



INTRODUCTION

Down syndrome (DS) is a prevalent autosomal chromosomal anomaly due to an extra copy of genetic material on the 21st chromosome. Patients with DS exhibit distinct craniofacial features, a breadth of systemic anomalies as well as intellectual disability. About 80% of children with Down syndrome have feeding difficulties (Pipes & Holm, 1980). They take more time chewing their food and reject hard food or swallow it without having been well chewed. (Hennequin et al, 1999; Gisel et al, 1984).

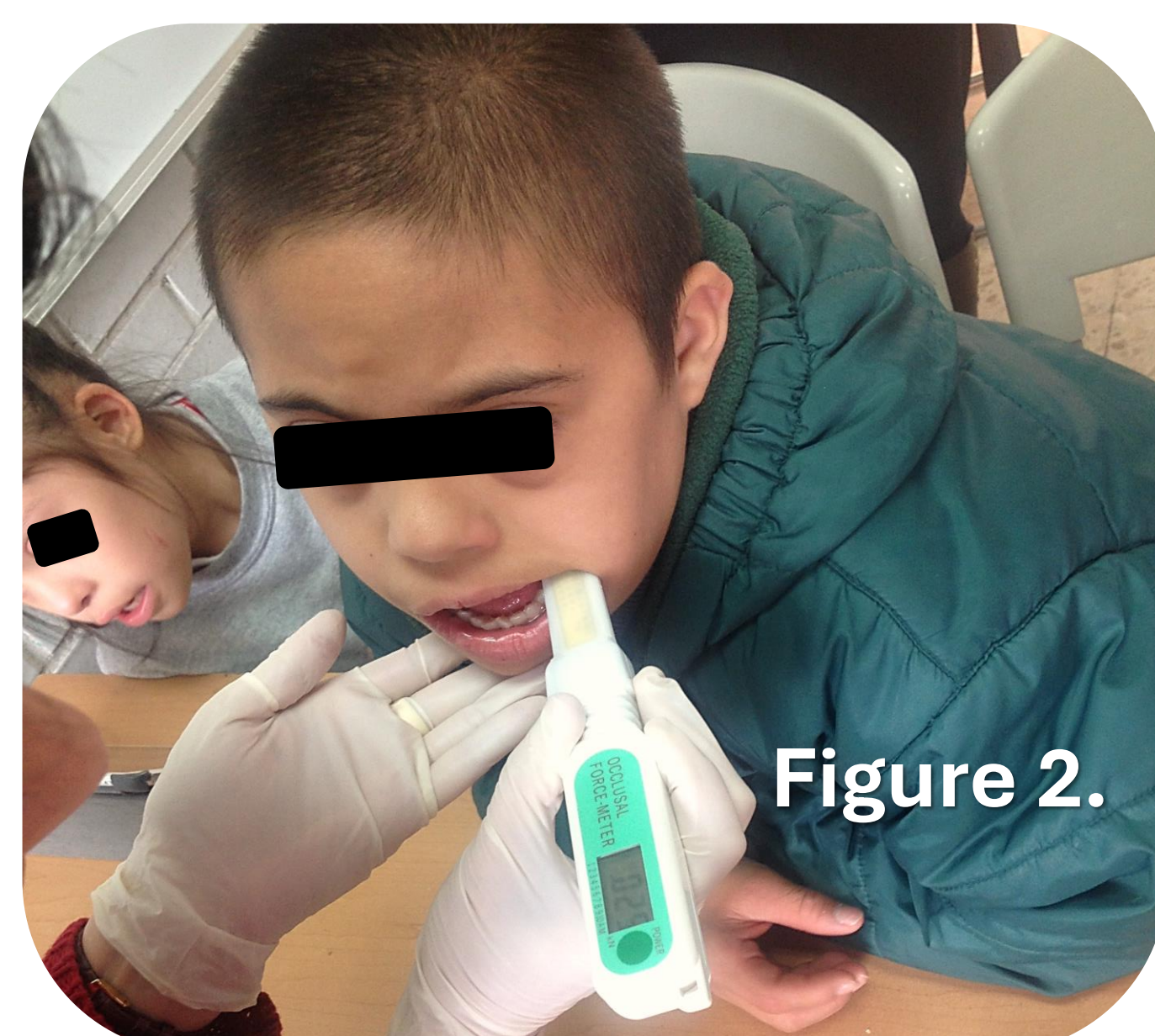
OBJECTIVE

To compare maximum occlusal force as an indicator of masticatory function in 8 to 10 year old Mexican children with and without Down syndrome. (Figure. 1)



METHODOLOGY

This was a cross-sectional study approved by the Bioethics Committee, with informed consent obtained from parents. The sample consisted of 8- to 10-year-old boys and girls with Down syndrome who received dental care at the Pediatric Dentistry Clinic of the Faculty of Dentistry, National Autonomous University of Mexico UNAM. Children with extensive carious lesions, or who had previous orthodontic or orthopedic treatment were excluded. Maximum occlusal force was determined using the GM10 Nagano Keiki Co.™ portable transducer on permanent first molars. Several measurements were made and the highest value obtained was used as the maximum occlusal force. (Figures 2,3). The results were compared to those from a database of children of the same age without SD. The statistical analysis was descriptive, and the comparisons were made with Mann-Whitney tests.



RESULTS

In the study group, (n = 8 children with Down syndrome) 5 were girls and 3 were boys, with a median age of 8.5. In the control group, (n = 32 children), 20 were girls and 12 were boys, with a median age of 9. The mean maximum occlusal force was 227.9±107kN and the median was 254kN for children with Down syndrome. The Mann–Whitney test indicates a p-value of 0.000, (a statistically significant difference). (Table 1.)

VARIABLE	STATISTIC	VALUE STUDY GROUP	VALUE CONTROL GROUP	P VALUE
Maximum occlusal force	MEAN ± SD	227.9 ±107kN	515.1±120.5kN	0.000 Mann-Whitney
	MEDIAN	254 kN	527 kN	
	MINIMUM	87 kN	242 kN	
	MAXIMUM	372 kN	747 kN	

Table 1.* kN =kilonewtons

CONCLUSIONS

Maximum occlusal force is 50% lower in children with Down syndrome than in children of the same age without Down syndrome, indicating masticatory deficiency. Despite obtaining statistically significant results in this study, a larger sample size is required to achieve more precise and reliable outcomes.

- Pipes PL, & Holm VA. Feeding children with Down's syndrome. *J Am Diet Assoc.* 1980 Sep;77(3):277-82.
- Hennequin M, Faulks D, Veyrune JL, Bourdiol P. Significance of oral health in persons with Down syndrome: a literature review. *Dev Med Child Neurol.* 1999 Apr;41(4):275-83.
- Gisel EG, Lange LJ, Niman CW. Tongue movements in 4- and 5-year-old Down's syndrome children during eating: a comparison with normal children. *Am J Occup Ther.* 1984 Oct;38(10):660-5.