

Characterization of Orthodontic Patients Treated by Pediatric Dental Residents

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INTRODUCTION

Interceptive orthodontics is treatment in mixed dentition aimed to prevent or alleviate occlusal problems such as skeletal issues, dental development, space problems and occlusal discrepancies. Interceptive orthodontics may reduce the severity of malocclusion or the cause. This study aims to characterize various orthodontic problems and treatment needs of patients in mixed dentition presenting for phase I orthodontic treatment and to evaluate the role of a pediatric dental resident in treating developing malocclusion.

MATERIALS AND METHODS

A retrospective chart analysis was done on patients aged 6 to 12 years old who have undergone Phase 1 orthodontic treatment by pediatric dental residents in the UF Department of Orthodontics between January 2016 and December 2023. Exclusion criteria included patients out of age range or treated by orthodontic residents or faculty. The following characteristics were recorded: age, gender, race, phase I indication, and appliance used. For patients that completed treatment, the duration of treatment, type of retention, completion of the desired goal, and if phase II was initiated were also recorded.

Phase 1 Indication	Appliance Used	Type of Retention
Eruption Problems	Expansion	Hawley Retainer
Space Management	Edgewise 2x4	Transpalatal Arch
Skeletal Issues	Habit-breaking	Nance Appliance
Occlusal Relationship Problems	Space maintainer / Space regainers	Lower lingual holding arch
Increased Overjet	Class II Correctors	No retention
Deleterious Habits	Early Extraction of primary teeth	
	Anterior bite plane	
	Posterior bite plane	
	Lower incline plane	

