"MORPHOMETRIC ANALYSIS OF BASE OF THE NOSE IN RELATION TO AESTHETIC CONCEPTS- A ONE YEAR OBSERVATIONAL STUDY IN KLE DR PRABHAKAR KORE HOSPITAL"

By

REGISTRATION NO: BE0121006

Dissertation

Submitted to

KLE Academy of Higher Education and Research,
Belagavi, Karnataka

In partial fulfilment
of the requirements for the degree of

MASTER OF SURGERY

IN

OTORHINOLARYNGOLOGY AND HEAD AND NECK SURGERY

DEPARTMENT OF OTORHINOLARYNGOLOGY AND HEAD AND NECK SURGERY,
JAWAHARLAL NEHRU MEDICAL COLLEGE,
BELAGAVI, KARNATAKA

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Sub: Institutional Ethical Clearance for the study.

With reference to the above, we wish to inform you that your proposed research project titled **"MORPHOMETRIC ANALYSIS OF BASE OF THE NOSE IN RELATION TO AESTHETIC CONCEPT – A ONE YEAR OBSERVATIONAL STUDY IN KLE DR PRABHAKAR KORE HOSPITAL.",** is ethical and justifiable. The proposed research project has been cleared by the JNMC Institutional Ethics Committee.

(Dr. Smita Sonoli)
Member Secretary
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ABSTRACT

Background: The morphology of the nose varies greatly between races and between individuals within the same race. Age, sex, and cultural background are factors that affect anthropometric parameters. Attempting to determine normal values may act as a guide for medical professionals doing reconstructive and cosmetic nose surgery. Few publications have been written about the basal view of nose, despite several articles being written about the frontal and lateral perspectives. This study examines the structural elements of base of the nose to see if they possess the ideal aesthetics.

Objectives:

1. To analyse the various aesthetic morphometric structural components contributing to the formation of base of the nose.
2. To analyse the variations of the base of the nose in relation to each other in the study population.

Material and Methods: This observational study was conducted in the Department of Otorhinolaryngology and Head and Neck Surgery of KAHER's Jawaharlal Nehru Medical College and KLES Dr. Prabhakar Kore Hospital and Medical Research Centre, Belagavi from September 2022 to August 2023. 200 patients participated in the study. Clinical photographs were taken, including frontal, lateral, and basal views of the nose, using a CANON EOS 200D DSLR camera with an 18-55mm lens. Nasal anthropometric measurements were performed using sliding digital vernier calipers, focusing on nasal parameters in the basal view. Nasal angles were measured using clinical photographs and assessed using the Imagemeter application.

Result: In this study 200 subjects within the age group of 18-55 of which mean age was 26 years with 52% females and 48% males. (82.50%) had symmetrical nostrils

and (17.50%) had asymmetrical nostrils. There was no relation between symmetry of nostrils based on region. Type 2 triangular type of nostril was most common among the population of India.Type2 nostril was seen in majority of population from different geographical regions of India hence significant. Nasal anthropometric parameters like nasal breadth, alar length, columellar length and width was more in males compared to females and was significant. Nasal parameters of base of the nose and angles based on geographical regions of India was not significant in this study.

Conclusion:

The present study shows there is a significant difference in Nasal breadth, Alar length, Columellar length, Columellar width between males and females.

The most common type of nostril among Indian population is type-2 triangular type broader nostril in topical humid climate of India**.** The results of the study could be taken as baseline data for therapeutic, forensic, and research applications in the Indian population. These results can be used to extrapolate reference to plan for Rhinoplasty surgeries.

Keywords: Base of the nose, Aesthetics, Anthropometric parameters, Geographical regions.

LIST OF ABBREVIATIONS

GLOSSARY	ABBREVIATIONS
SMAS	Subcutaneous musculoaponeurotic system
FH	Frankfurt horizontal plane
prn	Pronasale
sn	Subnasale
ls	Labiale superius
al	Alare
NLA	Nasolabial angle
CLA	Columellar lobular angle
IAA	Interalar angle

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INTRODUCTION

The morphology of the nose varies greatly between races and between individuals within the same race. Age, sex, and cultural background are factors that affect anthropometric parameters[1]. In this modern world of smart phone photography and social media, aesthetics of nose has gained a lot of importance. Nose is situated in middle of face, and it is the most prominent feature and gives a clue regarding race, tribes and geographical area[2]. The results of anthropological research allow us to evaluate the variations in racial groups social and economic, as well as their health and nutritional state. Analysing nasal variations helps us understand how gender differ in anthropometric features.[3]

Nasal reconstruction has been performed since centuries. Topographical studies of nose are also done before the rhinoplasty for roadmap to look for change in shape and size. The dorsum, tip, columella, lateral side walls, ala, and soft tissue triangle are among the distinct, constant nasal subunits that developed from changes in soft tissues and bone shapes of nose .The dynamic lower cartilaginous section and the static component of the osteo-cartilaginous pyramid have a consistent form[2].

