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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии  
საქართველოს სამედიცინო სიახლენი

## GEORGIAN MEDICAL NEWS

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**GMN: Georgian Medical News** is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

GMN is indexed in MEDLINE, SCOPUS, PubMed and VINITI Russian Academy of Sciences. The full text content is available through EBSCO databases.

**GMN: Медицинские новости Грузии** - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

**GMN: Georgian Medical News** – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებიდან.

### WEBSITE

[www.geomednews.com](http://www.geomednews.com)

## К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman (Кириллица)**, для текста на грузинском языке следует использовать **AcadNusx**. Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - <http://www.spinesurgery.ru/files/publish.pdf> и [http://www.nlm.nih.gov/bsd/uniform\\_requirements.html](http://www.nlm.nih.gov/bsd/uniform_requirements.html) В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректур авторам не высылаются, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

**При нарушении указанных правил статьи не рассматриваются.**

## REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or computer-printed on a single side of standard typing paper, with the left margin of 3 centimeters width, and 1.5 spacing between the lines, typeface - **Times New Roman (Cyrillic)**, print size - 12 (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: [http://www.nlm.nih.gov/bsd/uniform\\_requirements.html](http://www.nlm.nih.gov/bsd/uniform_requirements.html)  
[http://www.icmje.org/urm\\_full.pdf](http://www.icmje.org/urm_full.pdf)

In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

**Articles that Fail to Meet the Aforementioned  
Requirements are not Assigned to be Reviewed.**

## ავტორთა საქურაღებოლ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დაიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx**. შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შედეგის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფხიხლებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

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## CORRELATION BETWEEN TRANSVERSE CEPHALOMETRIC PARAMETERS AND THE SEVERITY OF SKELETAL MALOCCLUSIONS

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### Abstract.

**Background and Objectives:** Malocclusion prevalence varies globally, ranging from 34.9% to 93.6% for Class I, 4.4% to 44.7% for Class II, and 1.4% to 19.4% for Class III occlusions. This study aims to assess transverse cephalometric measurements related to maxillary and mandibular dimensions, intermolar and intercanine distances, and other relevant factors.

**Materials and Methods:** The descriptive cross-sectional research included 100 individuals with malocclusion grades 1, 2, and 3.

**Results:** The study involved 100 participants across three age groups (15-21, 22-28, 29-35), with the majority in the 22-28 range. Gender distribution showed a significant imbalance (77% female, 23% male). Cephalometric measurements for three malocclusion types revealed distinct patterns. Notably, inter-molar width exhibited a strong positive correlation with malocclusion severity (Malocclusion 1:  $r=0.504$  to  $0.561$ , Malocclusion 2:  $r=0.560$  to  $0.625$ , Malocclusion 3:  $r=0.625$  to  $0.559$ ), while maxillary-mandibular transverse discrepancy had a negative correlation (Malocclusion 1:  $r=-0.496$ , Malocclusion 2:  $r=-0.483$ , Malocclusion 3:  $r=-0.483$ ).

**Conclusions:** Age-diverse sample, gender imbalance noted. Cephalometric correlations reveal inter-molar width association with malocclusion severity, emphasizing clinical implications.

**Key words.** Transverse cephalometric parameters, severity, skeletal malocclusions, cephalometry, craniofacial morphology, orthodontics.

### Introduction.

Skeletal malocclusions, arising from maxilla and mandible disparities due to factors like skeletal anomalies, facial irregularities, trauma, missing teeth, and limited space, pose challenges for orthodontic practitioners [1-3]. Malocclusion incidence varies widely geographically and by classification criteria. Class I occlusion ranged from 34.9% to 93.6%, class II from 4.4% to 44.7%, and class III from 1.4% to 19.4% [4]. Malocclusion rates globally: 56%, highest in Africa (81%), then Europe (72%) [5]. Syrian refugee children: 83.8% malocclusion; 52.6% class I, 24.2% class II, 7% class III [6]. Malocclusion categorization involves Class II Division 1 and Class II Division 2, with unclear dental-skeletal distinction [7,8]. Skeletal malocclusion leads to dental problems, hindering function and health [9,10]. Early orthodontic care in children crucial for skeletal correction, self-esteem promotion [11,12]. Orthodontists employ expanders, braces, aligners, and surgery to correct malocclusion [13]. Malocclusion, misaligned teeth, results from environmental factors (oral hygiene, diet), genetics (craniofacial growth), and demographic variables (age, gender, location) [14].

