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Journal of Oral Health and Dental Science

RESEARCH ARTICLE

ISSN: 2577-1485

Correlation of Molar Relationship and ANB Skeletal Jaw Base Relationship: A Retrospective Hospital Based Study

Twisibilege Mwakasungula[1*], Cecilia Kayombo[2] and Sima Rugarabamu[2]

[1]Department of Dental Health, Temeke region referral hospital, Dar-Es-Salaam, Tanzania
[2]Department of Oral Health, Muhimbili National Hospital Mloganzila, Tanzania

[*]**Corresponding author:** Twisibilege Mwakasungula, Department of Dental Health, Temeke region referral hospital, Dar-Es-Salaam, Tanzania, Tel: +255713651077, E-mail: Kalikutwisi@gmail.com

Citation: Twisibilege Mwakasungula (2022) Correlation of Molar Relationship and Anb Skeletal Jaw Base Relationship: A Retrospective Hospital Based Study. J Oral Health Dent Sci 5: 104

Abstract

Objective: To Correlate the Molar Relationship And ANB Skeletal Jaw-Base Relationship Among The Orthodontic Patients

Study Design: Retrospective Analytical Study

Materials And Methods: Orthodontic Dental Cast And Lateral Cephalograms Were Obtained From Random Sample Of 63 Patients Age Were 12-25 Years Old In Department Of Orthodontics And Radiology In Tongji Hospital Which The Angle's Classification Was Used To Assess The Dental Arch Relationship From Orthodontic Cast .The Jaw-Base Relationship Was Assessed From Lateral Cephalograms Obtained From CBCT Machine And Stored In Computer Where Invivo 5 Software Used To Measure Angular (ANB Angle).

Results: The Sample Had Patients' Gender as Follows: There Were 29 Male Individuals (46%) And34 Female Individuals (54%) Hence The Sample Was Relatively Dominated By The Female. The Sample Of The Study Had Mean ANB Angle Of 2.3, And The Standard Deviation Was 3.4. Whereas The Age Mean Was 16.9 With A Standard Deviation of 3.8. That Define That the Sample (N= 63) Had Individual Age Ranging From 12 Years (Minimum) Which A Documented Mean Value of 16.97 In Age Category with Standard Deviation of 3.8. Conversely ANB (Mean Values 2.3) Levels Were -7.6 At Minimum and 7.2 Maximum with Standard Deviation of 3.4.

The Difference Was Not Significant P>0.115 On The Distribution of ANB Angle and Age. In The Study Sample There Was Skeletal Class I Individuals Who Were 27(42. 9%).Closely Followed by Skeletal Class II Who Occupied 25(39.7%) And Far Lower by Number Were Skeletal Class III Who Possessed Only 11(17.5%).

The Molar Relationship Corresponding to Skeletal Classification Had Agreement of 30.2% For Class I, 27.0% Class II and 7.9%Class III. This Indicate That the Higher Percentage Had the Significant Relationship. The Distribution of Different Molars Relationship Classes Among the Skeletal Classes Was Uneven (P<0.0001) Kappa Statistic Showed That There Is Statistically Significant Strongly Between Molar Relationship And ANB Skeletal Classes.

Conclusion: There Are Relatively Moderate Statistical Significant Correlation Coefficient Value Between the Molar Relationship Classification and ANB Angle Skeletal Jaw Base Classification. There Are Strongly Statistically Significant Association Between Molar Relationship and ANB Angle Skeletal Jaw Base.

Keywords: Malocclusions; Periodontal Health; Orthodontic Treatments; Dental Plaque

Introduction

The Art and Science of Orthodontic Continues to Receive A Vigorous In Put Both From Researches And From Clinical Development. The Main Ways to Obtain A Proper Orthodontic Diagnosis And Treatment Planning Is To Base On The Good Assessment Of Dental Arch And Skeletal Pattern For Better Result Of Treatment. The Orthodontist Must Have A Good Knowledge Of Dental Inclusion And The Underlying Skeletal Occlusion This Help To Reduce The Severity Of The Malocclusion [1].

The Angle's Classification Was the First Concept Dealing with The Static Occlusion in The Intercuspal Position Where by Defined The Ideal Relationship Of The Maxillary And Mandibular First Permanent Molar And The Alignment Of All The Teeth Line In Occlussion In The Anteroposterior Relationship. Several Studies Suggested That The Dental Arch Relationship Is Usually Being Affected With Craniofacial Skeleton Where By Teeth Are Positioned [2] Therefore The Assessment Of The Skeletal Jaw Base Relationship Plays A Major Part In The DeterminingThe Occlusal Relationship And It's A Major Limiting Factor In Orthodontic Treatment, It Is Necessary To Be Able To Assess It Accurately On The Individual Patient. This Makes The Orthodontists To Be Interested With The Correlation Between The Craniofacial Morphology And Malaligment Of Teeth. Thus Few Studies Have Been Come Up With The Investigation Based On The Comparison Between The Molar Relationship And Skeletal Jaw-Base Relationship [3]

The First Concept of Evaluating Anteroposterior Jaw Relationship Cephalometrically Was Coming from Down's Description Of Point A And B [4]. Then After A Few Years Steiner Come Up With The Concept Of ANB[5] Which Become The Most Important Concept Of Analyses .The Most Part Of The Arguments Inside Orthodontics Is Whether The Molar Relationship In Dental Arch Relate With The Skeletal Jaw Base Relationship And If It's Important In Assessment Of Orthodontic Diagnosis And Treatment Planning, Due To That The Valuation Of Both The Anteroposterior Dental Arch And Jaw-Base Relationship Are Founded In Sagittal Plane, It Is Reasonable That They Are Much Correlated, Instead Some Studies Suggested That There Is Weak Correlation Between Them [6].

