

# **EFFECT OF IMPAIRED AMBULATION AND ANTI-EPILEPTIC DRUG INTAKE ON VITAMIN-D NUTRITION STATUS OF CHILDREN WITH CEREBRAL PALSY**

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## **ABSTRACT**

**Background:** Individuals with cerebral palsy (CP) are at risk for developing low bone mineral density (BMD) for many reasons. Vitamin D deficiency is an important cause of poor bone mineral density. Children with CP are at higher risk of developing vitamin D deficiency due to many factors like lack of sun exposure, lack of physical activity, anti-epileptic drug intake and poor dietary intake of calcium and vitamin D due to oral-motor dysfunction. There is paucity of scientific evidence on the prevalence and severity of vitamin D deficiency in this group of children, hence this work has been undertaken to study vitamin D nutrition status in children with CP with special reference to their antiepileptic drug intake and ambulatory status.

**Aims and objectives:** To compare vitamin-D nutrition status in children with cerebral palsy aged 2-10 years with that of age-matched healthy controls and to study the influence of impaired ambulation and anti-epileptic drug intake on vitamin-D nutrition status of children with cerebral palsy.

**Methods:** In this observational study we examined the relative effects of anticonvulsant use and ambulatory status on vitamin- D nutrition status in children (age 2-10 years, n=120) with cerebral palsy (CP). Four groups of children with CP (n=30 each), were enrolled based on their anticonvulsant use and ambulatory status,

and compared with age matched normal healthy children (n=30). Parameters assessed included dietary calcium intake, sun exposure, serum Ca, iP, ALP, PTH, 25(OH)D levels and wrist radiograph for rickets.

**Results:** Healthy controls had significantly higher serum 25(OH)D levels compared to cases with CP, median (IQR) 25 (OH)D levels being 24 (14.8-27.7) ng/ml and 17.8 (10.7-25.6) ng/ml in controls & cases respectively, (p=0.04). Over-all, 60% cases of CP and 36.7% of controls were vitamin D deficient (25(OH)D <20ng/ml). Cases who were non-ambulatory with anti-epileptic drug intake were worst affected, 83.3% children of this group were vitamin D deficient with median (IQR) 25(OH)D levels of 13.4(5.0-18.1) ng/ml. In this group 53.3% children had raised ALP and 17.2% had raised PTH levels.

**Conclusion:** Our results indicate that children with CP are highly vulnerable to vitamin D deficiency. Both anticonvulsant use and lack of sun exposure contribute towards poor vitamin D status in children with CP, the effect being more pronounced when both these factors co-exist.