"Occlusal Curvature Meets Facial Form: Insights from Mathura."

Abstract

The curve of Spee is a critical determinant of occlusion and dentofacial harmony. While variations in dentofacial morphology have been studied across populations, limited data exist for the Mathura population. This study evaluates the relationship between the curve of Spee and skeletal as well as dental parameters, with a focus on sexual dimorphism.**Aim & Objectives:**To evaluate the curve of Spee in mandibular arches of the Mathura population.To assess its relationship with dentofacial morphology.To determine sexual dimorphism.**Materials and Methods:** A total of 160 subjects (80 males, 80 females) aged 18–24 years with Class I molar relationships and minimal crowding were selected. Lateral cephalograms were used to record angular and linear measurements. Dental models were prepared to measure the curve of Spee, occlusal plane, intercanine and intermolar widths, arch length, and dental arch form. Statistical analysis was performed to evaluate correlations and regression.**Results:**Mean mandibular curve of Spee: 1.89 mm.Significant negative correlations with FMA and mandibular canine region in males.Significant negative correlation with intercanine width in females.No significant correlation with facial parameters.Regression analysis showed facial morphology accounted for only 7.1% of curve variance.No sexual dimorphism observed.**Conclusion:** The curve of Spee in the Mathura population is primarily influenced by dental morphology rather than facial parameters. The positive correlation between mandibular and maxillary curves highlights their interdependence for proper occlusion, independent of sex.

Key words: APDI Angle, ODI angle, curve of Spee, Inter Canine Width.

Introduction

The curve of Spee, first described by F. Graf von Spee in 1890, is a fundamental concept in dental anatomy and occlusion[1]. Von Spee defined the line of occlusion as a segment of a cylinder tangent to the anterior border of the condyle, the occlusal surface of the second molar, and the incisal edges of the mandibular incisors. He observed this curvature using skulls with abraded teeth and suggested that it represented the most efficient model for maintaining tooth contact during mandibular gliding movements. The curve of Spee is typically seen as a downward convex curve in the maxillary dentition and a corresponding upward concave curve in the mandibular dentition when viewed in profile. Its anatomical and functional significance has been the subject of extensive research over the past century.Biomechanically, the curve of Spee plays an important role in mastication. It increases the crush-shear ratio between posterior teeth, thereby enhancing the efficiency of occlusal forces during food processing. Von Spee himself emphasized its relevance in prosthetic dentistry, suggesting that dentures should incorporate this curvature to improve mastication and minimize lever effects during chewing. Later studies, such as those by Baragar and Osborn, linked the curve of Spee to mandibular morphology and biting force[2]. They concluded that the sagittal inclination of mandibular molars optimizes the conversion of muscle force into work, further underscoring the functional importance of this curvature.

Clinically, the curve of Spee has significant implications in orthodontics. An excessive curve is often associated with deepbite malocclusions, where the vertical overlap of the anterior teeth is pronounced. Correcting such malocclusions typically requires leveling the curve of Spee[3], which may involve anterior intrusion, posterior extrusion, or a combination of both. In some cases, proclination of the lower incisors is employed to reduce vertical overlap. Leveling the curve of Spee is therefore considered a routine procedure in comprehensive orthodontic treatment, as it helps establish proper incisor relationships and posterior occlusion during excursive movements.The deviation of the occlusal plane from a flat plane also has practical consequences in terms of arch circumference. A curved arch naturally requires a greater circumference than a flat arch. While a popular theory suggests that 1 mm of arch circumference is needed to level each millimeter of the curve of Spee, studies by Baldridge and Garcia demonstrated that less than 1 mm is actually required[4]. This finding has important implications for orthodontic treatment planning, particularly in cases involving crowding or arch length discrepancies.

Furthermore, Andrews highlighted the natural tendency of the curve of Spee to deepen with age[5]. This occurs because the downward and forward growth of the mandible often exceeds that of the maxilla, forcing the lower anterior teeth backward and upward. This process contributes to crowding of the lower anterior teeth and a deeper overbite. Thus, analysis of the curve of Spee is not only relevant in orthodontics but also in prosthodontics, where it serves as a reference for reconstructing occlusion in the sagittal plane.Previous studies have established that variations in the depth of the curve of Spee significantly affect dentofacial parameters such as overbite and overjet. Research has also explored differences across racial populations, revealing that occlusal characteristics may vary among groups. However, limited attention has been given to specific populations within India. Mathura, a region with a diverse demographic composition and a mix of racial subgroups, provides a unique context for such investigations. Given the paucity of studies focusing on this population, the present research aims to assess the relationship between the curve of Spee and dentofacial morphology in individuals from Mathura. This study seeks to contribute to a more comprehensive understanding of occlusal variations in Indian populations and provide insights that may assist clinicians in orthodontic and prosthetic treatment planning.