FUNDING

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RESULTS

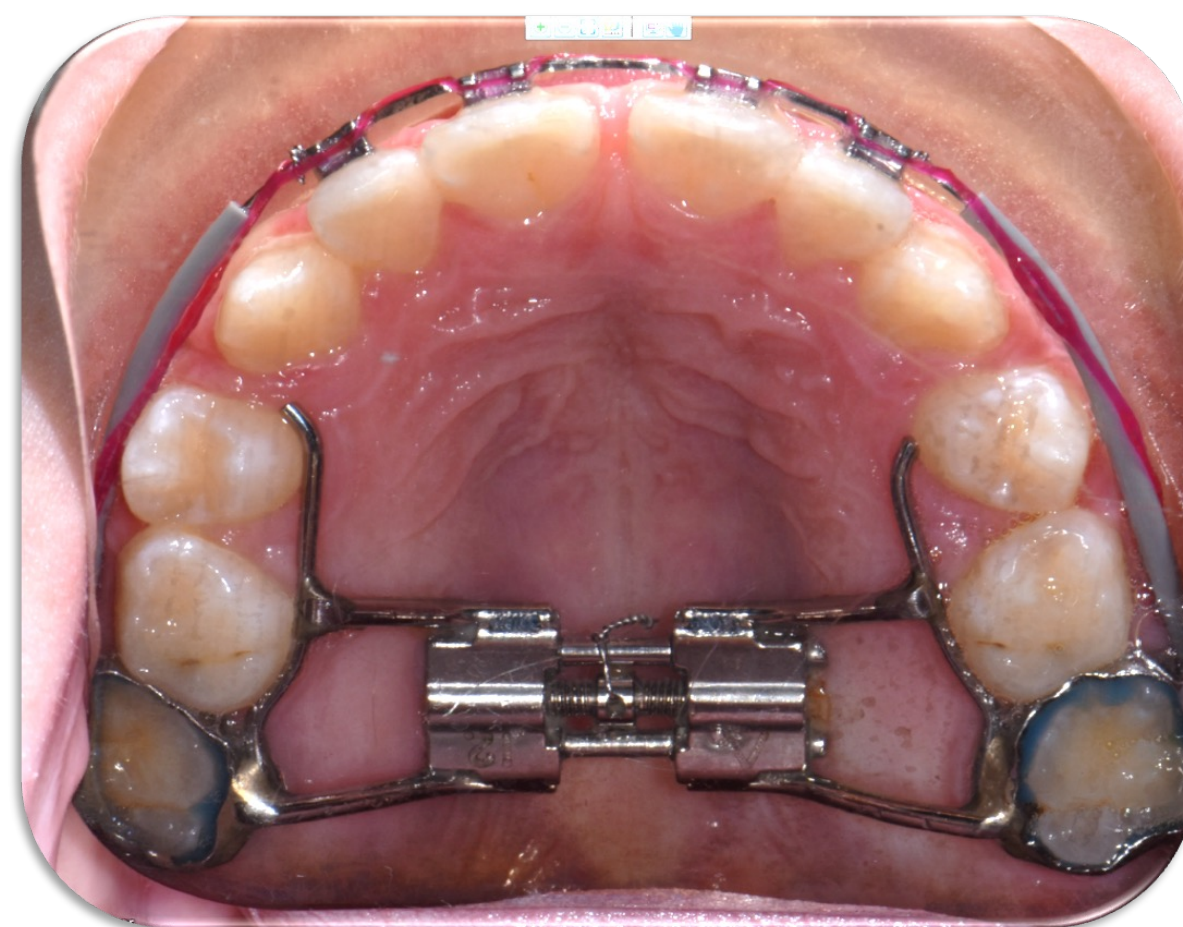


Figure 1a & 1b: Correction of narrow maxillary arch and crowding using 2x4 preadjusted edgewise appliance and HYRAX appliance

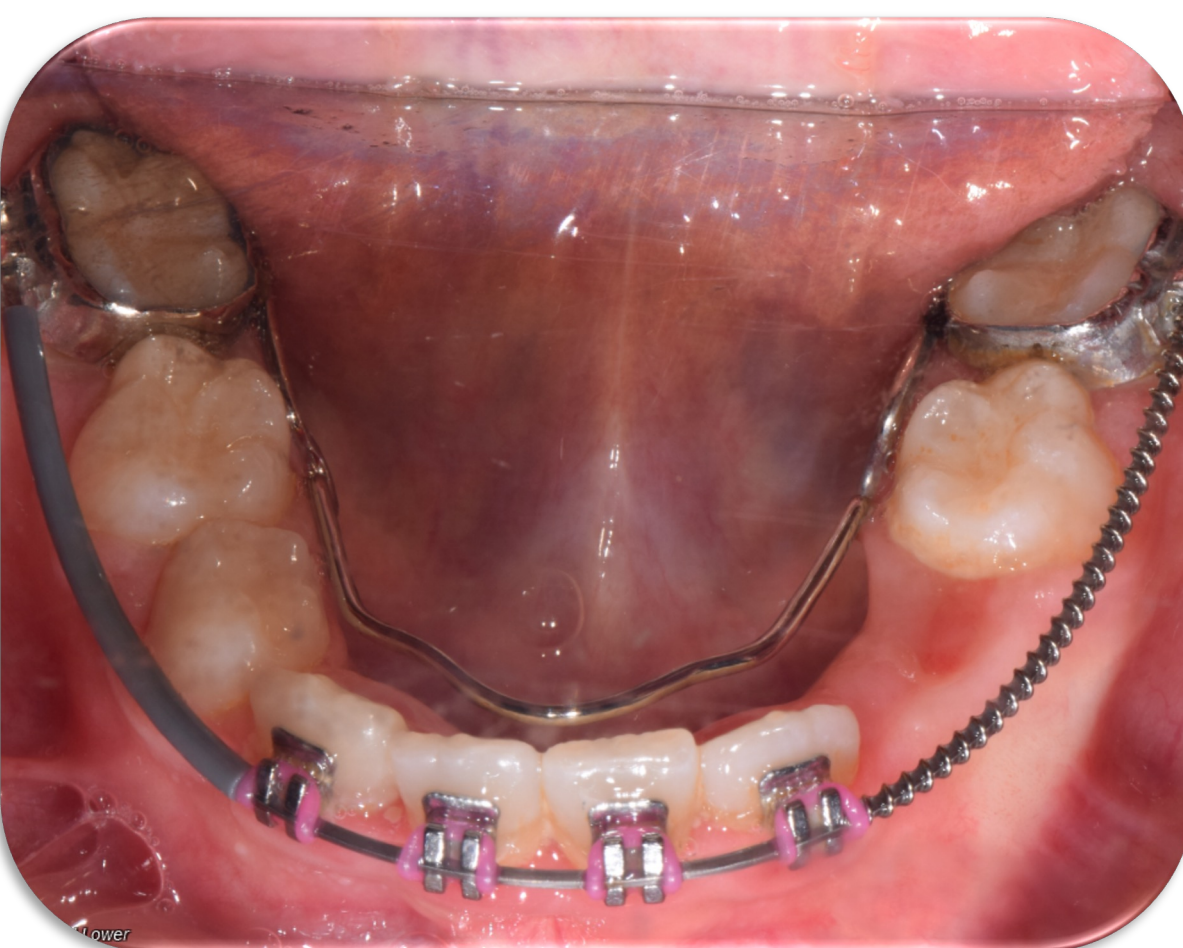


Figure 2a & 2b: Correction of lower crowding using space regaining via 2x4 preadjusted edgewise appliance

