

Prevalence of vertical malocclusion in patients aged 5 to 9 years who attended the dental school of the university of Cuenca in the period 2019-2023

Tatiana Jazmin Lazo Sanchez, *, Carmen Yolanda Minchala Ortega, Estefanía Belén Narváez Guachichullca, Kevin Fabricio Orellana Barros, Alex Raul Zhinín Gonzalez and Maria Yolanda Yunga Picón

Department of Orthodontics, Faculty of Dentistry, University of Cuenca, Ecuador.

World Journal of Advanced Research and Reviews, 2023, 19(01), 706–710

Publication history: Received on 01 June 2023; revised on 11 July 2023; accepted on 13 July 2023

Article DOI: <https://doi.org/10.30574/wjarr.2023.19.1.1373>

Abstract

Objective: To determine the prevalence of vertical malocclusion in patients aged 5 to 9 years who attended the clinic of the Faculty of Dentistry of the University of Cuenca in the period 2019-2023, by reviewing clinical records. Materials and methods A retrospective observational study of 615 orthodontic clinical records was carried out, using Excel and SPSS software to determine the prevalence of malocclusion in the vertical plane, considering the variables of age, sex, type of vertical malocclusion and side involved according to the type of vertical malocclusion (left or right).

Result: In the present study a universe of 616 records was obtained, of which 317 met the inclusion criteria, 77 records presented vertical malocclusion (24.25%) and 240 records did not present vertical malocclusion (75.71%), of the 77 records 40 belonged to the male sex (51.95%) and 37 records corresponded to the female sex (48.05%). According to the type of vertical malocclusion, there were 41 patients with overbite (53.25%), 32 patients with open bite (41.56%) and 4 patients with edge-to-edge bite (5.19%). As for the side involved, the overbite was greater on both right and left sides in 28 patients (36.36%), the open bite was greater on both right and left sides in 24 patients (31.17%). Edge-to-edge bite was higher on the right side affecting 2 patients (2.59%). Finally, according to age, there was a higher prevalence at 7 and 8 years of age, affecting 25 patients.

Conclusion: According to the results obtained in the clinical records, there was a higher prevalence in males, overbite was the most prevalent type of vertical malocclusion and in most cases the side involved was both the right and left side, according to age there was a higher prevalence at 7 and 8 years of age.

Keywords: Malocclusion; Vertical; Prevalence; Children

1. Introduction

Malocclusion is a pathology that reflects the lack of harmony of the teeth of the maxilla and mandible, which in turn is related to the size of the jaws, the position and the skeletal and dental relationship 1.

Malocclusion can develop due to multiple factors such as: type of diet, deforming oral habits, proximal caries, defective fillings, premature tooth extractions, diseases that affect the evolutionary process of the mixed and permanent dentition 2.

The prevalence of malocclusion varies by race and ethnicity 3.

* Corresponding author: Tatiana Lazo

Among the main etiologies of malocclusion we can mention the hereditary factor and the environmental factor 2 3. The lack of dental balance causes anomalies in the sagittal, transversal and vertical planes, the latter being of interest in this investigation due to its high level of prevalence in the child population.

Alterations in occlusion in the vertical direction are manifested at the clinical level as: vertical overbite, edge-to-edge bite, anterior open bite and posterior open bite (unilateral or bilateral) 1. These alterations affect the gingival, dental, muscular and bony tissues, the temporomandibular joint and the nervous system; they also affect the speech and psychosocial development of the patient 1.

According to the World Health Organization (WHO), occlusal disorders are one of the most frequent oral pathologies worldwide, after dental caries and periodontal disease, with prevalences ranging from 35% to 75% 1.

The objective of the present investigation was to determine the prevalence of vertical malocclusions in patients aged 5 to 9 years who attended the Faculty of Dentistry of the University of Cuenca in the period 2019-2023.