Materials and methodology:

SAMPLE SELECTION

Inclusion Criteria

1. Presence of Angle's Class I molar relationship.

2. Clinically normal dental arch form with minimal dental crowding or spacing (less than 2 mm).

3. No clinically detectable skeletal discrepancy.

4. No history of previous orthodontic treatment.

5. Absence of anterior and lateral crossbite.

6. Periodontally healthy dentition, with no signs of pathological periodontal disease.

7. Teeth free from cast restorations or cuspal coverage.

8. Absence of temporomandibular joint disorders (TMDs).

9. No history of orthognathic surgery or surgical correction of developmental anomalies such as cleft lip and palate.

Exclusion Criteria

1. Presence of Class II or Class III molar relationship.
2. Moderate to severe crowding or spacing (≥ 2 mm).
3. Presence of skeletal discrepancies.
4. History of previous orthodontic treatment.
5. Presence of anterior or lateral crossbite.
6. Evidence of pathological periodontal conditions.
7. Presence of cast restorations, crowns, or cuspal coverage on teeth.
8. Presence or history of temporomandibular disorders.
9. History of orthognathic surgery or surgical treatment for craniofacial developmental disorders, including cleft lip and palate.

SAMPLING

Sample size:

The study was conducted in the department of Orthodontics and Dentofacial Orthopedics at KD Dental College and Hospital, Mathura, (UP).

160 subjects (80 males and 80 females), who were analysed to beaverage growers as per the Frankfort mandibular plane angle (FMA- 210 -290) and Gonial angle (130 +/- 7), were selected from the outpatient department of Orthodontics and Dentofacial Orthopedics of KD Dental College and Hospital Mathura. The purpose of this study was to evaluate the curve of Spee of maxillary & mandibular arches in

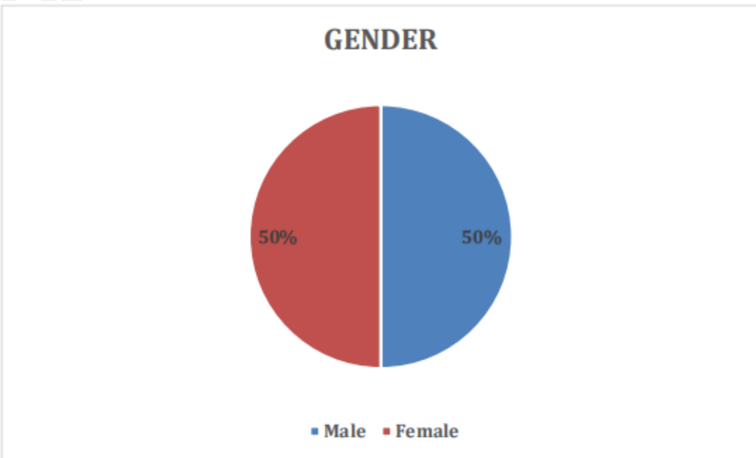
Mathura population, to determine its relationship with dentofacial morphology and to evaluate the sexual dimorphism. The selected subjects were divided into two groups based on sex i.e. male and female subjects (Table 1 and Graph 1), ranged in the age group of 18 to 24 yrs. The subjects were selected. Informed consent to participate in the study was obtained from all the subjects.

Selected individuals were subjected to cephalometric radiography in the Department of Oral Medicine and Radiology on a cephalostat manufactured by kodak dental division (CS 8100) (Fig. 1) and study model of all the subjects were prepared in the Department of Orthodontics and Dentofacial Orthopedics.

Figure 1. Cephalometric machine.

Prior to making impressions and lateral cephalograms, name, age and sex from each subject was recorded and ethical clearance and consent of the subjects were taken.

Graph1



Armamentarium List

1. A wide bladed stiff spatula, perforated impression trays, Alginate dental impression material (Zhermack) and dental stone (neelkanth).(Fig.2)

2. Maxillary and Mandibular models. (Fig.3)

3. X-Ray Films, Lateral Cephalogram. (Fig.4)

4. A 4H pencil, Soft tissue tracing red pencil, Eraser, Sharpner, Set squares, Millimeter scale , Divider and Protractor (Fig.5)

Armamentarium Figures

Figure 2. Armamentarium used for making impression

Figure 3. Maxillary and Mandibular models

Figure 4. Armamentarium used for tracing and measurements

Parameter analysed:

1.Curve of Spee (COS)

2.Intercanine width (ICW)

3.Intermolar width (IMW)

4.Arch length (AL)

5.Dental arch form

Table 1

Table 1 shows the distribution of patients according to gender. The study sample consisted of a total of 160 subjects, comprising 80 males (50%) and 80 females (50%), indicating an equal representation of both genders in the study population.

FACIAL PARAMETERS

Table 2

Table 2 shows the intra-examiner reliability (double determination) of the facial parameters. The mean differences between the first and second readings for all facial parameters were minimal, and the correlation coefficients were high ($r = 0.979–0.996$), indicating excellent reproducibility. None of the parameters demonstrated a statistically significant difference between repeated measurements ($p > 0.05$), confirming good intra-examiner reliability.

DENTAL MODEL PARAMETERS

Table 3

Table 3 shows the intra-examiner reliability of occlusal plane measurements. The mean differences between repeated readings were negligible, with high correlation coefficients ($r = 0.976–0.992$). All occlusal plane measurements showed non-significant p-values ($p > 0.05$), indicating consistent and reliable measurements.

Table 3a

Table 3a shows the intra-examiner reliability of curve of Spee measurements. The mean differences between first and second readings were very small, and correlation coefficients ranged from moderate to strong ($r = 0.485–0.845$). All measurements were statistically non-significant ($p > 0.05$), demonstrating acceptable reproducibility of curve of Spee assessment.