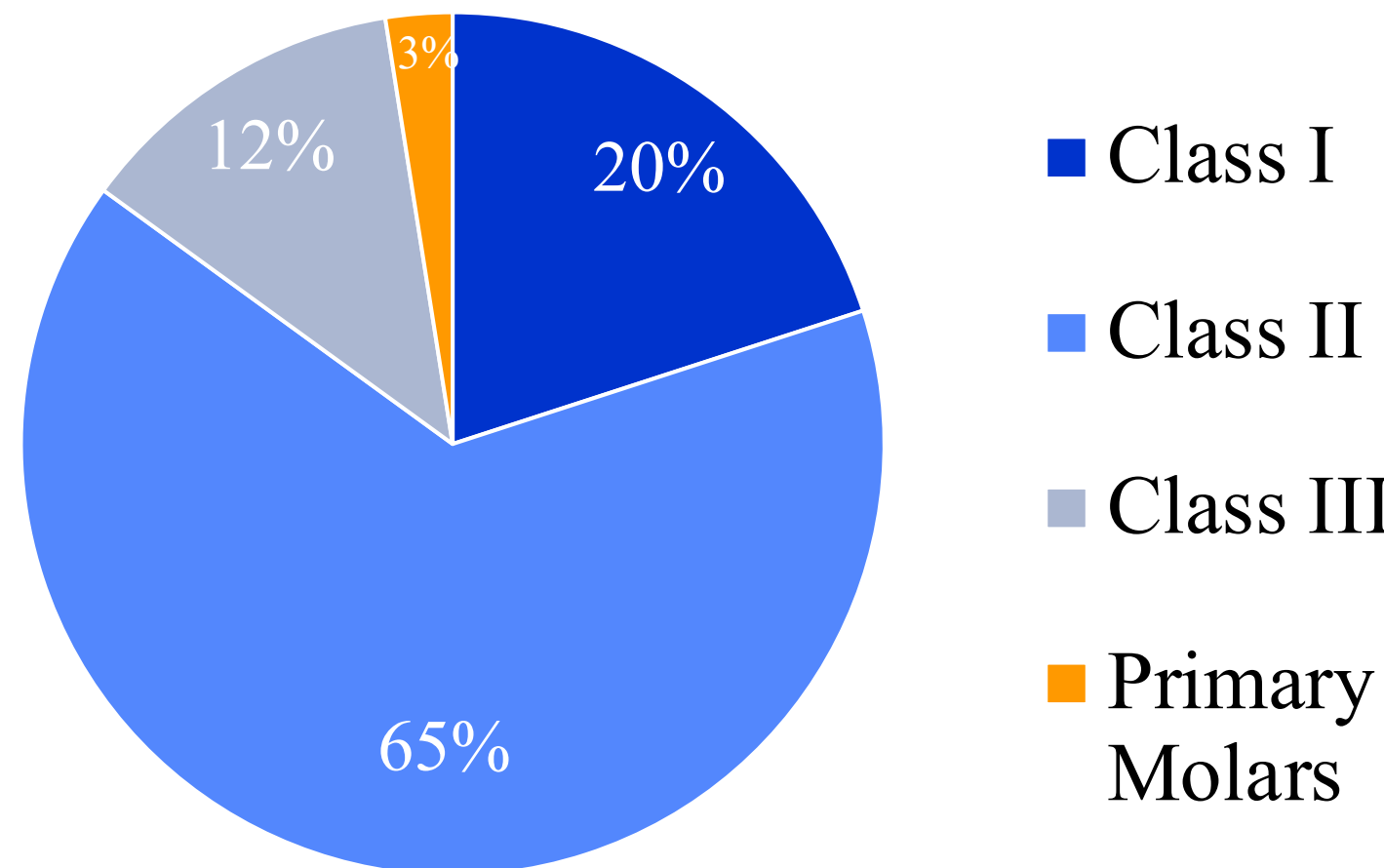


Figure 3a & 3b: Correction of anterior crossbite with anterior incline plane

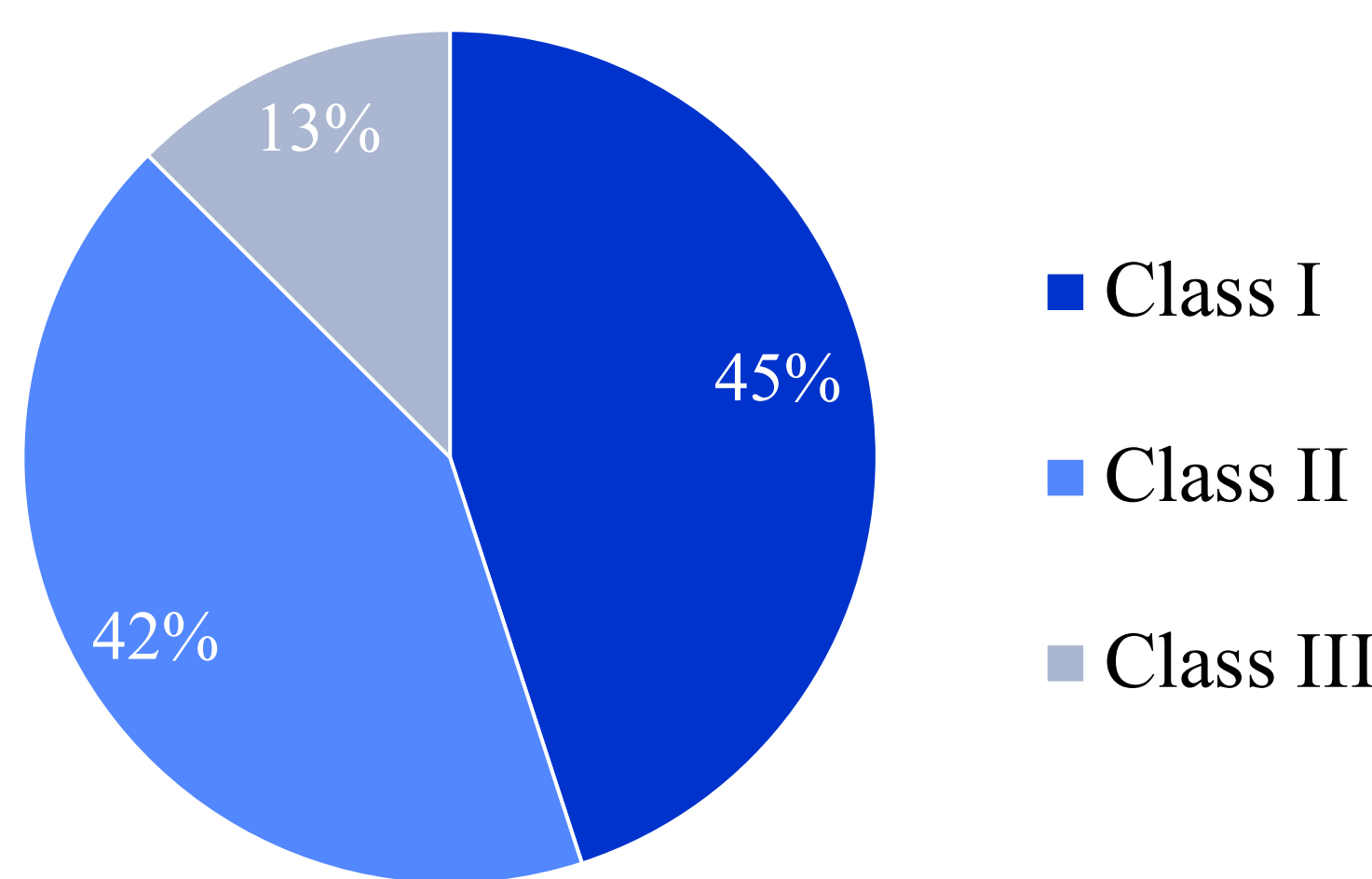


Figure 4a & 4b: Correction of anterior open bite using habit-breaking appliance

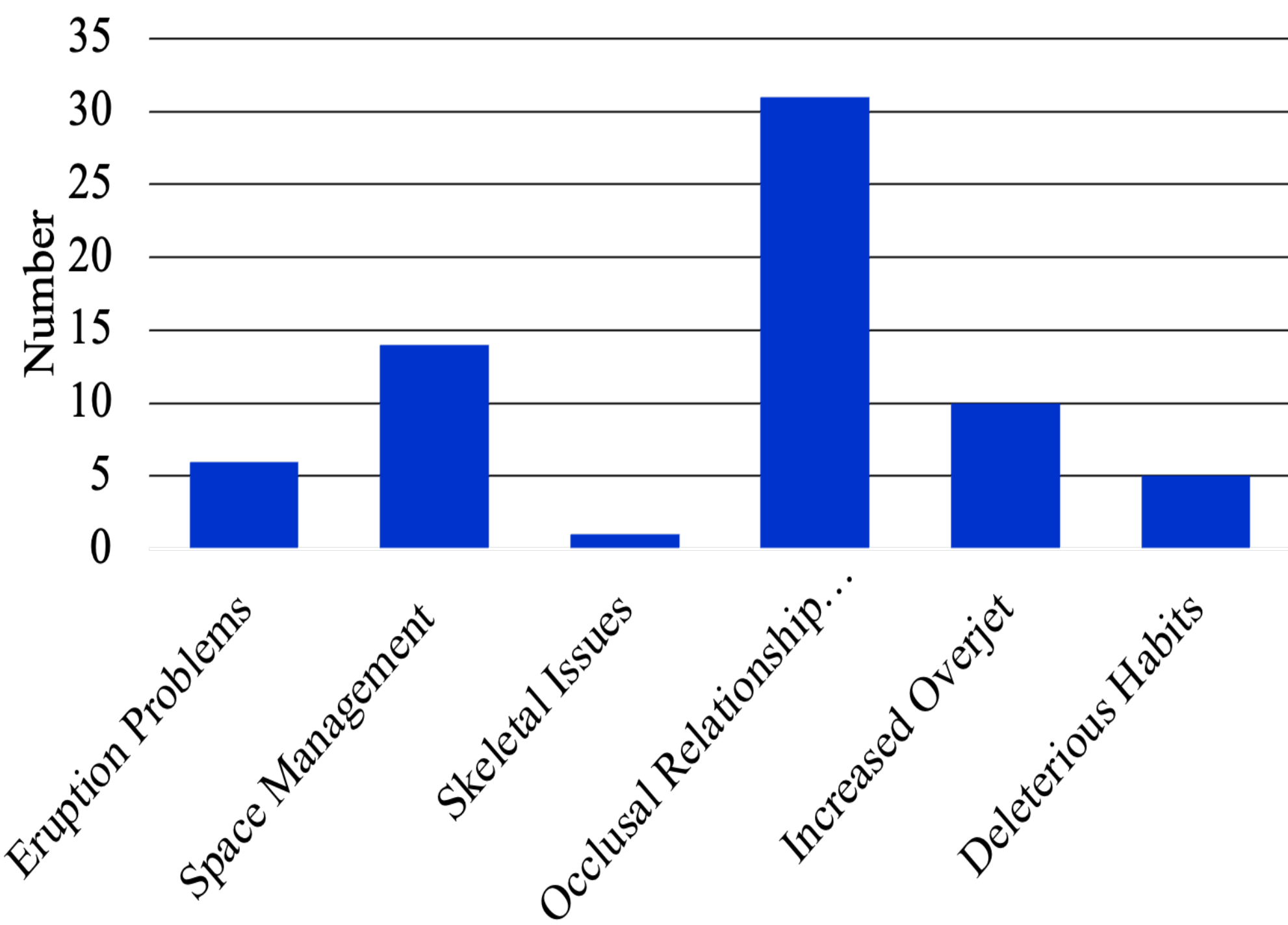
Dental Classifications



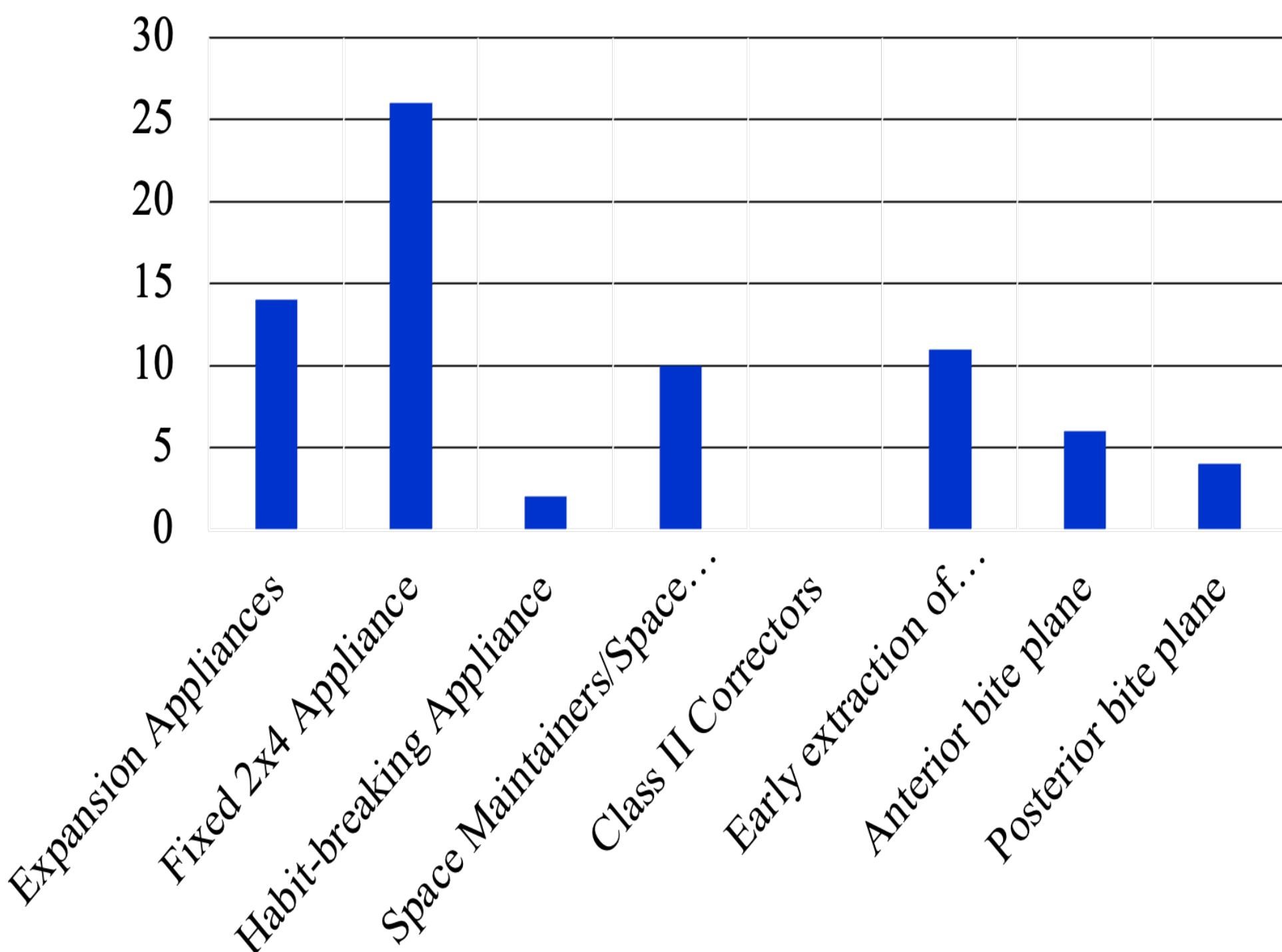
Skeletal Classifications



Phase 1 Indication



Appliance Used



Of the 500 charts analyzed, 40 patients met all inclusion criteria with all data points available. The average age was 8.6 years old, with 57.5% female patients and 42.5% male. The majority of patients were white and non-Hispanic. 