

## Original Research Article

# Prevalence of Dental Arch Disharmony at the Orthodontic Department of Blida University Hospital Center

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**Abstract: Introduction:** Dento-maxillary disharmony (DMD), now referred to as Dental Arch Disharmony (DAD), is a highly prevalent anomaly encountered by orthodontists in their daily practice. **Objective:** The aim of our study is to estimate the prevalence of dento-maxillary disharmony at the dento-facial orthopedics (DFO) department of the Blida University Hospital Center in Algeria, in order to position this disharmony relative to other orthodontic anomalies, estimate its evolution, and compare the results obtained with other studies conducted in different countries. **Materials and Methods:** This descriptive epidemiological study was conducted at the DFO department of the Ahmed Zabana Dental Clinic at the Blida University Hospital Center, focusing on 80 cases of dento-maxillary disharmony out of 188 cases in the orthodontic population. The study spanned a period of one month and five days, from May to June 2022. **Results:** Analysis of our records reveals that 42.55% of the orthodontic population exhibits dento-maxillary disharmony, with a predominance of females at a rate of 64%. The most frequent age group is children aged between 6 and 12 years (49%). During our study, the prevalence of relative macrodontia dento-maxillary disharmony was the most dominant, accounting for 86%, followed by 8% for dento-maxillary disharmony due to microdontia, and 6% for mixed cases. **Conclusion:** The high frequency of dental arch disharmony, as demonstrated in our study and similar studies, emphasizes the need to understand the factors contributing to its development in order to establish prevention and interception strategies, thereby enabling early management of this anomaly.

**Keywords:** Dento-Maxillary Disharmony, Prevalence, Relative Macrodontia, Microdontia.

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## INTRODUCTION

The term dento-maxillary disharmony or DDM is now considered inappropriate according to the recommendations of the Federative Committee on Anatomical Terminology (FCAT). In its place, the French Society of Dentofacial Orthopedics (SFODF) has recently adopted the term "dental arch disharmony."

Dental arch disharmony (DDA) corresponds to a disproportion between the sum of the mesio-distal diameters of the teeth and the perimeter of the corresponding dental arch. There is positive DDM, or dental deficiency, when true microdontia or relative microdontia due to large maxillae is present, and negative DDM, or dental excess, when true macrodontia or relative macrodontia occurs.

We conducted a study with the aim of estimating the prevalence of dental arch disharmony at the dento-facial orthopedics (DFO) department of the Blida University Hospital Center in Algeria, in order to position this disharmony relative to other orthodontic anomalies, estimate its evolution, and compare the results obtained with studies conducted in other countries.

## PRIMARY OBJECTIVE

To estimate the prevalence of dental arch disharmony at the Orthodontic Department of the Ahmed Zabana Dental Clinic (Blida University Hospital Center) in Algeria.

**Secondary Objectives**

- Describe the socio-demographic profile of patients with dental arch disharmony.
- Define some factors associated with dental arch disharmony.
- Identify the different forms of dental arch disharmony.
- Study the therapeutic approaches for this anomaly.

**Study Type**

This is a descriptive cross-sectional study of patients presenting with dental arch disharmony at the Orthodontic Department of the Ahmed Zabana Dental Clinic (Blida University Hospital Center) in Algeria.

**Data Collection**

Data were collected from standardized clinical records filled out for each patient after an interview followed by a clinical examination and paraclinical examinations conducted at the department.

**Study Procedure**

The study was conducted from May 5th to June 9th, 2022, at the department, spanning a period of one month and five days.