Table 3b

Table 3b shows the intra-examiner reliability of dental measurements. Minimal mean differences were observed between repeated readings, with strong correlation coefficients ($r = 0.922–0.990$). None of the dental measurements showed statistically significant differences ($p > 0.05$), indicating high measurement reliability.

Table 3c

Table 3c shows the intra-examiner reliability of dental arch form and symmetry measurements. The mean differences between first and second readings were minimal, and correlation coefficients ranged from strong to excellent ($r = 0.812–0.995$). All parameters were statistically non-significant ($p > 0.05$), confirming consistent assessment of dental arch form and symmetry.

CURVE OF SPEE

Table 4

Table 4 shows the mean, standard deviation, and standard error of mean of the depth of curve of Spee in the maxillary and mandibular arches. The mean depth of curve of Spee was 1.68 ± 0.78 mm in the maxillary arch and 1.85 ± 0.63 mm in the mandibular arch, indicating a slightly greater depth in the mandibular arch.

Table 5

Table 5 shows the comparison of mandibular depth of curve of Spee between males and females. Males demonstrated a mean mandibular curve of Spee of 1.89 ± 0.68 mm, while females showed a mean value of 1.82 ± 0.58 mm. The difference between genders was not statistically significant ($p = 0.472$).

CORRELATION ANALYSIS – MALES

Table 6

Table 6 shows the correlation between facial parameters and mandibular depth of curve of Spee in males. A statistically significant negative correlation was observed between FMA and mandibular curve of Spee ($r = -0.251$, $p = 0.024$). All other facial parameters showed no significant correlation ($p > 0.05$).

Table 7

Table 7 shows the correlation between occlusal plane measurements and mandibular depth of curve of Spee in males. Both maxillary and mandibular occlusal plane measurements showed non-significant correlations with mandibular curve of Spee ($p > 0.05$).

Table 8

Table 8 shows the correlation between maxillary and mandibular depth of curve of Spee in males. A statistically significant positive correlation was observed ($r = 0.412$, $p < 0.001$), indicating that an increase in maxillary curve of Spee was associated with an increase in mandibular curve of Spee.

Table 9

Table 9 shows the correlation between dental measurements and mandibular depth of curve of Spee in males. A statistically significant negative correlation was found between mandibular intercanine width and mandibular curve of Spee (r = −0.235, p = 0.034). All other dental measurements showed non-significant correlations.

Table 10

Table 10 shows the correlation between dental arch form, symmetry, and mandibular depth of curve of Spee in males. A statistically significant negative correlation was observed with mandibular canine width (r = −0.311, p = 0.005), while all other parameters were not significantly correlated.

CORRELATION ANALYSIS – FEMALES

Table 11

Table 11 shows the correlation between facial parameters and mandibular depth of curve of Spee in females. None of the facial parameters demonstrated a statistically significant correlation with mandibular curve of Spee (p > 0.05).

Table 12

Table 12 shows the correlation between occlusal plane measurements and mandibular depth of curve of Spee in females. Both maxillary and mandibular occlusal plane measurements showed non-significant correlations (p > 0.05).

Table 13

Table 13 shows the correlation between maxillary and mandibular depth of curve of Spee in females. A statistically significant positive correlation was observed ($r = 0.486$, $p < 0.001$).

Table 14

Table 14 shows the correlation between dental measurements and mandibular depth of curve of Spee in females. A statistically significant negative correlation was observed for maxillary intercanine width ($r = -0.298$, $p = 0.007$) and mandibular intercanine width ($r = -0.247$, $p = 0.026$). Other measurements were not significantly correlated.

Table 15

Table 15 shows the correlation between dental arch form, symmetry, and mandibular depth of curve of Spee in females. None of the parameters demonstrated statistically significant correlations ($p > 0.05$).

REGRESSION ANALYSIS

Table 16

Table 16 shows the regression analysis for mandibular depth of curve of Spee. FMA emerged as a statistically significant predictor ($p = 0.006$). The regression model explained 7.1% of the variance ($R^2 = 0.071$) in mandibular curve of Spee, indicating a modest but significant contribution.

Tables

Table 1

Shows distribution of patients.

Gender	Frequency	Percent (%)
Males	80	50
Females	80	50

Facial Parameters

Table 2: Intra-examiner Reliability (Double Determination) of Facial Parameters

Facial Parameters	Mean difference between first and second reading	Correlation (r)	p-value	Significance
SNA (deg.)	0.15	0.996	0.112	N.S
SNB (deg.)	0.18	0.993	0.251	N.S
ANB (deg.)	0.12	0.989	0.201	N.S
FMA (deg.)	−0.25	0.987	0.206	N.S
Ar-Go-Me (deg.)	0.02	0.990	0.984	N.S
APDI (deg.)	0.14	0.990	0.591	N.S
ODI (deg.)	0.22	0.995	0.378	N.S
G-Sn-Pog′ (deg.)	−0.21	0.981	0.327	N.S
Cm-Sn-Ls (deg.)	0.08	0.996	0.771	N.S
Ar-Go (mm)	0.15	0.994	0.279	N.S

Go-Me (mm)	−0.15	0.979	0.559	N.S
U-E line (mm)	0.01	0.996	0.987	N.S
L-E line (mm)	0.18	0.983	0.185	N.S