2. Methodology

This research corresponds to a retrospective observational study, through the collection of orthodontic clinical records of patients who attended the Clinic of the Faculty of Dentistry of the University of Cuenca, in the period 2019-2023. For the analysis of clinical records, permission was requested from the Dean of the Faculty of Dentistry of the University of Cuenca, we began with the review of clinical records that are registered in the database of the child's clinic records, from which the tabulation of results was performed in excel and in the SPSS program.

The study is feasible because it does not involve bioethical conflicts, since it is carried out on data taken from patients who attended the clinic of the Faculty of Dentistry of the University of Cuenca.

For the study we considered those clinical records of patients between the ages of 5 and 9 years, records containing information such as age, sex, type of malocclusion, affected side (left or right). All records that did not have complete information, orthodontic follow-up records, and those that did not correspond to the aforementioned age were excluded.

3. Results

In the present study, a universe of 616 orthodontic records was obtained, of which 317 met the inclusion criteria.

Of these 317 records of patients seen in the Orthodontic area, 77 records (24.29%) presented a vertical malocclusion, while the remaining 240 records (75.71%) did not present any alteration in their occlusion. Table 1

Table 1 Prevalence of vertical malocclusion

Vertical Malocclusion		
	Frequency	Percentage
YES	77	24.29%
NO	240	75.71%
TOTAL	317	100.00%

Of the total population of this study that presented vertical malocclusion (77), 40 patients were male, corresponding to 51.95%, and 37 patients were female, corresponding to 48.05%, which shows that despite the small difference, there is a greater prevalence of vertical malocclusion in the male sex. Figure 1

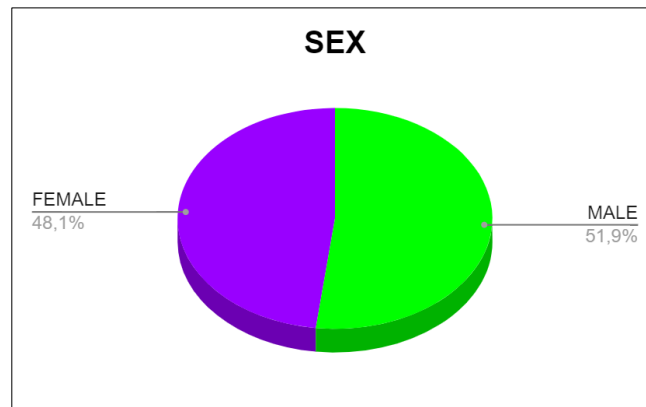


Figure 1 Distribution according to sex

According to the type of malocclusion in the vertical direction, 3 types have been established: open bite, overbite and edge-to-edge bite. The results obtained were: 41 patients with overbite corresponding to 53.25%, 32 patients with open bite corresponding to 41.56% and 4 patients with edge-to-edge bite corresponding to 5.19%.

Thus demonstrating that overbite is the most prevalent type of vertical malocclusion in patients aged 5-9 years who attended the Clinic of the Faculty of Dentistry in the period 2019-2023, while edge-to-edge bite is almost null. Figure 2, Figure 2

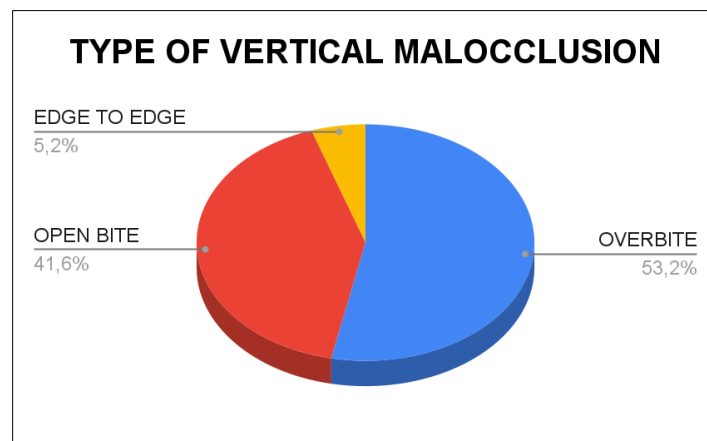


Figure 2 Type of malocclusion in the vertical direction. Edge-to-edge bite, overbite and open bite