75% of referrals came from the University of Florida Pediatric Dentistry, and 25% came from various outside offices. Dental and skeletal classifications are depicted above. There was an average overbite of 40% and an average overjet of 3.35 mm. The distribution of phase I indications and appliances used are illustrated in the graphs. Most patients (63%) were retained with the Hawley appliance. Of the 47.5% of patients who completed treatment, the majority had less than one year of treatment. 84% of patients had achieved the desired goals. Nearly all female patients completed the desired goals versus two-thirds of male patients. Of the patients who completed treatment, 28% initiated phase II treatment. The most common indication for the phase I treatment was occlusal relationship issues. Fixed 2x4 appliance was used more frequently than any other modalities of treatment. Comparing phase I indications with appliances used showed that patients with eruption problems and space management issues were significantly more likely to have early extraction of primary teeth.

CONCLUSIONS

Pediatric dental residents are currently treating a wide variety of malocclusions in the mixed dentition. The majority of patients had an initial presentation of occlusal relationship problems. The most utilized treatment was 2x4 pre-adjusted edgewise appliances. Data analysis showed that patients often presented with more than one phase I indication and were treated with more than one type of appliance. However, no patients were treated with class II correctors, as these patients are treated by the UF orthodontic department. Increasing the sample size may result in more statistically significant data. Malocclusions can be observed and corrected in the mixed dentition by pediatric dentists to avoid complications in the future. This research hopes to add to the literature that pediatric dental residents play a vital role in diagnosing and managing developing malocclusion.