Dental Model Parameters – Occlusal Plane

Table 3: Intra-examiner Reliability (Double Determination) of Occlusal Plane Measurements

Dental Model Parameters (mm)	Mean difference between first and second reading	Correlation (r)	p-value	Significance
Occlusal plane Max. Rt.	0.12	0.976	0.172	N.S
Occlusal plane Max. Lt.	0.11	0.977	0.189	N.S
Occlusal plane Mand. Rt.	0.08	0.990	0.514	N.S
Occlusal plane Mand. Lt.	0.11	0.992	0.284	N.S

Table 3a

Intra-examiner Reliability (Double Determination) of Dental Model Parameters – Curve of Spee

Dental Model Parameters (mm)	Mean difference between first and second reading	Correlation (r)	p-value	Significance
COS Max. Rt.	0.08	0.612	0.472	N.S

COS Max. Lt.	0.07	0.485	0.561	N.S
COS Mand. Rt.	0.08	0.845	0.529	N.S
COS Mand. Lt.	0.04	0.758	0.801	N.S

Table 3b

Intra-examiner Reliability (Double Determination) of Dental Model Parameters – Dental Measurements

Dental Model Parameters (mm)	Mean difference between first and second reading	Correlation (r)	p-value	Significance
ICW Max.	0.12	0.990	0.472	N.S
ICW Mand.	0.25	0.928	0.148	N.S
IMW Max.	0.15	0.922	0.589	N.S
IMW Mand.	0.18	0.985	0.304	N.S
Arch Len. Max.	0.08	0.978	0.712	N.S
Arch Len. Mand.	0.02	0.984	0.981	N.S

Table 3c

Intra-examiner Reliability (Double Determination) of Dental Model Parameters – Dental Arch Form and Symmetry

Dental Model Parameters (mm)	Mean difference between first and second reading	Correlation (r)	p-value	Significance

RMx.C	−0.04	0.812	0.826	N.S
LMx.C	0.11	0.946	0.401	N.S
RMn.C	0.11	0.994	0.351	N.S
LMn.C	0.12	0.995	0.347	N.S
RMx.2M	0.08	0.974	0.742	N.S
LMx.2M	0.04	0.975	0.872	N.S
RMn.2M	−0.04	0.952	0.861	N.S
LMn.2M	0.04	0.958	0.848	N.S
RMxM	0.14	0.994	0.358	N.S
LMxM	0.31	0.991	0.203	N.S
RMnM	0.08	0.989	0.514	N.S
LMnM	0.11	0.988	0.396	N.S

Table 4

Shows mean, standard deviation, and standard error of mean depth of curve of Spee of maxillary and mandibular arch.

Curve of Spee (mm)	Mean	S.D.	S.E.M
COS Max.	1.68	0.78	0.07
COS Mand.	1.85	0.63	0.05

Table 5

Showing sex differences of mandibular depth of curve of Spee.

Curve of Spee (mm)	Males			Females			(p-value)	Sig.
	Mean	S.D.	S.E.M	Mean	S.D.	S.E.M		
COS Mand.	1.89	0.68	0.08	1.82	0.58	0.07	0.472	N.S.

Level of significance: 'p' < 0.05 = significant (S); 'p' > 0.05 = non-significant (N.S)

Table 6

Showing Facial Parameters and their correlation to the mandibular depth of curve of Spee in males (n=80).

Facial Parameters	Pearson Correlation (r)	p-value	Sig.
SNA (deg.)	-0.042	0.712	N.S.

SNB (deg.)	0.087	0.445	N.S.
ANB (deg.)	-0.098	0.383	N.S.
FMA (deg.)	-0.251*	0.024	S
Ar-Go-Me (deg.)	0.104	0.356	N.S.
APDI (deg.)	0.125	0.268	N.S.
ODI (deg.)	0.144	0.199	N.S.
G-Sn-Pog' (deg.)	-0.063	0.580	N.S.
Cm-Sn-Ls (deg.)	-0.091	0.424	N.S.
Ar-Go(mm)	-0.038	0.734	N.S.
Go-Me(mm)	-0.056	0.618	N.S.
U-E line(mm)	0.089	0.433	N.S.
L-E line(mm)	0.046	0.684	N.S.

Correlation is significant at 0.05 level.

Table 7

Showing Occlusal plane and their correlation to the mandibular depth of curve of Spee in males (n=80).

Occlusal plane (mm)	Pearson Correlation (r)	p-value	Sig.
Occlusal plane Max.	-0.162	0.150	N.S.
Occlusal plane Mand.	-0.085	0.452	N.S.

Table 8

Showing correlation of maxillary depth of curve of Spee and mandibular depth of Curve of Spee in males (n=80).

Curve of Spee (mm)	Pearson Correlation (r)	p-value	Sig.
COS Mand.	0.412*	0.000	S

Table 9

Showing dental measurements and their correlation to the mandibular depth of curve of Spee in males (n=80).

Dental measurements (mm)	Pearson Correlation (r)	p-value	Sig.
ICW Max.	-0.192	0.087	N.S.
ICW Mand.	-0.235*	0.034	S
IMW Max.	-0.141	0.211	N.S.
IMW Mand.	-0.178	0.112	N.S.
Arch Len. Max.	0.088	0.437	N.S.
Arch Len. Mand.	-0.108	0.339	N.S.

