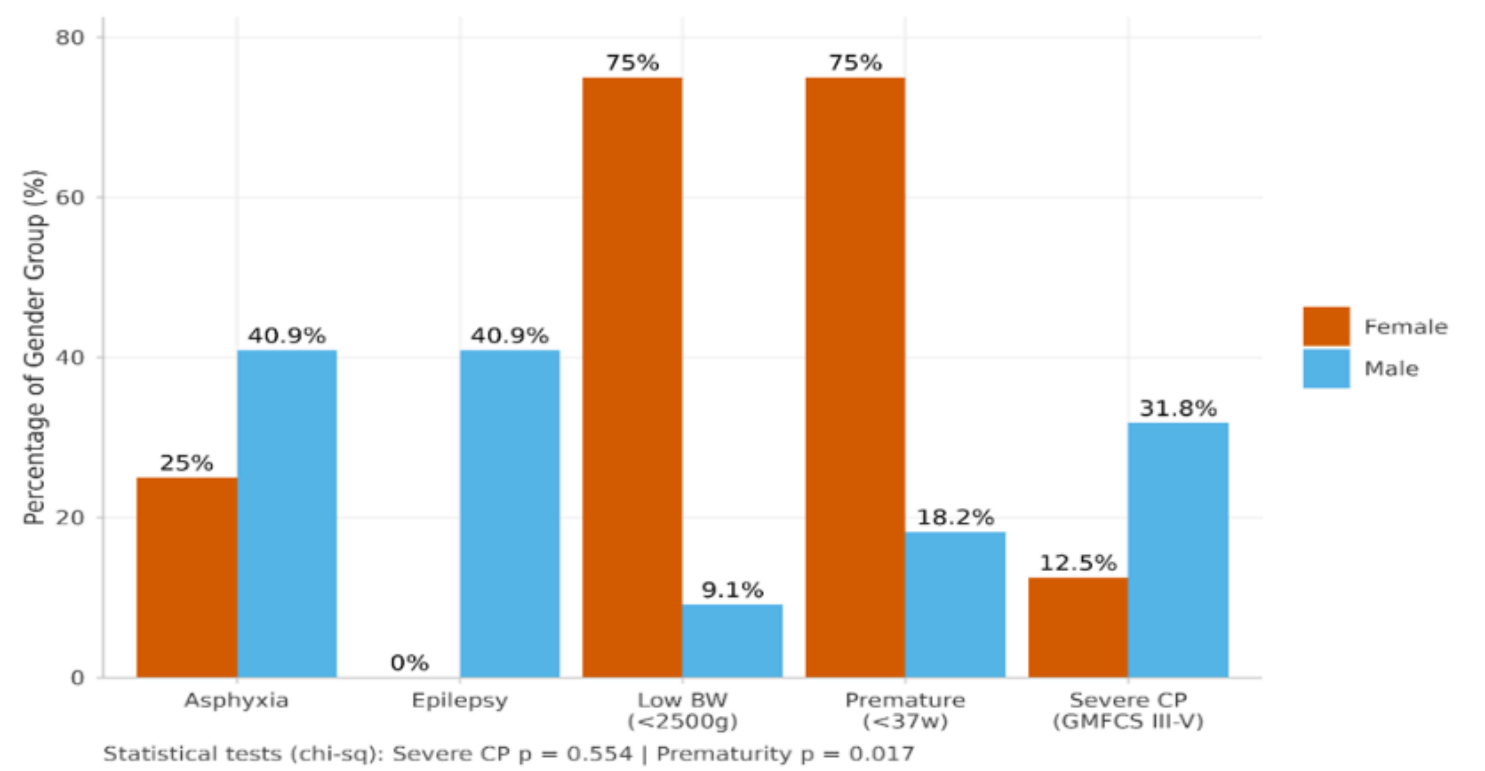


Figure 2

Illustration of the distribution of selected perinatal and clinical characteristics by sex.