**Study Population:** The study included all patients of any gender and age who were treated at the department.

**Sample Size:**

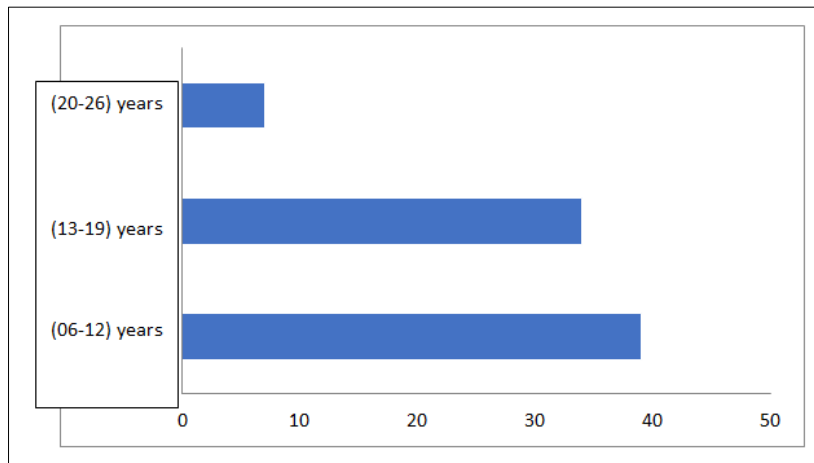
The study sample consisted of 80 subjects who presented with dental arch disharmony, selected from 188 patients who visited the Orthodontic Department.

**Statistical Analysis:**

**Distribution of the Sample by Gender:**

Regarding our study, female subjects dominate the sample, comprising 64% (51 women) compared to 36% male subjects, totaling 29 men, resulting in a gender ratio (F/M) of 1.75.

**Distribution of the Sample by Age:**

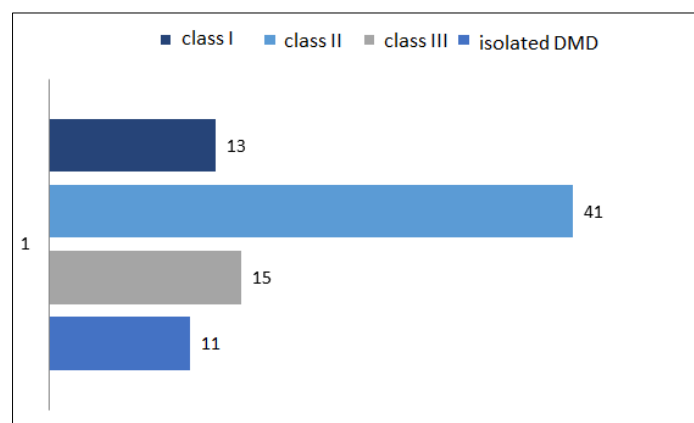


**Figure 01: Distribution of the Sample by Age.**

The distribution by age is predominantly represented by the modal class of the 6 to 12 age group (49%).

**Distribution of the Sample by Associated Anomaly:**

**Skeletal Anomaly:**

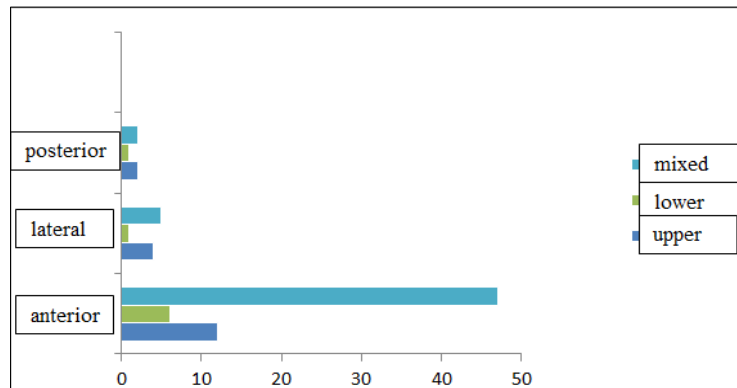


**Figure 02: Distribution of Patients by Associated Skeletal Anomaly**

Dental arch disharmony diagnosed among patients is found isolated in 13.75% of cases. It is associated with skeletal anomalies in 18.75% of cases for

Class I Angle, with a rate of 51.25% for Class II, while Class III accounts for only 16.25%.