Table 10

Showing dental arch form, symmetry of dental arch and their correlation to the mandibular depth of curve of Spee in males (n=80).

Dental arch form (mm)	Pearson Correlation (r)	p-value	Sig.

Mx.C	-0.188	0.094	N.S.
Mn.C	-0.311*	0.005	S
Mx.2M	0.172	0.125	N.S.
Mn.2M	0.128	0.256	N.S.
MxM	-0.105	0.351	N.S.
MnM	-0.092	0.418	N.S.

Table 11

Showing Facial Parameters and their correlation to the mandibular depth of curve of Spee in females (n=80).

Facial Parameters	Pearson Correlation (r)	p-value	Sig.
SNA (deg.)	-0.195	0.082	N.S.
SNB (deg.)	-0.142	0.207	N.S.
ANB (deg.)	-0.088	0.438	N.S.
FMA (deg.)	0.108	0.340	N.S.
Ar-Go-Me (deg.)	0.114	0.312	N.S.
APDI (deg.)	0.172	0.126	N.S.
ODI (deg.)	-0.041	0.722	N.S.
G-Sn-Pog' (deg.)	-0.145	0.199	N.S.
Cm-Sn-Ls (deg.)	-0.104	0.357	N.S.
Ar-Go(mm)	-0.094	0.408	N.S.

Go-Me(mm)	0.091	0.422	N.S.
U-E line(mm)	0.082	0.469	N.S.
L-E line(mm)	0.042	0.712	N.S.

Table 12

Showing Occlusal plane and their correlation to the mandibular depth of curve of Spee in females (n=80).

Occlusal plane (mm)	Pearson Correlation (r)	p-value	Sig.
Occlusal plane Max.	0.124	0.272	N.S.
Occlusal plane Mand.	-0.028	0.806	N.S.

Table 13

Showing correlation of maxillary depth of curve of Spee and mandibular depth of Curve of Spee in females (n=80).

Curve of Spee (mm)	Pearson Correlation (r)	p-value	Sig.
COS Mand.	0.486*	0.000	S

Table 14

Showing dental measurements and their correlation to the mandibular depth of curve of Spee in females (n=80).

Dental measurements (mm)	Pearson Correlation (r)	p-value	Sig.

ICW Max.	-0.298*	0.007	S
ICW Mand.	-0.247*	0.026	S
IMW Max.	0.061	0.592	N.S.
IMW Mand.	0.184	0.100	N.S.
Arch Len. Max.	-0.108	0.340	N.S.
Arch Len. Mand.	-0.092	0.418	N.S.

Table 15

Showing dental arch form, symmetry of dental arch and their correlation to the mandibular depth of curve of Spee in females (n=80).

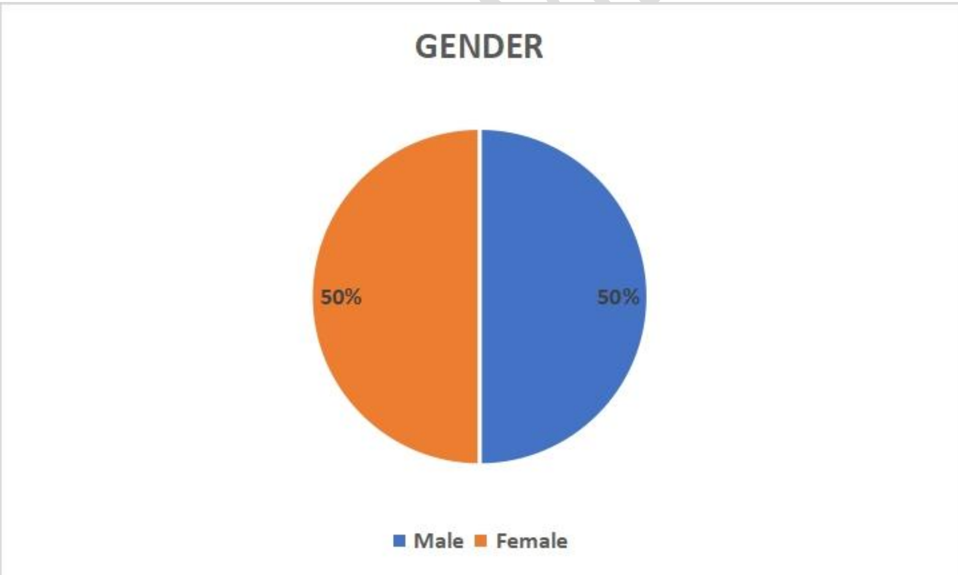
Dental arch form (mm)	Pearson Correlation (r)	p-value	Sig.
Mx.C	0.142	0.208	N.S.
Mn.C	0.098	0.385	N.S.
Mx.2M	-0.068	0.547	N.S.
Mn.2M	-0.158	0.159	N.S.
MxM	0.124	0.272	N.S.
MnM	-0.028	0.806	N.S.

Table 16

Shows Regression analysis for mandibular depth of curve of Spee.