Robotic surgery offers precision and minimally invasive benefits for skeletal malocclusions, but ethical and safe

deployment requires more study, training, and legislation [15,16]. In-depth review links aging-related physical and mental changes to skeletal malocclusions, highlighting treatment advancements and the imperative for ongoing research and improvement [17].

Advancements in pharmacological research for skeletal malocclusions in Ukraine are unclear. Improved access to orthodontic technologies involves addressing financial and legal barriers [18]. AI, machine learning, and image identification reshape orthodontic care. Innovations like ML algorithms, server apps, and telemedicine revolutionize global orthodontic treatment [19]. The study employed laser-induced periodic surface structures on metallic glasses to examine links between cephalometric parameters and skeletal malocclusions [20]. The transverse dimension in craniofacial structures influences skeletal malocclusion severity. Cephalometry, analyzing lateral skull radiographs, helps orthodontists quantify and assess deviations [21,22].

This study aims to explore cephalometric indicators influencing transverse dimension in diverse malocclusions, predicting severity, and assessing skeletal discrepancies across populations [23,24]. Research on transverse cephalometric parameters and their link to skeletal malocclusion severity has gaps [25,26]. Debates persist on the effectiveness of lateral cephalometric radiographs in diagnosing transverse malocclusions in orthodontics, requiring additional research for conclusive utility [27]. Sagittal lip position studies lack severity insights; treatment outcome studies are insufficient [28]. Study introduces vertical parameters, neglects transverse cephalometric aspects in skeletal malocclusions [29].

Exploring transverse cephalometric for impactful orthodontic insights and enhanced patient care.

### Materials and Methods.

**Study design:** A descriptive cross-sectional.

**Sample Size:** 100 patients with malocclusion I, II and III.

**Sampling Technique:** Non-random sampling technique.

**Measurements:** Measuring transverse cephalometric parameters involves analyzing specialized X-ray images (cephalograms) by identifying key dental landmarks.

1. The Inter-Canine Width assesses the horizontal distance between maxillary and mandibular canine tips. <https://medscience.center/j>

2. Inter-Premolar and Inter-Molar Widths gauge distances between respective premolar and molar cusp tips.

3. Maxillary-Mandibular Width compares transverse dimensions separately, revealing any discrepancies.

4. Maxillary-Mandibular Transverse Discrepancy involves measuring distances between specific cephalometric landmarks (e.g., condylion, gonion) and measure the transverse distances between them. Calculate the discrepancy between the maxilla and mandible in millimeters.



5. Condylar Inclination assesses angles formed by lines along condyle long axes.

6. Zygomatic Arch Width measures the horizontal distance between zygomatic arches.

All measurements, recorded in degrees or millimeters, contribute to comprehensive.

**Operational Definition.**

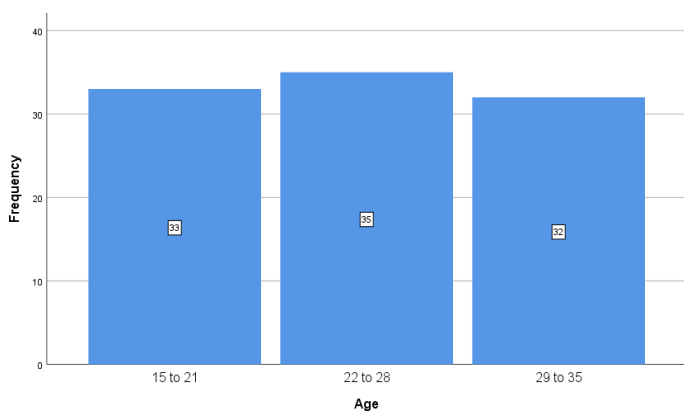
Malocclusion 1 features a mild Maxillary-Mandibular Transverse Discrepancy (-0.3 to -0.5) mm, with slight reductions (5-10%) in maxillary inter-canine and inter-premolar widths, and a modest decline in condylar inclination. Malocclusion 2 exhibits a moderate transverse discrepancy (-0.5 to -0.7), notable reductions (10-15%) in maxillary widths, and a substantial decrease in condylar inclination. Severe Malocclusion 3 shows a strong negative transverse discrepancy, significant (>15%) maxillary and mandibular width reductions, a consistent decline in condylar inclination, and an approximate 10-15% reduction in zygomatic arch width.