As for the side involved, overbite affected 28 patients on both right and left sides, 12 patients on the right side and 1 patient on the left side. Open bite affected 24 patients on both the right and left sides, 7 patients on the right side and 1 patient on the left side. And edge-to-edge bite affected 2 patients on the right side, 1 on both sides and 1 on the left side. Table 2

Table 2 Involved side (left or right) of the vertical malocclusion

Type of vertical malocclusion				
	Frequency	Side involved	Frequency	Percentage
Overbite	41	Right and left	28	36.36
		Right	12	15.58
		Left	1	1.30
Open bite	32	Right and left	24	31.17
		Right	7	9.10

		Left	1	1.30
Edge to edge bite	4	Right and left	1	1.30
		Right	2	2.59
		Left	1	1.30
Total	77		77	100

And finally, according to age, it was found that at 5 years of age only 1 patient presented a malocclusion, at 6 years of age 9 patients presented some type of vertical malocclusion, at 7 and 8 years of age 25 patients presented some alteration, and at 9 years of age, 17 patients. Thus showing that the highest prevalence of vertical malocclusion arises between 7 and 8 years of age according to the initially established range. Figure 3

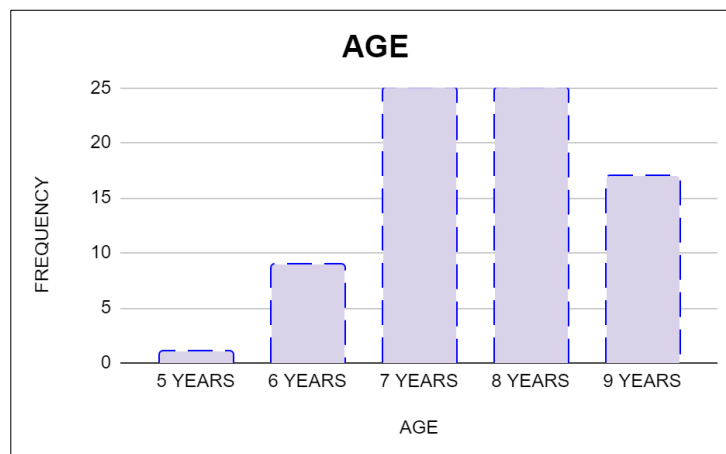


Figure 3 Prevalence of malocclusions according to age

4. Discussion

In the present descriptive, retrospective observational article, with 77 cases, a prevalence was found in 40 male patients corresponding to 51.95% , and 37 female patients, corresponding to 48.05% , so it is determined that despite the minimal difference there is a higher prevalence of vertical malocclusion in the male sex; unlike the study of Mendez J, Rotela R, Gonzalez A. (2016), where they determined a higher prevalence of malocclusion in the vertical direction in the female sex with 54%. (3)

In this study, vertical malocclusion in children 5 to 9 years of age, in the child's clinic, revealed a significant number of children carrying malocclusion (24.29%), a prevalence that is found to be decreased in similar studies conducted by Peña M et al. (2014), in their cross-sectional descriptive study in study models and profile craniofacial radiographs of patients older than 5 years diagnosed with dyslalia, finding that the prevalence of malocclusions in diagnosed patients 51.2% were vertical malocclusions, a study that is corroborated by that published by Villasana-Villa, P.G., et al. (2013), in their descriptive, cross-sectional and observational study of 76 students of the "6 de abril" elementary school in Hermosillo Sonora, in which values of 40.8% were obtained for vertical malocclusion.(5,6)