Therefore The Population Studies Need To Confirm The Relationship Between The Anteroposterior Dental Arch And Jaw-Base Skeleton Relationship. However It Is Unclear Whether Malocclusion

Size, Or A Combination Of The Two. Similar Cranial Base Length Correlated Strongly With Maxillary Length But Weakly With Mandibular Length. However, The Size Of The Maxilla Did Not Influence Its Prognathism, The Cranial Base Angle Was Strongly Correlated (–0.7) With Angle Sella –Nasion–Point Size And Shape Influence Mandibular Prognathism By Determining The Anteroposterior Position Of The Condyle Relative To The Facial Profile. Nevertheless The Upper Jaw (Maxilla) And The Lower Jaw(Mandible)Articulate With Different Limbs Of The Cranial Base, And Therefore It Is Possible That Variations In Growth And Orientation Of The Cranial Base Region Could Lead To A Differential Movement Of The Mandible In Relation To The Maxilla [7]. Some Studies Has Been Done To Confirmed The Comparison Of Molar Relationship And Jaw-Base Relationship Such As Haavikko And Hele [8]studied The Sample Size Of 1017 Finnish Children Aged From 12 To 19 Years And Then Come Up With The Conclusion That Among Finnish Children Every Angle Class Include Direct Proportion Of Atypical Facial Types. Though The Age Range Of Samples Within That Studies Differ Considerably Hence The Sample Had Differ In Degrees Of Dental Arch And Jaw-Base Development. From Their Results They Described That In Angle Class III The Frequency Of Skeletal Class III(38%) Was Lower Than The Skeletal Class I(62%)[8].While Another Studies Done By Milacic And Markovic Described That 85% Of Angle Class III Subjects Had The Same Dental And Skeletal Relationship In The Study Of Sample Size 585 Swiss Orthodontic Patients. Therefore The Contradictory Evidence Is Most Like To Be Related With The Samples That Have Been Studied, Where By The Clinical Sample Is More Convenient As Opposed To Random Sample Drawn From A Population.

However The Angle's Classification Is Significant During The Assessment Of The Anteroposterior Dental Arch Relationship Where By The Angular Measurements Has Been Included In Assessment Of Anteroposterior Jaw-Base Skeleton Relationship[9]. Though This Method Has Got Its Weakness Based On The Variation Factor Other Than The Jaw Relationship. The Correlation Between The

Molar Relationship In Anteroposterior Dental Arch And Jaw-Base Relationship Assessed By Angular Measurements Has Not Been Carry Out In A Population Study Being Research.

Therefore, The Aim Of This Study Is To Investigate The Association Between The Molar Relationship And Skeletal Jaw-Base Relationship Among The Orthodontics Patients.

Materials and Methods

Sample

The Subjects Obtained Randomly Were Pre-Treatment Orthodontic Dental Cast And Lateral Cephalometric Used After Searching From Orthodontic And Radiology Department Respectively At Tongji Hospital.63 Orthodontic Patients, Aged 12-25 Years Old Who Fulfilled The Inclusion Criteria Formed The Sample Of The Study.

Data Collection

The Orthodontic Patient Visited the Department of Orthodontic and Dentofacial Orthopedicsat Tongji Hospital In Wuhan Hubei Province That Fulfills The Requirement Of Selection. The Orthodontic Casts Were Obtained in Orthodontic Department and The Lateral Cephalometric in Oral Radiology Department Where Patients Information Were Stored in Computer and Measurement Done. The Retrospective Study Design Used to Obtained the Pretreatment Orthodontic Cast Model and Lateral Cephalometric Of 63 Orthodontic Patients. The Data Were Collected from The Patients Came to The Orthodontic Treatment from September 2014 To February 2015.

Orthodontic Dental Cast and Lateral Cephalometric Study

Study Cast Measurement; Orthodontic Dental Cast Used for Assessing the Molar Relationship (Anteroposterior Dental Arch Relationship) On The Basis Of Angle's Definition. Orthodontic Casts Were Taken In Centric Occlusion And Trimmed With Symmetrical Bases And Measure.

Molar Relationship Class I Was Defined As Occurring When Mesiobuccal Cusp Of The Upper First Permanent Molar Occludes With The Mesial Buccal Groove Of The Lower First Permanent Molar.

Class II Was Defined As Occurring Where The Mesiobuccal Cusp Of The Upper First Molar Occluded Anterior To The Mesial Buccal Groove Of The Lower First Permanent Molar.

Molar Class III Was Defined As Occurring Where The Mesiobuccal Cusp Of The Upper First Molar Occluded Posterior To The Mesial Buccal Groove Of The Lower First Permanent Molar.. The Study Sample Of 63 Subjects Was Distributed Into Three Different Classes Based On The Molar Relationship.

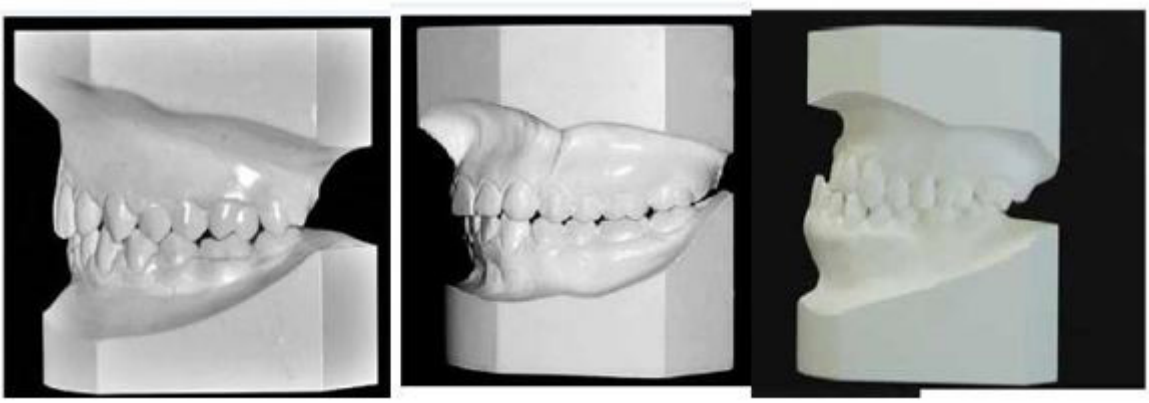

Figure 1: Molar Relationships: From The Left To The Right Class I, II, And III

Cephalometric Analysis

The 63 Lateral Cephalometric Radiographs Were Used And Traced The Landmarks And Analyzed By Using Invivo5autoimage Software Computerization. The Cephalometric Reference Values Of Anteroposterior Jaw-Base Relationship Were Assessed Using Angular Measurement ANB Angle. Where Point S, N, A, B And Plane SNA, SNB Used To Measure The Angular ANB By Subtracting SNA And SNB To Get The ANB Value.