Dependent Variable	Statistically significant independent variables	B	S.E	Beta	t-value	p-value	R^2 value
COS Mand.	FMA(deg.)	0.028	0.010	0.198	2.814	0.006*	0.071
	ICW Max.	0.038	0.019	0.142	1.971	0.052	
	ICW Mand.	-0.004	0.002	-0.134	-1.867	0.066	
	Mand. Canine	-0.015	0.025	-0.043			

GRAPH 1:



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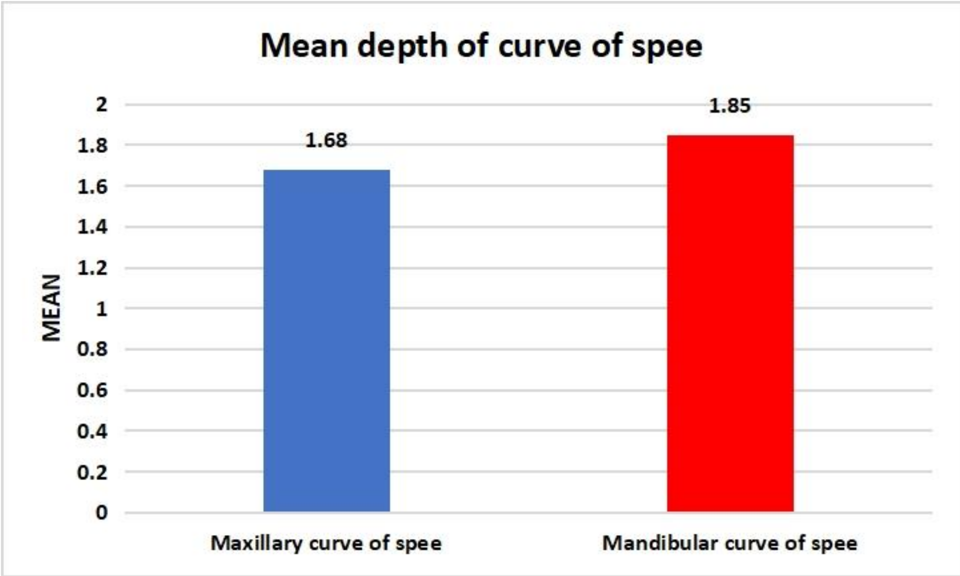

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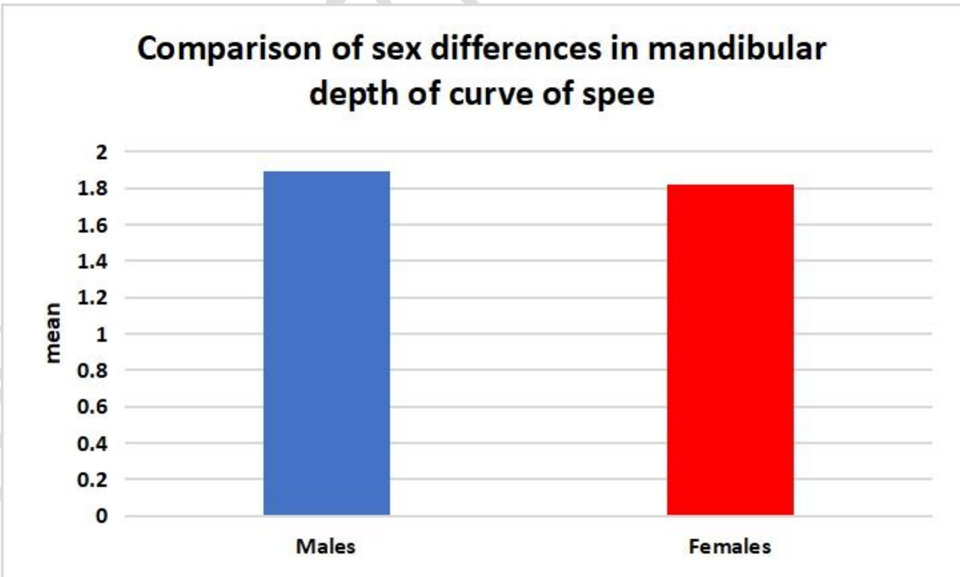

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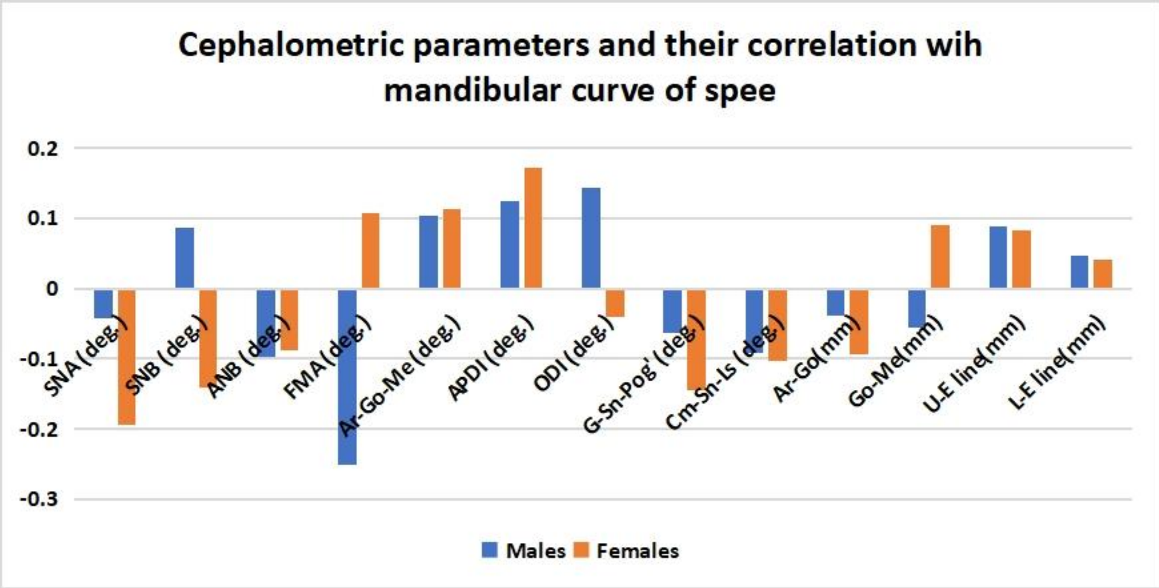