**Data Analysis.**

Study used tables, figures, means, and standard deviations, employing SPSS 26 for Pearson's correlation analysis between variables.

**Results.**

The distribution of study participants by age, depicted in (Figure 1), shows diversity across 15-21 (33 participants), 22-28 (35 participants), and 29-35 (32 participants).



**Figure 1.** Distribution of study participants age-wise.

**Source:** author's own development.

Table 1 displays crucial transverse cephalometric parameters for Malocclusion 1 include maxillary and mandibular arch widths, maxillary-mandibular relationships, condylar inclination (17.05 degrees), and zygomatic arch width (44.925 mm).

Table 2 outlines transverse cephalometric for malocclusion 2. Maxillary dental arch widths include inter-canine (30.625 mm, SD = 5.93), inter-premolar (43.025 mm, SD = 1.74), and inter-molar (49.75 mm, SD = 3.31). Mandibular widths are inter-canine (29.775 mm, SD = 2.98), inter-premolar (41.9 mm, SD = 3.17), and inter-molar (50.15 mm, SD = 3.19). Maxillary-mandibular relationship width is 65.2 mm (SD = 3.01), with a transverse discrepancy of 8.125 mm (SD = 2.92). Condylar inclination averages 21.375 degrees (SD = 3.05), and Zygomatic arch width is 39.9 mm (SD = 3.13).

**Table 1.** Mean and SD Transverse Cephalometric Parameter Malocclusion 1.

Maxillary Dental Arch Width	Inter-Canine Width	42.3 ± 4.88
	Inter-Premolar Width	44.8 ± 3.02
	Inter-Molar Width	53.425 ± 3.21
Mandibular Dental Arch Width	Inter-Canine Width	33.05 ± 3.27
	Inter-Premolar Width	47 ± 3.13
	Inter-Molar Width	54.425 ± 3.15
(Maxillary-Mandibular Relationship)	Maxillary-Mandibular Width	68.875 ± 3.32
	Maxillary-Mandibular Transverse Discrepancy	5.5 ± 2.90
	Condylar Inclination	17.05 ± 3.21
	Zygomatic Arch Width	44.925 ± 3.26

Transverse Cephalometric Parameter Mean ± SD.

**Table 2.** Mean and SD Transverse Cephalometric Parameter Malocclusion 2.

Maxillary Dental Arch Width	Inter-Canine Width	30.625 ± 5.93
	Inter-Premolar Width	43.025 ± 1.74
	Inter-Molar Width	49.75 ± 3.31
Mandibular Dental Arch Width	Inter-Canine Width	29.775 ± 2.98
	Inter-Premolar Width	41.9 ± 3.17
	Inter-Molar Width	50.15 ± 3.19
Maxillary-Mandibular Relationship	Maxillary-Mandibular Width	65.2 ± 3.01
	Maxillary-Mandibular Transverse Discrepancy	8.125 ± 2.92
	Condylar Inclination	21.375 ± 3.05
	Zygomatic Arch Width	39.9 ± 3.13

Transverse Cephalometric Parameter Mean ± SD.

Malocclusion 3 exhibits maxillary dental arch dimensions with mean inter-canine, inter-premolar, and inter-molar widths of 26.9 mm, 38.05 mm, and 45.05 mm, respectively as shown in (Table 3). Corresponding mandibular arch widths are 27.1 mm, 38.35 mm, and 43.75 mm. Maxillary-mandibular relationship width averages 60.7 mm, revealing a 12.45 mm transverse discrepancy. Condylar inclination averages 27 degrees, while the zygomatic arch width has a mean of 35 mm.

Table 4 Pearson's Correlations shows Malocclusion 1: inter-molar width—maxillary r=0.504, mandibular r=0.561; Malocclusion 2: maxillary r=0.560, mandibular r=0.625; Malocclusion 3: maxillary r=0.625, mandibular r=0.559) as in Table 1. Conversely, maxillary-mandibular transverse discrepancy displayed a negative correlation, strengthening with malocclusion severity (Malocclusion 1: r=-0.496; Malocclusion 2: r=-0.483; Malocclusion 3: r=-0.483).