The Skeletal Jaw Base Relationships Were Categorized Into Three Groups (Skeletal Class I, II, And III). Skeletal Class I Was Defined As Values Within The Range Of Mean Value Of The Sample One Standard Deviation. Class II Was Defined As Greater Than Mean Value Plus One Standard Deviation. Class III Was Defined As Less Than Mean Value Minus One Standard Deviation.

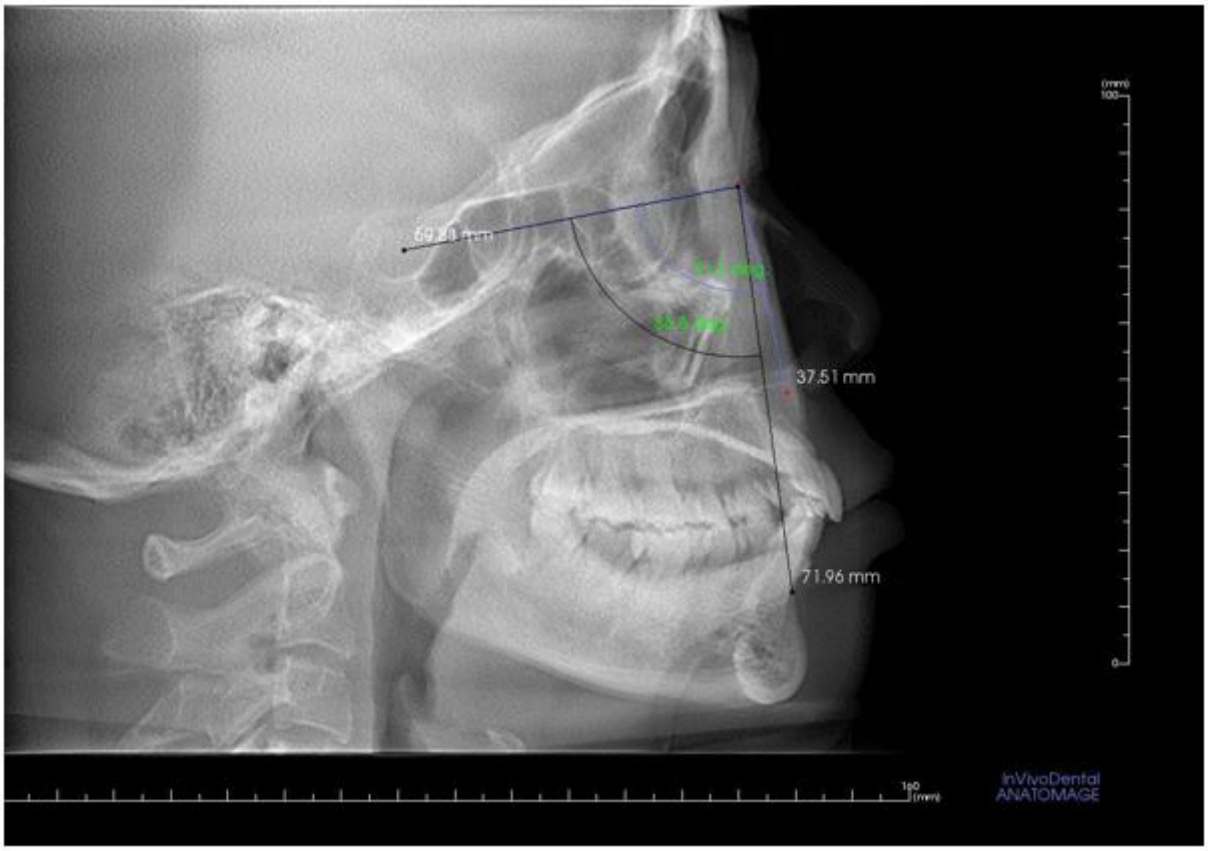

Figure 2:. Illustrate ANB Angle Measurement

	Class I	Class II	Class III
ANB Angle	2.3°± 3.4	ANB>5.7	ANB<-1.1

Table 1: Classification Of Anteroposterior Jaw-Base Relationships Assessed By ANB

Data Analysis

Data Were Evaluated by Using Statistical Package Software System, Version 20 (IBM® SPSS® Statistics 20). Statistical Analyses Were Done and The Significance Level Was Set At P<0.05. The Different Statistics Tests Were Performed.

Error of Methods

The Reliability Of The Result Were Done By Re-Examine The Subjects Twicely Intraexaminer Through Measuring The ANB Angle Degree In Lateral Cephalometrics In A Way Of Measuring The SNA And SNB Angle And Also The Direct Measuring Of NA And NB To Obtained The ANB Angle Degree .A Paired T-Test Was Performed To Assess The Difference Between The Examiners And The Level Of Significance Was Set At P<0.05. There Were No Statistical Difference Between The Examiners P>0.05. . Carefully Tracing Of Landmarks Or Points On Lateral Cephalograms Had Aided To Minimize The Error. The Use Of Sophisticated Software For Measuring The ANB Angle Also Minimizing The Error.

1.Paired T-Test Was Used To Evaluate Inter-Examiner Reliability Of The Method.
2.Pie Charts And Frequency Table Were Used Show The Distribution Of Molar Relationship, ANB Skeletal Jaw Relationship And Age And Gender Of The Study Sample
3.Relationship Between Molar Relationships And ANB Angle Were Performed In Order To Calculate The Mean, The Standard Deviations Of ANB.
4.Chi-Square Was Used To Assess The Association Existence Between Molar Relationship And ANB Skeletal Jaw Relationship. Cohen's Kappa Coefficient Was Used To Rank The Level Of Correspondence Between The Moral Relationship And ANB Skeletal Jaw Relationship.
5.Correlation Was Established Between Molar Relationship And ANB Skeletal Jaw Base

Results

The Results Obtained from The Study Were;

	Age Of The Patients	ANB
Valid	63	63
N	0	0
Missing	16.97	2.305
Mean	3.865	3.4442
Std. Deviation Minimum	12	-7.6
Maximum	25	7.2

Table 2: Statistics Of The ANB And Age

Statistics

The Sample Of The Study Had Mean ANB Angle Of 2.3, And The Standard Deviation Was 3.4. Whereas The Age Mean Was 16.9 With A Standard Deviation Of 3.8.That Define That The Sample (N= 63) Had Individual Age Ranging From 12 Years (Minimum) And 25 Years(Maximum) Which A Documented Mean Value Of 16.97 In Age Category With Standard Deviation Of 3.8. Conversely ANB (Mean Values 2.3) Levels Were -7.6 At Minimum And 7.2 Maximum With Standard Deviation Of 3.4.

