

# Prevalence of Children Undergoing Orthodontic Extraction below 18 Years of Age: A Retrospective Study

Nor Masitah Mohamed Shukri<sup>1</sup>, Jessy P<sup>2\*</sup> and Arthi Balasubramaniam<sup>3</sup>

<sup>1</sup>Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, India; <sup>2</sup>Department of Pediatric and Preventive Dentistry, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, India; <sup>3</sup>Department of Public Health Dentistry, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, India

Corresponding author: Jessy P, Department of Pediatric And Preventive Dentistry, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Chennai, India, E-mail: jessyp.sdc@saveetha.com

## Abstract

Tooth extraction in orthodontics is well indicated in crowded dentition in order to gain deficient space for aligning the teeth in the correct functional position. Crowding or proclined teeth demand concerns during orthodontic treatment, which includes the elective selection of removing first or second premolars. The aim of this study is to investigate the prevalence of children undergoing orthodontic extraction below 18 years of age. Data collection was done in a private dental university setting. Out of 1500 patients, 375 orthodontic patient records were selected by reviewing the case sheets. The following parameters; age, gender and presence or absence of orthodontic extraction were gathered and obtained data entered in MS excel, tabulated and statistically analyzed using SPSS version 23. A total of 375 patients below 18 years of age had undergone orthodontic treatment. 23.3% of them underwent therapeutic extraction prior to the orthodontic treatment and the remaining 76.8% were not. Females (66.7%) had a higher proportion of having orthodontic extraction than male (33.3%). The common age group seen in patients with orthodontic extraction was 15-18 years and both upper and lower arches were preferred the most for extraction. Statistically significant differences between gender and orthodontic treatment showed a higher proportion of female patients were associated with orthodontic extraction. Within the limits of this study, the high prevalence of orthodontic extraction exhibits in females within the age group of 15-18 years.

**Keywords:** Children; Therapeutic extraction; Malocclusion; Prevalence

## Introduction

Malocclusion is a term to define the irregularity of the teeth in relation to the two dental arches. <sup>[1]</sup> Malocclusion can develop in growing children oftentimes it is hereditary. <sup>[2]</sup>

In normalcy, malocclusion is not considered as a life threatening problem, <sup>[3]</sup> but it can cause serious oral health problems. <sup>[4]</sup>

In addition to this, malocclusion is ranked third among the worldwide dental public health priorities, as it is the third highest frequency in oral pathologies and second-ranked in the prevalence of dental caries and periodontal disease. <sup>[5,6]</sup>

Orthodontic treatment aims to straighten teeth into normal occlusion and it is well indicated in unfavorable or interrupted development of occlusal. This malocclusion requires

orthodontic treatments such as removable or fixed orthodontic appliances, aligners, extractions and surgical treatment. Orthodontic treatment generally begins at 12-14 years of age because permanent teeth have erupted among the children. <sup>[7,8]</sup>

Teeth extraction in orthodontics has been controversial since the turn of the century. <sup>[9]</sup> This is because non-extraction therapy has been significantly preferred by most clinical practice in recent years. <sup>[10,11]</sup> Several philosophical shifts were attributed to this, such as research on postretention studies showed less efficacy of extraction over non-extraction approach in crowding teeth with the respect of long term stability and good alignment. <sup>[12,13]</sup> Increased acceptance of dental protrusion in the circumoral area had also accounted for

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**Table 1: Treatment eliminates more comprehensive treatment modalities.**

Variables	Orthodontic extraction				Statistical values
	Upper arch n(%)	Lower arch n(%)	Both arches n(%)	Total n(%)	Chi square test
Age groups					
08-Oct	2 (2.3)	0 (0.0)	2 (2.3)	4 (4.6)	Pearson chi square=2.717 p value=0.606
Nov-14	9 (10.3)	0 (0.0)	23 (26.5)	32 (36.8)	
15-18	12 (13.8)	2 (2.3)	37 (42.5)	51 (58.6)	
Gender					
Male	10 (11.5)	0 (0.0)	19 (21.8)	29 (33.3)	Pearson chi square=2.267 p value=0.32
Female	13 (14.9)	2 (2.3)	43 (49.5)	58 (66.7)	

patients having orthodontic extractions (blue-upper arch, green-lower arch and beige-both arches). There was no significant association between age groups and orthodontic extraction. (Pearson's Chi-square value-2.717;  $p=0.606$  ( $>0.05$ )) which was statistically not significant, however increase in extraction for both arches for orthodontic purposes among patients aged from 15-18 years were seen compared to other age groups.

**Figure 1:** Bar graph shows frequency distribution of orthodontic extraction cases based on age groups. X axis represents distribution of age groups and Y axis represents percentage of patients. There is high prevalence among 15-18 yrs old (58.62%).

**Figure 3:** Bar graph depicts the association between gender and orthodontic extraction cases. X axis represents gender and the Y axis represents the percentage of patients having orthodontic extraction cases (blue-upper arch, green-lower arch and beige-both arches). There was no significant association between gender and orthodontic extraction. (Pearson's Chi-square value-2.267;  $p=0.32$  ( $>0.05$ )) which was statistically not significant, however increase in extraction for both arches for orthodontic purposes among Girls were seen higher when compared to boys.

## Conclusion

**Figure 2:** Bar graph depicts the association between age groups and orthodontic extraction cases. X axis represents age groups and the Y axis represents the percentage of

Within the limits of the current study, 23.2% of the patients underwent therapeutic extraction prior to the orthodontic treatment. Females had a higher proportion of having orthodontic extraction than males. The common age group

seen in patients with orthodontic extraction was 15-18 years and both upper and lower arches were preferred the most for extraction. In a nutshell, the high prevalence of orthodontic extraction exhibits in females within the age group of 15-18 years. Thus it becomes the primary responsibility of the dental health care professionals to educate the patient, and create a general awareness about preventive and interceptive orthodontics and its benefits through which comprehensive orthodontic treatment can be avoided in the future.

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## Authors Contributions

Conceptualisation: Nor Masitah and Jessy P; methodology: Nor Masitah and Jessy P; validation: Nor Masitah and Jessy P; statistical analysis: Nor Masitah and Jessy P; draft preparation: Nor Masitah; writing-review and editing: Jessy P; visualisation: Arthi B.

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