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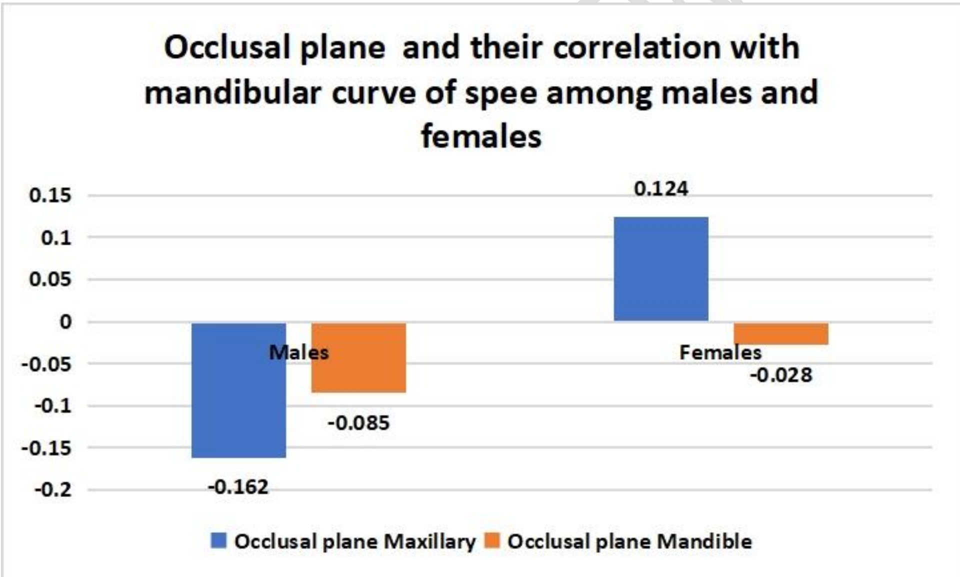

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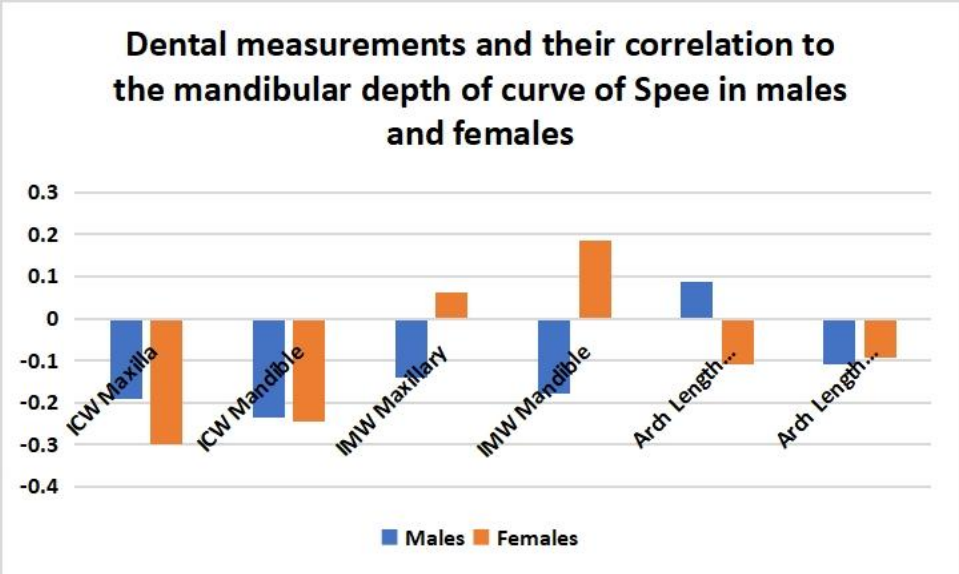