Mallqui J et al. (2018), in their research conducted in Lima - Peru, shows that in relation to the type of vertical malocclusion the most predominant was deep bite (29.3%), followed by anterior open bite (12.2%). Result that coincides with Villasana-Villa, P.G., et al. (2013), Study that showed higher prevalence in deep bite with 35.5% and the prevalence of open bite was 5.3%. Such information had coincidence with our study, as similar results were obtained 41 patients with deep bite corresponding to 53.25%, followed by 32 patients with open bite corresponding to 41.56% and 4 patients with edge to edge bite corresponding to 5.19%,(2,5) Boeck E, et al. (2013), in their study conducted in schoolchildren aged 5 to 12 years also shows a certain degree of coincidence, since 26.63% present deep bite and 26.14% anterior open bite, and at the same time it can be evidenced slightly higher prevalence in deep bite. Similar studies by Peña M et al (2014) show that anterior open bite and deep bite were more frequent with a percentage of 22% and 19% respectively, with anterior open bite being slightly more predominant. On the other hand, the study carried

out by Navarrete H et al (2020), where they evaluated the presence of malocclusions in children aged 3 to 9 years, showed that only 4% of children had an open bite.(7)

The present study allows us to know the most frequent occlusion problems of the patients who come to the Clinic of the Faculty of Dentistry of the University of Cuenca and at the same time to plan the treatments that each patient requires.

5. Conclusions

According to the results obtained in this research, it was possible to determine a significant prevalence of vertical malocclusion in pediatric patients who attended the clinic of the Faculty of Dentistry of the University of Cuenca in the period 2019-2023.

The most prevalent type of malocclusion was overbite affecting both right and left sides. The most affected population was male and finally, according to age, there was a higher prevalence at 7 and 8 years of age.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to disclosed.

Statement of informed consent

This article did not require the application of informed consent, because it was carried out based on information from the clinical records of the Faculty of Dentistry of the University of Cuenca, it did not apply for approval by the institutional bioethics committee, as we did not work with human beings or living beings, but only with a file with the corresponding authorizations.

References

- [1] Moncayo Guillen M, Llanes Serantes M, Montilla Uzcátegui M. Prevalence of dental malocclusions in schoolchildren in the parish of El Batán Ecuador. *Rev postgrado scientiarvm* p. 61-63 January 2018 Vol 4- No 1. DOI: 10.26696/sci.epg.0073.
- [2] Mallqui G, Chavez M. Non-physiological oral habits and vertical malocclusions in children between 6 - 12 years old from I.E.P. Mater Purissima in 2017. Universidad Nacional Mayor de San Marcos; 2018.
- [3] Méndez J, Rotela R, Gonzalez A. Prevalence of malocclusion in children aged 6 A 12 years in the city of Coronel Oviedo, Paraguay, Year 2016. *Mem Inst Investig Cienc Salud* [Internet]. 2020 [cited 2023 July 3];18(2):86-92. Available from: http://scielo.iics.una.py/scielo.php?script=sci_arttext&pid=S1812-95282020000200086
- [4] Navarrete Angulo N, Pita Sobral M. Factors related to malocclusions in Ecuadorian children aged 3-9 years. *Rev Cubana Estomatol* [Internet]. 2020 Jun [cited 2023 Jun 20] ; 57(2): e2111. Available from: http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S0034-75072020000200009&lng=es. Epub 13-Jul-2020.
- [5] Villasana-Villa, P.G., et al. "Prevalence of malocclusions in children of '6 de Abril' elementary school in Hermosillo, Sonora, Mexico." *Oral*, vol. 25, no. 1, June 2013, pp. 102+. Gale OneFile: Academic Report, link.gale.com/apps/doc/A416301949/IFME?u=anon~b06a0a4d&sid=googleScholar&xid=4bc38df3. Accessed 22 June 2023.
- [6] Peña, M., Rojas, M. D. P., Tirado Cepeda, Á. M., Benavides, B., Hurtado, M., & Ruiz Gómez, A. (2014). Prevalence of malocclusion in three planes of space in patients diagnosed with speech defects in the functional orthopedics and orthodontics specialization clinics of the Universidad Cooperativa de Colombia.
- [7] Boeck, E.M. et al. (2013) Prevalência de Maloclusão em Escolares de 5 a 12 Anos de Rede Municipal de Ensino de Araraquara, Revista CEFAC. Available at: <https://www.scielo.br/j/rcefac/a/rLPgPJNjv6CZQRC5pxYQ6TQ/?lang=pt#> (Accessed: 04 July 2023)