The ANB Angle Which Demonstrate The Jaw Base Relationship Where By The Mean And Standard Deviation Used To Have The Skeletal Classes. The Class I By ANB Angle Measurement Comprised All Subjects Which ANB Angle Ranged From The Mean Value (2.3◦± 3.4) The Skeletal Class II By Angular Measurement Includes All Subjects Who Had ANB Angle Greater Than The Mean And Standard Deviation Whereas The Skeletal Class III By Angular Measurement Encompassed ALL Individual Who Had ANB Angle Value Below The Mean And Standard Deviation.

Sex Of The Patient

		Frequency	Percent	Valid Percent	Cumulative Percent
	Male	29	46.0	46.0	46.0
Valid	Female	34	54.0	54.0	100.0
	Total	63	100.0	100.0	

Table 3: Gender Distribution Of The Patients

The Distribution Of The Patients' Gender In This Study Was As Follows: There Were 29 Male Individuals (46%) And 34Female Individuals (54%) Hence The Sample Was Relatively Dominated By The Female

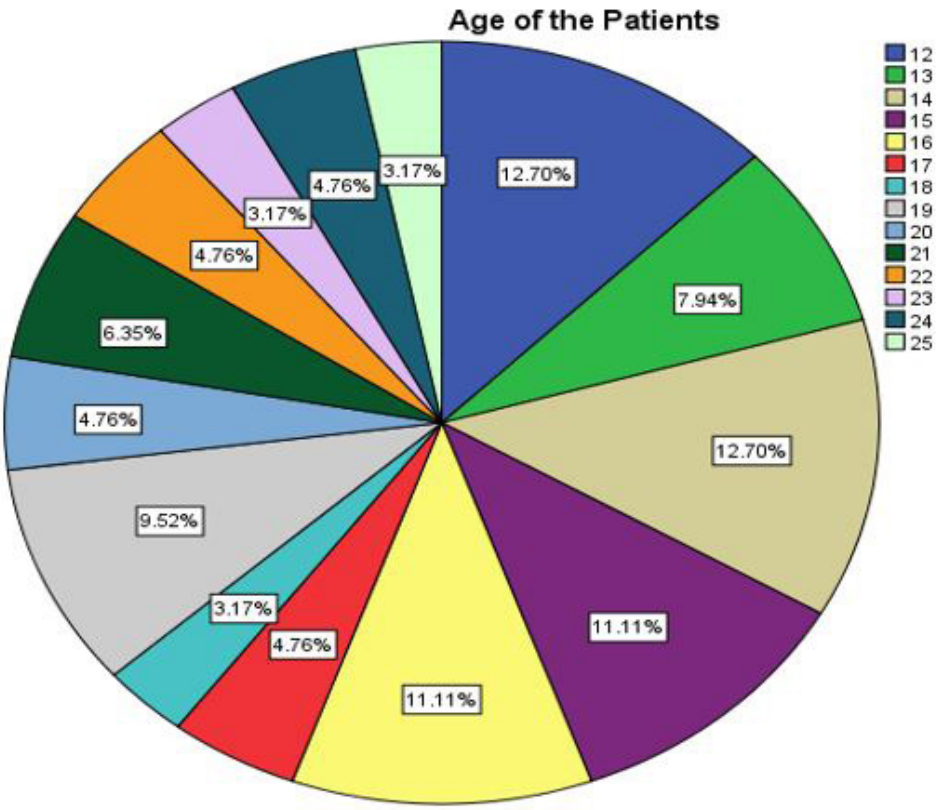

Figure 3: Age Distribution Of The Patients

Age	Male	female	Total
12	5 (7.94%)	3(4.76%)	8(12.70%)
13	2 (3.17%)	3(4.76%)	5(7.94%)
14	4 (6.35%)	4 (6.35%)	8(12.70%)
15	4(6.35%)	3(4.76%)	7(11.11%)
16	3(4.76%)	4(6.35%)	7(11.11%)
17	2(3.17%)	1(1.59%)	3(4.76%)
20	1(1.59%)	1(1.59%)	2(3.17%)
19	1(1.59%)	5 (7.94%)	6(9.52%)
20	1(1.59%)	2(3.17%)	3(4.76%)
21	2(3.17%)	2(3.17%)	4(6.35%)
22	2(3.17%)	1(1.59%)	3(4.76%)
23	1(1.59%)	1(1.59%)	2(3.17%)
24	1(1.59%)	2(3.17%)	3(4.76%)
25	1(1.59%)	1(1.59%)	2(3.17%)
Total	29(46.1%)	34(53.9%)	63(100%)

Table 4: Sample Distribution Across Gender and Age

The Sample Had Male Individuals Age 12 Years Were in Higher Number 5(7.94%) Compared with The Female Individual Aged 12 Years Had 3(4.76%).

While Female Individuals Age 19 Years Were in Higher Number 5(7.94%) Compared with Male Individuals Age 19 Years Had 1(1.59%)

Molar Relationship N%

	I	31	49.2	49.2	49.2
Class	II	23	36.5	36.5	85.7
	III	9	14.3	14.3	100.0
	Total	63	100.0	100.0	

Table 5: Molar Relationship in Patients

The Sample Had Total Number of 63 (N=63) This Shown That the Sample Had More of Individuals with The Molar Relationship Class I to The Tune of 31(49.2%) Followed by Class II Molar Relationship to The Tune of 23(36.5%) And Lastly Class III Molar Relationship Individuals Accounted 9(14.3%).

