

# PREVALENCE OF CEREBRAL PALSY IN SOUTHERN SWITZERLAND: A POPULATION-BASED STUDY

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## Background and Aim

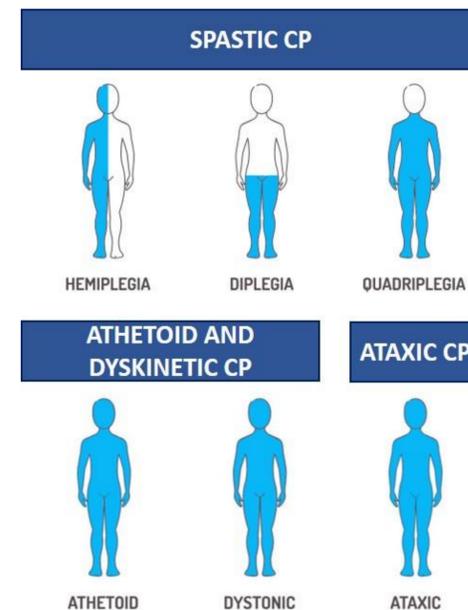
Cerebral palsy (CP) is the most common type of motor disability in childhood, and can complicate 0.1–0.4% of births.<sup>1</sup> It covers a group of conditions involving a combined disorder of movement, posture, and motor function. CP is a permanent condition, attributed to non-progressive disturbances that occurred in the developing fetal or infant brain.<sup>2</sup>

Early diagnoses can be made at the age of 6 months, using history, standardized motor and neurological examination protocols, and neuroimaging, followed by a prompt referral to a diagnostic specific early intervention to optimize infant motor and cognitive plasticity, prevent secondary complications, and enhance caregiver well-being.<sup>3</sup>

Little information is currently available in literature concerning children affected by CP in the different regions of Switzerland, since epidemiologic data have been collected and published about the canton of Saint Gallen, only.<sup>4</sup>

The purpose of this study was to collect data about the prevalence and severity of CP in children born in Southern Switzerland and to compare these data with those of the canton of Saint Gallen.

## Figure 1



At least three subgroups of Cerebral Palsy can be distinguished: (i) spastic (bilateral or unilateral), (ii) dyskinetic and (iii) ataxic. Mixed forms are also reported.

Table 1

Sociodemographic variables	Medical variables	Developmental variables
Date of birth	Gestational age	GMFCS
Date of death	Multiple birth	BFMF
Sex	Birth order	
Birthweight	Delivery mode	
	CP classification	
Mother's date of birth	Cognition	
Mother's residency	Vision	
	Hearing	
	Epilepsy	
	Associated syndromes	
	Post neonatal CP	

Abbreviations: CP, cerebral palsy; GMFCS, Gross Motor Function Classification System; BFMF, Bimanual Fine Motor Function Classification

## Materials and Methods

A retrospective study was selected to analyze data of all children affected by CP born in the canton of Ticino from January 1, 2000 to December 31, 2013. Eligible patients were identified according to the International Classification of Functioning, Disability and Health diagnoses G80.0-9.

To be eligible, children aged >4 years at the time of data acquisition had to be diagnosed with CP by a board-certified neuropediatrician according to the criteria set by the Surveillance of Cerebral Palsy Network in Europe (SCPE).<sup>5</sup> CP was classified into three types: spastic (with bilateral and unilateral subtypes), dyskinetic (with choreo-athetotic and dystonic subtype) and ataxic (Figure 1).

Our study focused on the demographic characteristics of the mother (age, parity, delivery mode and multiple birth) and child (sex, weight, and the gestational age at birth and date of death). Functional classification was undertaken using the Gross Motor Function Classification System (GMFCS) and Bimanual Fine Motor Function (BFMF). All the information on clinical features reported were extracted from medical records and classified according to SCPE rules (Table 1).

## Results

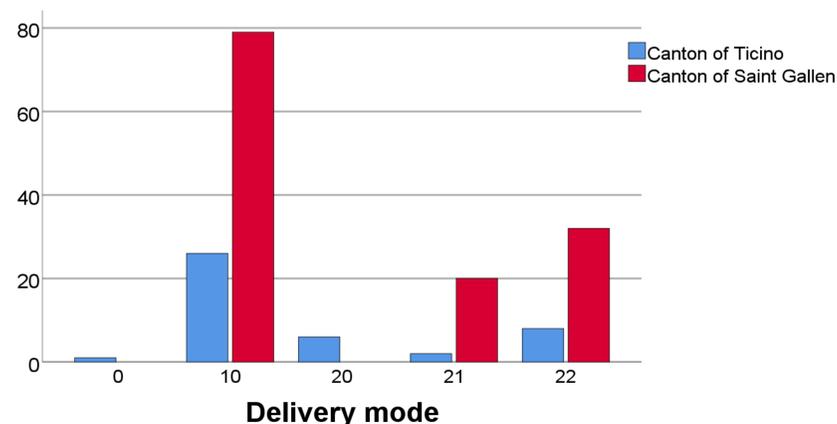
49 children (25 girls, median age 11) met the inclusion criteria.

Prevalence of CP was 0.14%, with 71.4% of children affected by a spastic CP.

The distribution of the study cohort according to GMFCS and BFMF scores was similar to that of the canton of Saint Gallen.

Comparisons between the extracted variables of the two populations resulted in two significant differences only: delivery mode ( $p < 0.005$ ) and multiple births ( $p < 0.05$ ), analyzed with the Pearson Chi-square and Mann-Whitney U tests, respectively.

Figure 2



Abbreviations: 0 = unknown; 10 = vaginal delivery; 20 = caesarean section; 21 = caesarean section elective; 22 = caesarean section emergency

## Conclusion

Two medical variables were identified as significantly different across the two cohorts. Prevalence of CP in the canton of Ticino was slightly lower with respect to northeastern Switzerland (0.19%). Data retrieved in the present study will be entered into the Swiss CP registry (created in 2017) and will be used to better anticipate therapeutic, educational and clinician needs in the future.

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