**Discussion.**

Participants were with the majority (35 individuals) aged 22 to 28, closely followed by the 15 to 21 group with 33 participants. A comparable age distribution was noted in a related study examining transverse dimensions in occlusion and malocclusion groups [30]. The study reveals a prominent gender imbalance (77% female, 23% male). Past research

**Table 3.** Mean and SD Transverse Cephalometric Parameter Malocclusion 3.

Maxillary Dental Arch Width	Inter-Canine Width	26.9 ± 4.31
	Inter-Premolar Width	38.05 ± 2.23
	Inter-Molar Width	45.05 ± 3.39
Mandibular Dental Arch Width	Inter-Canine Width	27.1 ± 3.37
	Inter-Premolar Width	38.35 ± 3.26
	Inter-Molar Width	43.75 ± 3.10
Maxillary-Mandibular Relationship	Maxillary-Mandibular Width	60.7 ± 3.18
	Maxillary-Mandibular Transverse Discrepancy	12.45 ± 3.15
	Condylar Inclination	27 ± 2.99
	Zygomatic Arch Width	35 ± 3.32

Transverse Cephalometric Parameter Mean ± SD.

**Table 4.** Pearson's Correlations.

Correlation with Max Mand Transverse Discrepancy	Malocclusion 1 (Mild)	Malocclusion 2 (Moderate)	Malocclusion 3 (Severe)
Inter Canine Width Maxillary	0.501	0.504	0.415
Inter Premolar Width Maxillary	0.501	0.435	0.470
Inter Molar Width Maxillary	0.504	0.560	0.625
Inter Canine Width Mandibular	0.415	0.378	0.395
Inter Premolar Width Mandibular	0.524	0.547	0.496
Inter Molar Width Mandibular	0.561	0.525	0.559
Maxillary Mandibular Width	0.506	0.464	0.441
Maxillary Mandibular Transverse Discrepancy	-0.496	-0.483	-0.483
Condylar Inclination	-0.567	-0.551	-0.593
Zygomatic Arch Width	0.571	0.563	0.490

indicates notable gender- related distinctions, such as varying lower soft tissue thickness in males with sagittal skeletal malocclusions [31]. Gender's impact on malocclusion anatomy surpasses linear skeletal measurements' influence [32]. Another study highlighted the uniqueness of each face, emphasizing the existence of variation between genders and forming the basis of sexual dimorphism [33]. Gender influences facial anatomy, impacting malocclusion; vital for cephalometric research. Average widths include 42.3 mm for maxillary arch, 33.05 mm for mandibular arch. The research explores maxillary-mandibular relationships, uncovering key measurements like 68.875 mm mean width and 5.5 mm transverse discrepancy, informing orthodontic assessment. Gender differences in soft tissue thickness are observed for craniofacial therapy planning [34]. A cephalometric study on transverse dimensions in normal occlusion and malocclusions highlights significant gender and malocclusion- specific variations. Customizing orthodontic

treatments based on these findings ensures personalized care [35].

Notable differences were observed, with the mandibular arch having smaller dimensions than the maxillary arch. The investigation underscores the significance of recognizing these variations in orthodontic treatment planning, highlighting the importance of shape variability, and considering both width and depth in dental arches for effective management of malocclusions [36]. Dental arch variations between upper and lower arches underscore the need for personalized orthodontic treatments addressing individual inter-arch differences. Cephalometric measures are crucial in assessing Malocclusion 3, providing average values for inter-canine, inter-premolar, and inter- molar distances. Cephalometric analyses for Class III malocclusion benefit from additional studies, including three-dimensional facial asymmetry, Class III classification in Chinese individuals, and cephalometric-based treatment assessments in adults [37,38].

Increasing transverse discrepancy correlates positively with widened maxillary mandibular arches and zygomatic arches, but negatively with condylar inclination, indicating complex relationships in craniofacial dimensions. These findings contribute to treatment planning and enhance understanding of crowding etiology, supported research on skeletal components in Jazan's population [39]. Facial and maxillary front teeth correlation studied using Pearson's coefficient test [40]. These studies contribute valuable insights, further enriching our understanding of the interplay between specific dental measurements and malocclusion severity, thereby aiding in informed treatment planning.

## Conclusion.

Addressing age and gender differences enhances understanding of craniofacial anatomy in malocclusions. Malocclusion 1 emphasizes cephalometric aspects, offering vital indicators for orthodontic assessment and personalized treatment strategies. Dental arch variations underscore the importance of tailored orthodontic plans, considering shape, width-depth integration, and inter- arch factors. Class III malocclusion lacks a defined normal range, posing challenges in interpretation. Noteworthy correlations between dental measurements and transverse irregularities, particularly, contribute to effective treatment planning.

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