This Based On Angle's Classification That Determined the Molar Relationship Between the First Permanent Maxillary Molar and The First Permanent Mandibular Molar Hence Class I Molar Relation Were in Higher Frequency Compared with The Class I, II and III.

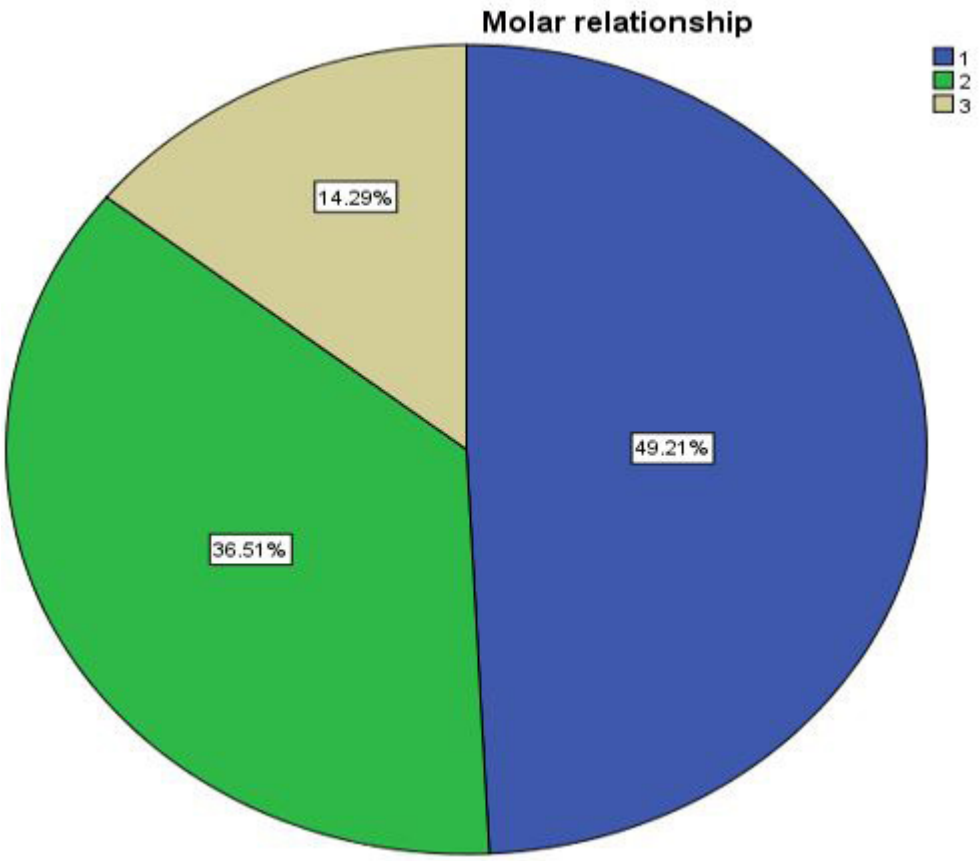

Figure 4: Distribution of The Molar Relationship

The Distribution of Sample Based in Molar Relationship Classes Showed the Class I Molar Relationship Individuals Had More Frequency of 49.21% Followed by Class II Molar Relationship Individuals of 36.51% And Lastly Class III Molar Relationship of 14.29%

		Frequency	Percent	Valid Percent	Cumulative Percent
Class	1	27	42.9	42.9	42.9
	II	25	39.7	39.7	82.5
	III	11	17.5	17.5	100.0
	Total	63	100.0	100.0	

Table 6: Distribution Of Skeletal Relationship

Skeletal Classification

The ANB Angle Measurement Used to Classify the Skeletal Jaw Base in Three Classes Were Classification from The Sample the All Individual with Class I Range from The Mean Value of (2.3◦± 3.4).

In This Study the Sample Size of 63 Individual Patients at Hand Composed of Greater Number of Skeletal Class I Individuals Who Were 27(42. 9%).Closely Followed by Skeletal Class II Who Occupied 25(39.7%) And Far Lower by Number Were Skeletal Class III Who Possessed Only 11(17.5%).