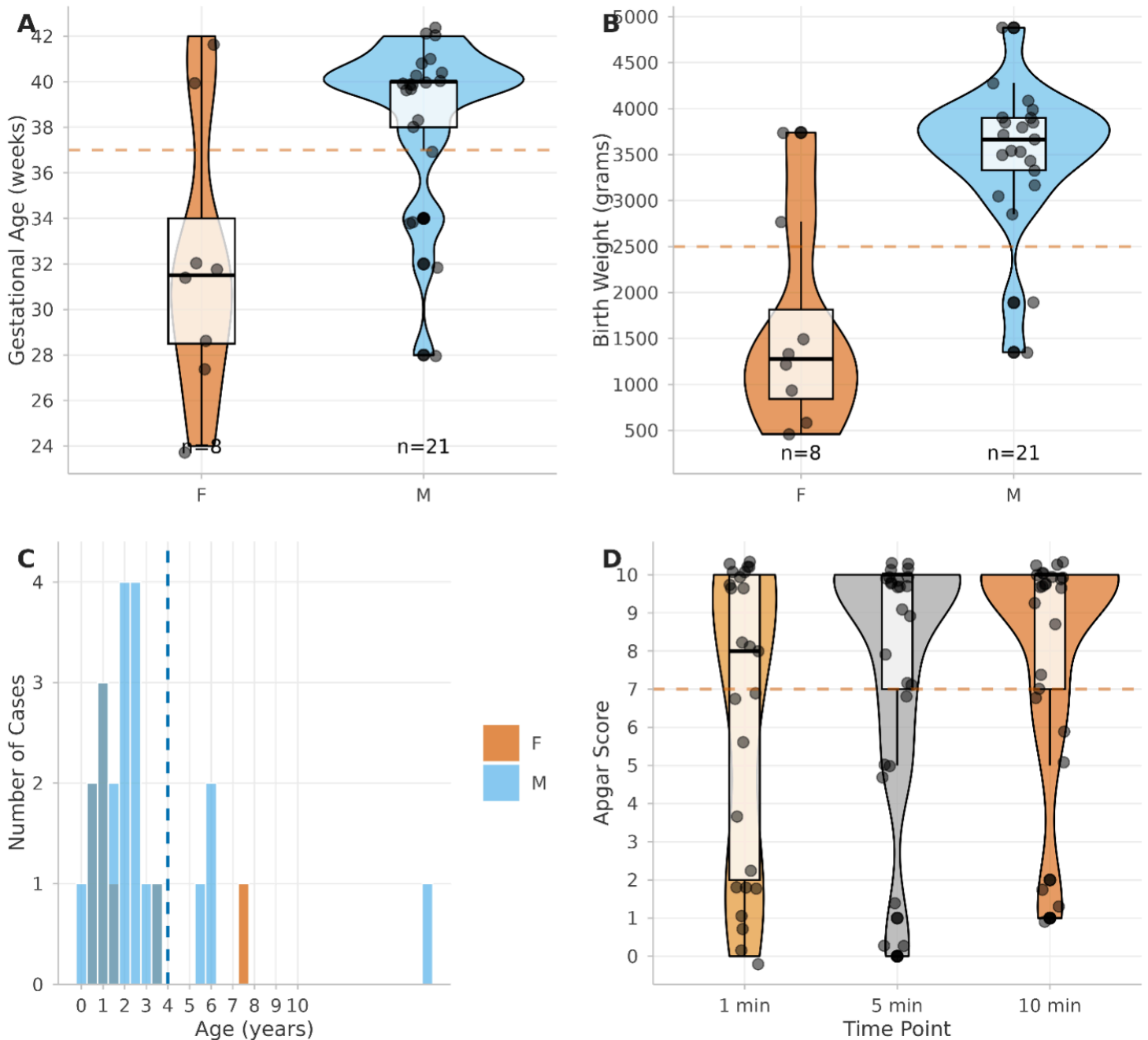


Figure 3

Distribution of gestational age (A), birth weight (B), age at diagnosis (C), and Apgar scores (D) among children with cerebral palsy, stratified by sex where applicable. Females (n = 8) showed a wider distribution of gestational age and a higher proportion of preterm births compared with males (n = 21), who were predominantly born at term. Similarly, birth weight was lower among females, with a greater proportion below 2,500 g, whereas males were more frequently within the normal birth weight range. Age at diagnosis was generally below 4 years for most cases, with a similar distribution between sexes. Apgar scores varied across time points, with lower scores observed in some cases at 1 minute and partial recovery at 5 and 10 minutes.

Supplementary Files

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- [SupplementaryTable1.2.3docx.docx](#)