

## **Impact of the COVID-19 Pandemic on Hip Surveillance: A Retrospective 5-Year Study of the Reimer Index in Children with Cerebral Palsy in Northeastern Mexico**

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### **Introduction**

Children with cerebral palsy (CP) experience muscle spasticity, which results in constant pulling of the limbs into asymmetric positions. In the case of the lower limbs, this can lead to irreversible subluxation or complete dislocation of the hip. The objective of this longitudinal study is to analyze the effect of the COVID-19 pandemic on the progression of hip displacement, as well as the impact of the GMFCS level and spasticity (MAS) on the Reimer Index.

### **Participants and Methods**

The study included 51 children, aged between 6 and 16 years (baseline mean age of 10.78 years (SD = 3.09), and a gender distribution of 62.7% male. All participants had been diagnosed with CP and were receiving treatment at *Instituto Nuevo Amanecer*. Using their electronic medical records, we collected data from 2019 to 2024, of Reimer's Index, spasticity grades (MAS), and the GMFCS levels. To be eligible for this study they have to undergone at least one anteroposterior (AP) pelvic X-ray per year. Participants without a radiographic record prior to April 2020 were excluded from the study. Qualitative data was presented as percentage and frequencies and quantitative data was presented as mean and standard deviation. Paired t-test and Regression models were performed. The statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS), version 29.

### **Results**

The mean Reimer Index in 2019 was 25% for right hip and 30% for left hip (MCPHCS Level

3), statistically different from 2024 where the Reimer Index was 34% for right hip and 40% for left hip (MCPHCS Level 4). During the pandemic (2020 vs. 2023), there was no statistical difference in hip surveillance data. Using regression analysis, we found that both the GMFCS level and the spasticity level had an impact on the Reimer Index only of the right hip in 2019, 2020, 2023 (Only MAS) and 2024 (Only GMFCS).

## **Conclusions**

The COVID-19 pandemic did have an effect on the Reimer's index, as well as the GMFCS level and MACS before and during the pandemic. This index advanced significantly despite the efforts of primary caregivers to continue work from home, highlighting the importance of a multidisciplinary approach in hip monitoring, including postural management. This underscores the need for a public health traffic light system to promote patient/family adherence to care focused on managing hip displacement.