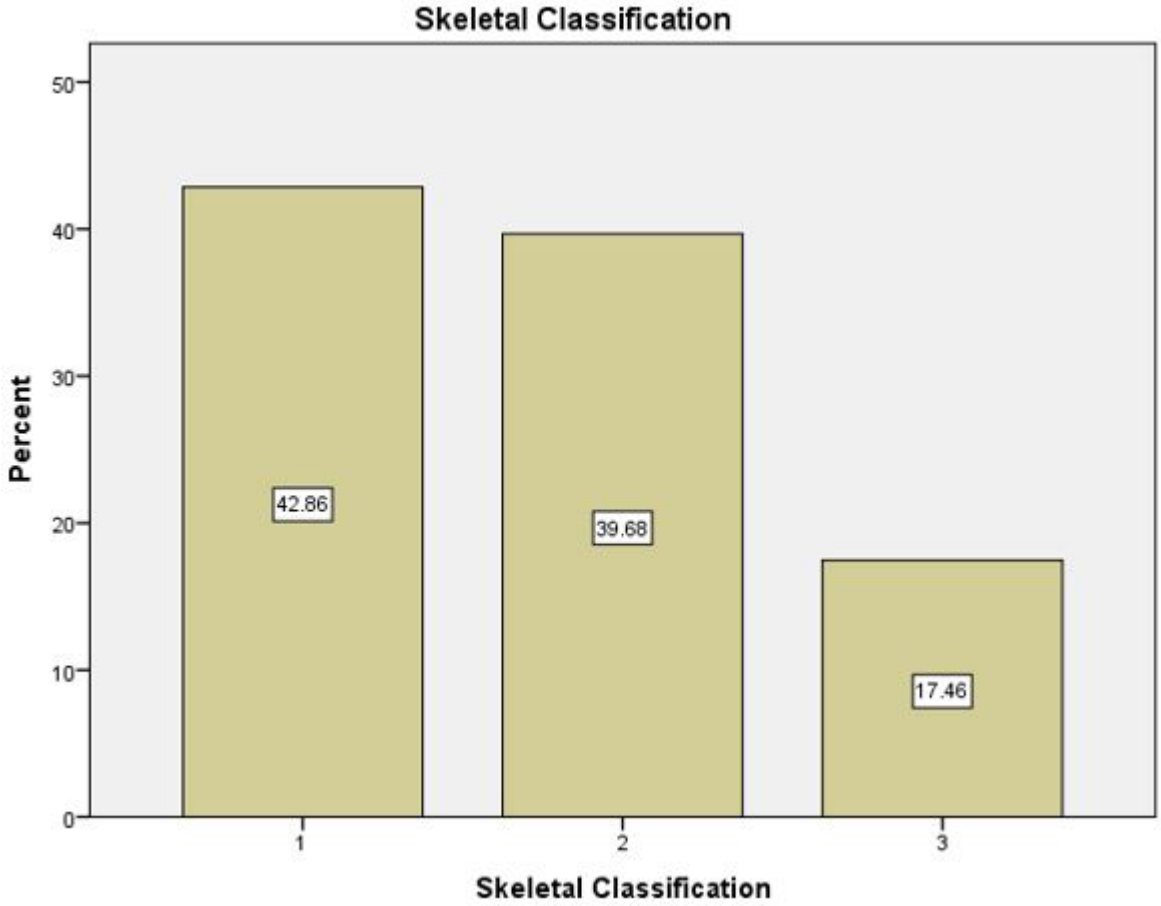

Figure 5: Distribution of Skeletal Classification in Percentage

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-Sided)
Pearson Chi-Square	626.375[a]	585	.115
Likelihood Ratio	276.361	585	1.000
Linear-By-Linear Association	.227	1	.634
N Of Valid Cases	63		

Table 7: Chi-Square Tests

In This Study Sample Size Was 63 Patients That Included 12 Years Old Patients Which Was the Youngest Age and 25 Years Patient Old Which Was the Eldest Aged. The Mean Age Is 16.5years and The Standard Deviation of 3.8. The Pearson's Chi-Square Shows That There Was

No Difference in The Distribution On ANB Angle Values in Age.

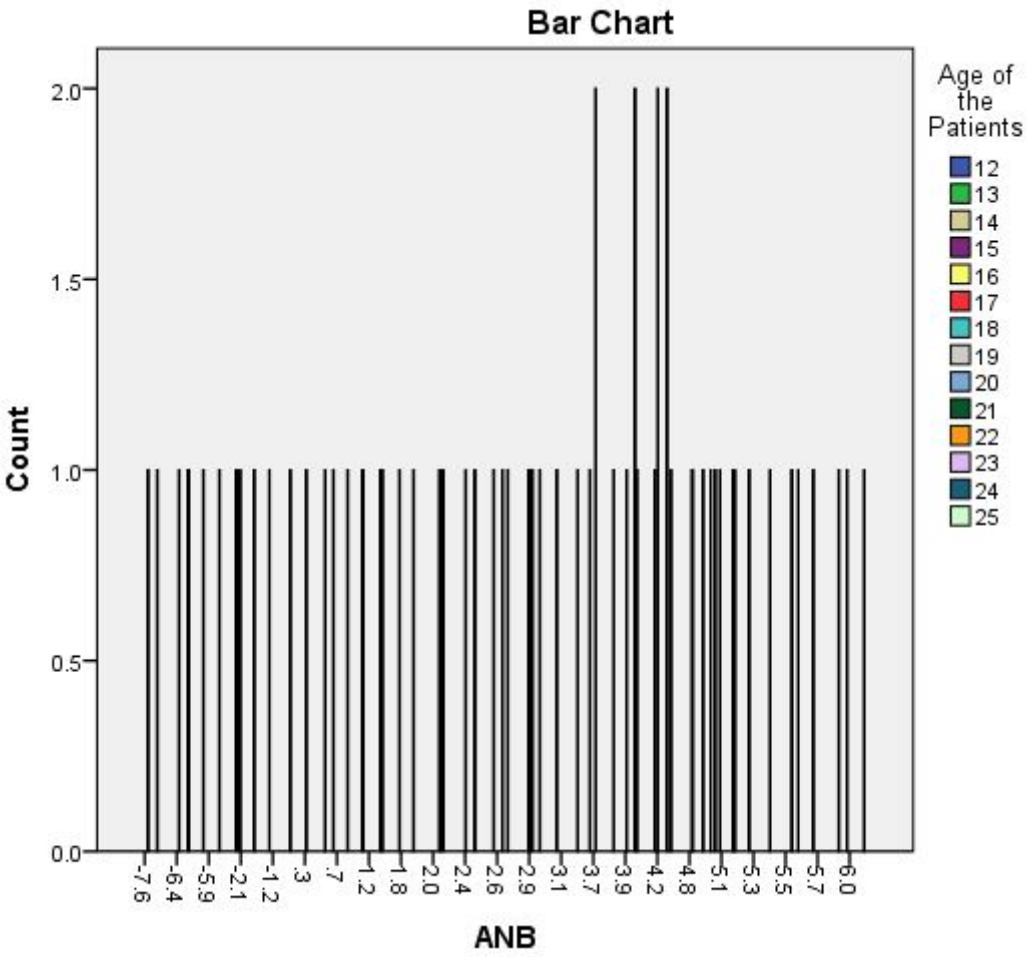

Figure 6: Distribution of ANB Angle Value and Age of the Patients

The Difference Was Not Significant P>0.115. The Distribution of ANB Angle Value in The Sample of 63 Patient Corresponding to The Age of the Patients Shows That the Maximum ANB Angle Was 7.2 Degree and The Minimum ANB Value Was -7.6 Degree.