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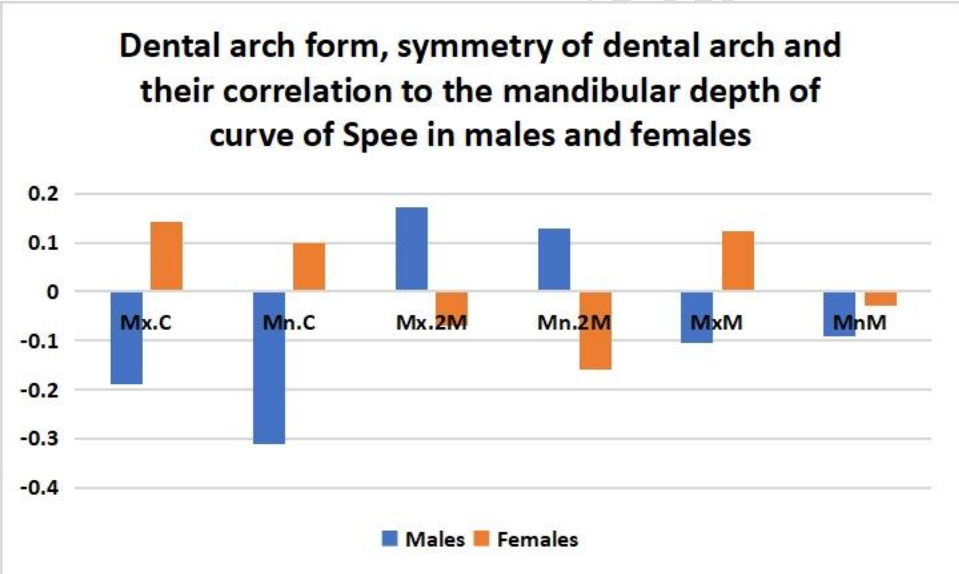
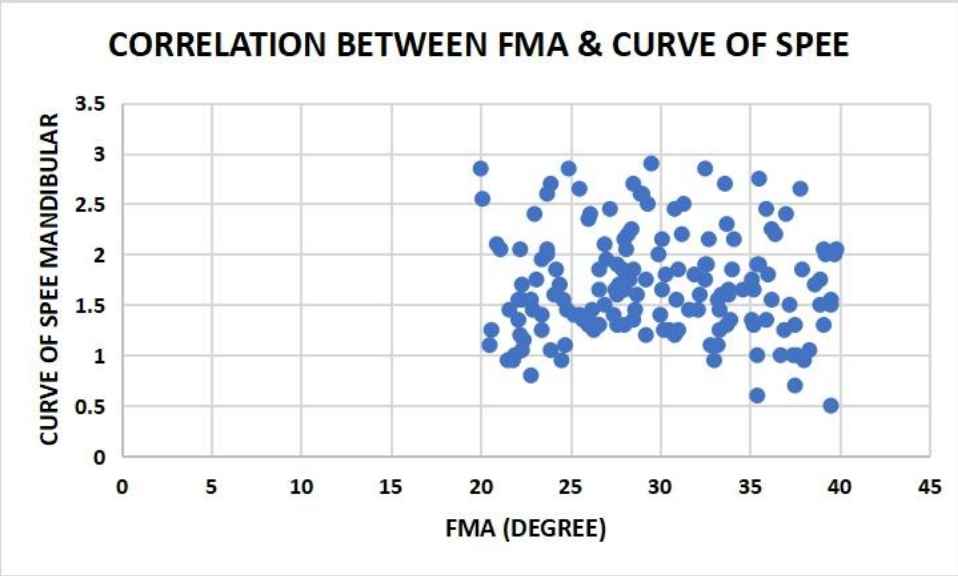


GRAPH 8



Discussion

The present study evaluated the curve of Spee in the mandibular arches of the Mathura population and explored its relationship with dentofacial morphology and sexual dimorphism. The mean mandibular curve of Spee was found to be 1.89 mm, which lies within the normative range of 0–2.5 mm proposed by Andrews. This value was slightly higher than previous reports, possibly due to the standardized inclusion of subjects with average growth patterns.

No significant sexual dimorphism was observed, confirming earlier findings that the curve of Spee is independent of gender. Correlation analysis revealed a significant negative relationship between the mandibular curve of Spee and FMA angle in males, consistent with Shannon and Nanda's observation that lower mandibular plane angles are associated with deeper curves[6]. A significant positive correlation was also noted between mandibular and maxillary curves, suggesting that changes in one arch influence the other to maintain proper intercuspation.

In both males and females, a deepening of the mandibular curve of Spee was associated with a reduction in intercanine width, supporting Andrews' explanation that anterior teeth are displaced backward and upward as the curve deepens. However, correlations with other facial parameters were largely insignificant, with some disparities compared to Cheon et al. These differences may be attributed to the segregation of male and female data in the present study, unlike in Cheon's methodology.

Multiple regression analysis indicated that dental morphology exerts greater influence on the curve of Spee than facial morphology, with only 7.1% of variance explained by facial parameters. This aligns with previous studies suggesting that most variation in the curve remains unexplained by dentofacial morphology and may be better accounted for by other biological or functional factors.

Overall, the findings reinforce that the curve of Spee is primarily a dental feature, minimally affected by facial morphology, and independent of sexual dimorphism. Future research should investigate additional factors—such as functional occlusion and developmental influences—that may better explain the variability of this curve.

Conclusion:

This study assessed the mandibular curve of Spee in the Mathura population and its association with dentofacial morphology and sexual dimorphism. The mean depth was 1.89 mm, within the normal range proposed by Andrews. No gender differences were observed, confirming independence from sexual dimorphism. Significant correlations included a negative relationship with FMA angle in males, a positive association between mandibular and maxillary curves in both sexes, and negative correlations with the mandibular canine region in males and intercanine widths in females. Most other dentofacial parameters showed no significant influence. Regression analysis indicated that dental morphology plays a stronger role than facial morphology, with only 7.1% of variance explained by facial parameters. These findings highlight the curve of Spee as primarily a dental feature, functionally important for occlusion and mastication, and relevant in orthodontic and prosthetic treatment planning.

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