**Distribution of Patients by Localization:**

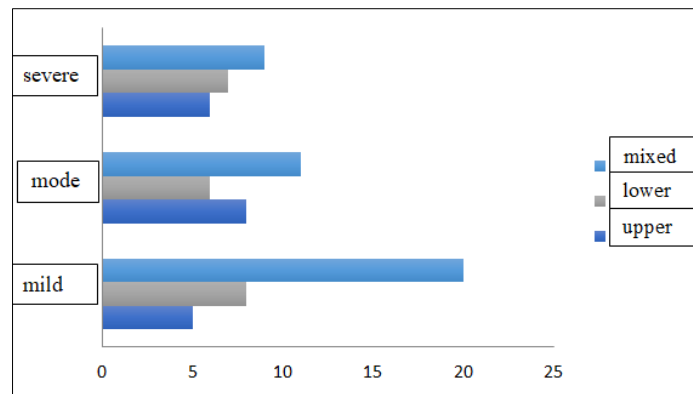


**Figure 03: Distribution of Patients by Localization.**

In our sample, we noted an anterior predominance in 58.75% of cases, with a mix of upper and lower arches. Additionally, 15% of cases were

localized in the upper arch, while only 7.5% were in the mandible.

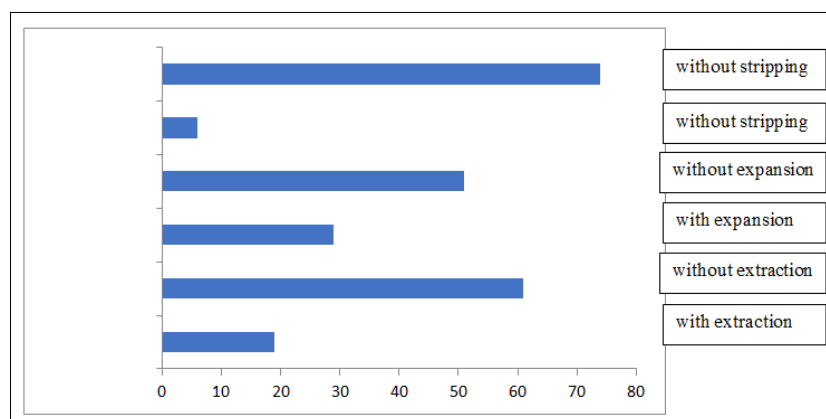
**Distribution of Patients by Severity:**



**Figure 04: Distribution of Patients by Severity of Dental Arch Disharmony.**

Regarding the severity of dental arch disharmony, the mild form is the most common in our study series, whether in the lower arch or in both arches (mixed), with respective frequencies of 10% and 25%.

**Distribution of the Sample by Treatment Plan:**



**Figure 05: Distribution of the Sample by Treatment Plan**

Among the 80 patients diagnosed with dental arch disharmony, 8% underwent treatment without extraction, 25% with extraction, 12% with expansion, 21% without expansion, 3% with stripping, and 31% without stripping.

## DISCUSSION

The primary objective of our study was to estimate the prevalence of dental arch disharmony (DDM) among patients aged 6 to 25 years at the Orthodontic Department of the Ahmed Zabana Dental Clinic at the Blida University Hospital Center in Algeria. Our study included 188 individuals, of whom 80 had dental arch disharmony, representing a percentage of 42.55%.

Excessive dental arch disharmony predominated, accounting for 86% of cases. Microdontia-related DDM was present in 8% of cases, while mixed DDM (excess on one arch and deficiency on the other) accounted for 6%.

Our study is the first to analyze the prevalence of DDM among patients aged 6 to 25 years in the Blida region. It aligns with several studies, such as one conducted by Abderrahmane A.N CISSE in 2019 in Bamako, which reported a prevalence of 89.9%, with 60.4% due to excessive DDM and 29.6% due to deficient DDM.

We observed a predominance of females, accounting for 64% compared to males at 36%, with a gender ratio of 1.75. This suggests a greater emphasis on aesthetic concerns among females.

The age group between 6 and 25 years was the most common, comprising 86.96% of cases. We attribute this to increased awareness among parents regarding dental anomalies with the eruption of permanent dentition, prompting them to seek consultations.

Isolated DDM prevalence in our sample was 13.75%, while associated DDM prevalence was 86.25%.

Regarding alveolar anomalies, DDM without alveolar anomalies predominated at 37%.

We found that Class II malocclusion had the highest prevalence at 51.25%, followed by Class I at 18.75%, and Class III at 16.25%.

Among diagnosed patients, 22% exhibited proalveolus, and 13% exhibited retroalveolus.

Epidemiological surveys provide insight into the most prevalent anomalies within a population, offering essential data for orthodontists to effectively plan and implement treatment strategies.

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