		ANGLE'S CLASS	SKELETALCLASS
ANGLE'S	Pearson	1	.314*
CLASS	Correlation		
	Sig. (2-Tailed)		.012
	N	63	63
SKELETALCL	Pearson	.314*	1
ASS	Correlation		
	Sig. (2-Tailed)	.012	
	N	63	63

Table 8: Angle's Classification and Skeletal Classification Correlation Results

*Correlation Is Significant at The 0.05 Level (2-Tailed)

Possible Relationship That Exists Between Angle's Classification and Skeletal Classification Was Examined by Employing Pearson Product-Moment Correlation Coefficient. Results Indicated the Model Was Perfectly Significant and Positive Correlation Between Angle's Classification and Skeletal Classification Was Obtained [R = .31, N = 63, P < .05]. It Can Be Deduced Here with Certain That Individuals with Molar Relationships Class I Are Associated with Skeletal Class I as Well and Class II Molar Relationship Are Associated with Skeletal Class II and Class III Molar Relationship Are Associated with Skeletal Class III as Well. Correlation Strength as Displayed by This Result (In Table Above) Suggests Medium Size Correlation as Per Cohen (1988) Rule of Thumb Correlation Interpretation (R = .10 To .29 Or R = -.10 To -.29 Small Size; R = .30 To49 or R =-.30 To -.49 Medium Size; R = .50 To 1.0 Or R =-.50 To -1.0 Large Size. Hence There Was Moderate Correlation Between Molar Relationship and ANB Angle Skeletal Jaw Base Relationship.

			Skeletal Classification			Total
			1	II	III	
	I	Count	19	7	5	31
		% Of Total	30.2%	11.1%	7.9%	49.2%
Molar Relationship	II	Count	5	17	1	23
		% Of Total	7.9%	27.0%	1.6%	36.5%
	III	Count	3	1	5	9
		% Of Total	4.8%	1.6%	7.9%	14.3%
Total		Count	27	25	11	63
		% Of Total	42.9%	39.7%	17.5%	100.0%

Table 9: Molar Relationship And Skeletal Classification

Molar Relationship * Skeletal Classification Crosstabulation

In This Study of the Sample 63 Patients Shows the Molar Relationship Corresponding to Skeletal Classification Had Agreement of 30.2% For Class I, 27.0% Class II and 7.9% Class III. This Indicate That the Higher Percentage Had the Significant Relationship Between Molar Relationship and Skeletal Relationship Due to The Common Count in Both Classes

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-Sided)
Pearson Chi-Square	25.746[a]	4	.000
Likelihood Ratio	24.008	4	.000
Mcnemar-Bowker Test	.833	3	.841
N Of Valid Cases	63		

Table 10: Chi Square Test

Symmetric Measures

		Value	Asymp. Std. Error[b]	Approx. T[c]	Approx. Sig.
Measure Of Agreement	Kappa	.436	.096	4.643	.000
N Of Valid Cases		63			

Cross Tabulation Chi-Square Showed That The Distribution Of Different Molars Relationship Classes Among The Skeletal Classes Was Uneven (P<0.0001).Kappa Statistic Showed That There Is Statistically Significant Strongly Association Between Molar Relationship And ANB Skeletal Classes.

The Molar Relationship And ANB Angle Skeletal Jaw Based Of The Sample Was Compared For The Purpose Of Determine The Agreement In These Two Classifications.

In This Study It Showed That There Was Common Count Between Both Molar Relationship And ANB Angle Skeletal Jaw Base Were 19 Individual (30.2% Of Total Sample) Were On The Same Class I For Both Classification,25 Individual (27.0% Of Total Sample) Class II And 11 Individual (7.9% Of Total Sample) Class III As Well. On The Opposite Side There Were Divergence In Their Correspondence Such As 7 Individuals (11.1% Of The Sample) Of Class I Molar Relationship Were Found In Class II Skeletal Jaw Base Relationship By ANB Angle Measurement, 5 Individuals (7.9% Of The Total Sample) Of Class II Molar Relationship Were Found In Class I Skeletal Jaw Base Relationship By ANB Angle Measurement, 3 Individuals (4.8%) Of The Total Sample) Of Class III Molar Relationship Were Found In Class I Skeletal Jaw Base Relationship By ANB Angle Measurement.

Discussion

The Sample Of The Study Was 63 Patients Which Male Were 46% And Female 54% Its Show The Gender Distribution Is Not Equal. The Mean Age Was 16.97years Old And Standard Deviation Of 3.8 While The Mean Of ANB Angle Of Skeletal Jaw Base Was 2.3 And Standard Deviation Of 3.4 This Means In The Sample Study The Age Were In Between 16.97±3.8 And The ANB Angle Measurement For Classes Had The Mean Of 2.3±3.4 Which Below -1.1 Demonstrate The Class III While Above 5.7 Its Suggest The Class II And Between The Range Was Class I.

The Study Sample Had Molar Relationship Distribution Of Class I, II, And III Which 31(49.2%) Individual Of The Total Sample Had Class I, 23(36.5%) Individual Of The Total Sample Had Class II And Lastly 9(14.3%) Individual Of The Total Sample Had Class III This Prove That The Individual With Class I Had Greater Percentage Followed By Individuals With Class II And Individual With Class III Being The Lower This Result Show The Agreement With The Previous Research Done By Horowitz Et Al. Where He Made The Comparison Between American Black And Caucasian Reported Distribution Of Malocclusion For American Black As 71%Class I ,11.4% Class II And 6.3% Class III While For The White The Prevalence Of 53.6% Class I,33.6% Class II And 4.7% Class III On The Sample Size Of 410 And 349.

However Show The Agreement With The Study Done In Kadazan Dusun Ethnic Patient In Malaysia Shown The Variation Of Molar Relationship Among The Study Sample Where The Prevalence Of 38% Class I, 33 % Class II And 30% Class III On Population Sample Size 345.

Though The Sequence Of Frequency Of Classes Of Malocclusion Is The Same In Both Studies The Percentages Are Not The Same Especially In Class I, II And Class III Molar Relationship. This May Be Explained By The Difference In Sampling And Age. Likewise The Study Done By The African Studies Such As Nigeria Shown Prevalence Of 50% Of The Subject Had Class I Malocclusion, Class II Prevalence Of 14% And 12 % Class III In Epidemiological Survey Of School Children Of Sample Size 636. Therefore From The Studies Done Which Their Objective Based On The Molar Relationship Distribution Had Similar Finding With This Study Where The Class I Had More Frequency In A Population Followed By Class II And Lastly Class III Individuals In A Population.

Similar The Mean And Standard Deviation Used To Have The Skeletal Jaw Base Classification By Measured The ANB Angle, The Classes From This Study Were As Follows Class I Range From The Mean Value Of (2.3± 3.4). The Sample Size Of 63 Individual Patients At Hand Composed Of Greater Number Of Skeletal Class I Individuals Who Were 27(42.9%).Closely Followed By Skeletal Class II Who Occupied 25(39.7%) And Far Lower By Number Were Skeletal Class III Who Possessed Only 11(17.5%).

According To The Result Its Show The Association Of Molar Relationship And ANB Skeletal Jaw Base Due To The Same Value Of Frequency In Both Molar Relationship And Skeletal Classes Where The Class I Had Greater Frequency Followed By Class II And III. In ANB Angular Measurement Concerning The Class III Demonstrated A Significantly Smaller Value That Produces The More Proclination Positions Of The Mandible Which Play A Major Role In The Development Of Class III.

The Distribution Of ANB Angle Value And Age Was Not Statistically Significant As The Pearson's Chi-Square Shows That There Was No Difference In The Distribution On ANB Angle Values In Age. The Difference Was Not Significant P>0.115 From This Results Relate With The Study Done Which Reported That The Cephalometric Values Obtained From 12-Year-Olds Seem To Be Valid For A Larger Age Range Because It Has Been Reported That There Is No Statistically Significant Difference For Cephalometric Parameters In 7 To 13-Years Old[56]. The Cranial Base Angle At Birth Is Approximately Higher, But Then Reduces At 5 Years Of Age. From 5 To 15 Years The Cranial Base Angle Is Relatively Stable[57]. While Another Studies Done By Melsen Has Shown That The Relative Stability Results From The Dynamic Process That Happened When The Neural End Of The Suture Ossifying Before Pharyngeal End Is Counteracted By Resorption Of Bone At The Endocranial And Deposition On The Pharyngeal Surface[58].

The Results Revealed That The Correlation Coefficient (R-Value) Which Represent The Probability To Predict The Variables From One Another, Was Moderate Between The Molar Relationships And ANB Angle Skeletal Jaw Base Results Indicated The Model Was Perfectly Significant And Positive Correlation Between Angle's Classification And Skeletal Classification Was Obtained [R = .31, N = 63, P ＜.05]. It Can Be Deduced Here With Certain That Individuals With Molar

Relationships Class I Are Associated With Skeletal Class I As Well And Class II Molar Relationship Are Associated With Skeletal Class II And Class III Molar Relationship Are Associated With Skeletal Class III As Well . Correlation Strength As Displayed By This Result Suggests Medium Size Correlation As Per Cohen (1988) Rule Of Thumb Correlation Interpretation (R = .10 To .29 Or R = -.10 To -.29 Small Size; R = .30 To .49 Or R =-.30 To -.49 Medium Size; R = 49

To 1.0 Or R =-.50 T0 -1.0 Large Size. Hence There Was Moderate Correlation Between Molar Relationship And ANB Angle Skeletal Jaw Base Relationship. This Was Because There Was Evident That The Molar Relationship Defined By Angle's Classification Of Occlusion Based On The Dental Arc Relationship Alone, Will Not Reveal The Full Picture Of Dento-Facial Deformity. This Results We Observed Was In Accordance With Other Studies[8].

The Molar Relationship And ANB Angle Skeletal Jaw Base Were 19 Individual (30.2% Of Total Sample) Were On The Same Class I For Both Classification, 25 Individual (27.0% Of Total Sample) Class II And 11 Individual (7.9% Of Total Sample) Class III As Well. Then The Agreement Between Molar Relationship And ANB Angle Was 65.1 % .Though The Milacic And Markovic Reported A Higher Frequency Count Between Molar Relationship And Skeletal Jaw Base Using ANB Angle (75%).While Zhou Et Al Found That The Anteroposterior Dental Arch Did Coincides With Jaw Base Relationship As Expressed By ANB Angle In 61% That Percentage It Seems Closely Related To This Study. The Possible Clarification For The Difference Between Our Results And Those Reported By Milac And Markovic Could Be Due To Their Sample Which Involved Mostly The Mixed Dentition. The First Permanent Molars During Eruption Tend To Assume An End To End Relationship In Mixed Dentition Before The Transition Into Class I Relationship Due To The Differential Mandibular Growth And Mesial Shift Into The Leeway Space[6].

In This Study We Found That The Molar Relationship And ANB Angles Are Mostly Related Due To The Strongly Association Between Them. Though There Was Conflicting Results This May Be Brought By Cephalometric Assessments And Lack Of Agreement With Dental Cast Classification, This Contribute To The Lower Weight Of Lateral Cephalometry In The Therapeutic Decision-Making Process By The Orthodontist[59].Kappa Statistic Showed That There Is Statistically Significant Strongly Between Molar Relationship And ANB Skeletal Classes (P<0.0001).The Level Of Correspondence In This Study Is Higher Than That Provided By Zhou Et Al Who Found That Only One-Third Correspond Between Molar Classification And ANB Skeletal Jaw Base Classification.

Conclussion

In This Study The Prevalence Of The Molar Relationship By Angle's Classification Demonstrate Class I, Was Higher In Frequency Followed By Class II And Lastly By Class III. The Agreement Between The Molar Relationship And ANB Angle Was Higher That Mean There Are Correspondence Between Them As Well, And Also The Agreement Was Higher In Class I Cases Followed By Class II, Then Class III In The Sample Population Of The Study.

The Relatively Moderate Correlation Coefficient Value Between The Molar Relationship Classification And ANB Angle Skeletal Jaw Base Classification. There Is Strongly Association Between Molar Relationship And ANB Angle Skeletal Jaw Hence We Reject The Null Hypothesis.

There Was No Difference In The Distribution On ANB Angle Values In Age. The Distribution Of ANB Angle Value And Age Was Not Statistically Significant P>0.115.

Author's Contribution

Conception or Design of the Study: TM, Data Acquisition, Analysis Or Interpretation: TK, CK
Writing The Article: SR Critical Revision of The
Article: TK, CK, SR Final Approval of the Article:
TK, CK, SR.

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