Anomalies, age-related changes, diseases, changes resulting from physical maturation, and racial and ethnic variances can be understood and analysed using nasal angles, nasal profiles, nostril models, and nose types. Focus of this work was on morphometric differences in gender, racial and ethnic groupings in various parts of India.[1.]

Attempting to determine normal values may act as a guide for medical professionals doing reconstructive and cosmetic nose surgery. Understanding the distinct form, structure, and measurements of the human nose is vital for a complete

knowledge of various components contributing to the formation of the nose. In this study analysis of base of the nose is done.

The Greek word "aesthesthai" is where the word "aesthetics" originates, and it describes the sense of beauty. While there are several methods for evaluating the aesthetics of nose. It needs to be assessed considering anthropometric factors. Good facial aesthetics is a factor in determining an individual's beauty and their relationship with society[2]. For centuries or more, anthropologists and medical professionals have tried to understand the notion of facial attractiveness objectively[1].The importance of symmetrical and balanced proportions in facial beauty was underscored by renaissance artists. We all possess an innate sense of beauty, and new research suggests that people of all racial and cultural backgrounds share this opinion more additional information. While some patients desire a beautiful nose, rhinoplasty is frequently performed to restore a normal-looking nose, rectify asymmetries, or correct shape alterations brought on by trauma. Consequently, it might not be accurate to say that all patients would always value beauty over the repair of shape modifications. In addition, preoperative planning mostly relies on photographic measures, which may not accurately depict reality[4-5].

And especially without a meticulous analytic approach the base of the nose in particular and challenging in rhinoplasty for optimal aesthetic and functional outcomes.

Few publications have been written about the basal view of nose, despite several articles being written about the frontal and lateral perspectives. This study examines the structural elements of base of the nose to see if they possess the ideal aesthetics.

OBJECTIVES

1. To analyse the various aesthetic morphometric structural components contributing to the formation of base of the nose.
2. To analyse the variations of the base of the nose in relation to each other in the study population.

REVIEW OF LITERATURE

India has a complex demographic structure. Our current heterogenous population is the result of an extensive process of immigration since centuries which has led to diffuse a diversify the characteristics among individuals from different parts of our nation[6].

Anthropological perspective of Indian nose

Based on Doddi and Eccles' systematic review, anthropologists proposed several systems in the 17th and 18th centuries to divide the human race into groups according on physical characteristics like skin type, hair, size of body and skull dimensions. It has been suggested that the various nasal sizes and shapes, particularly the broad nose, were a natural adaptation to the local ethnic practices and climate. It has been suggested that the various nasal sizes and shapes particularly the broad nose were an evolutionary adaptation to the climate.[6]

Impact of Migration

According to Dr. B S Guha, the current population of the Indian subcontinent is descended from six major racial groups**.**

I. Negrito
II. Proto-australoids
III. Mangaloids
IV. Mediterranean or Dravidian
V. Western Brachycephals
VI. Nordic

It can be simplified to three main categories for understanding:

- Indo-Aryan,
- Mangolian,
- Dravidian.

People who have adapted to dry environments typically have big, projecting external noses, nostrils that point downward, and smaller skeletal openings. These features cause turbulence in the nasal air flow, which maximizes filtration and humidification. People who live in humid environments tend to have shorter pyriform apertures and smaller, flatter external nares.[4]

Impact of climate

India's geographical divisions are categorized according to related climatic conditions.

- **North Indian**: Jammu and Kashmir, Punjab, Haryana, Delhi and Himachal Pradesh.
- **Central Indian:** Uttar Pradesh, Madhya Pradesh, Bihar, Chattisgarh, Jharkhand.
- **Western Indian**: Rajasthan, Maharashtra, Goa, Gujarat.
- **South Indian**: Karnataka, Tamil Nadu, Kerala, Andhra Pradesh, Telangana.
- **Northeast:** Assam, Arunachal Pradesh, Meghalaya, Manipur, Uttarakhand, Darjeeling. [6]

In summary, Indians generally have smaller nasal bones and, compromised alar cartilages which are characteristics unique to them. As a result, the pyriform aperture is broad and the dorsum is wide with inadequate anterior projection. There is usually a noticeable cutaneous fibro-fatty pad and thick skin. This contributes to a

weakly projected tip, and nasal alae are typically broader. Premaxillary area is often hypoplastic. [6]

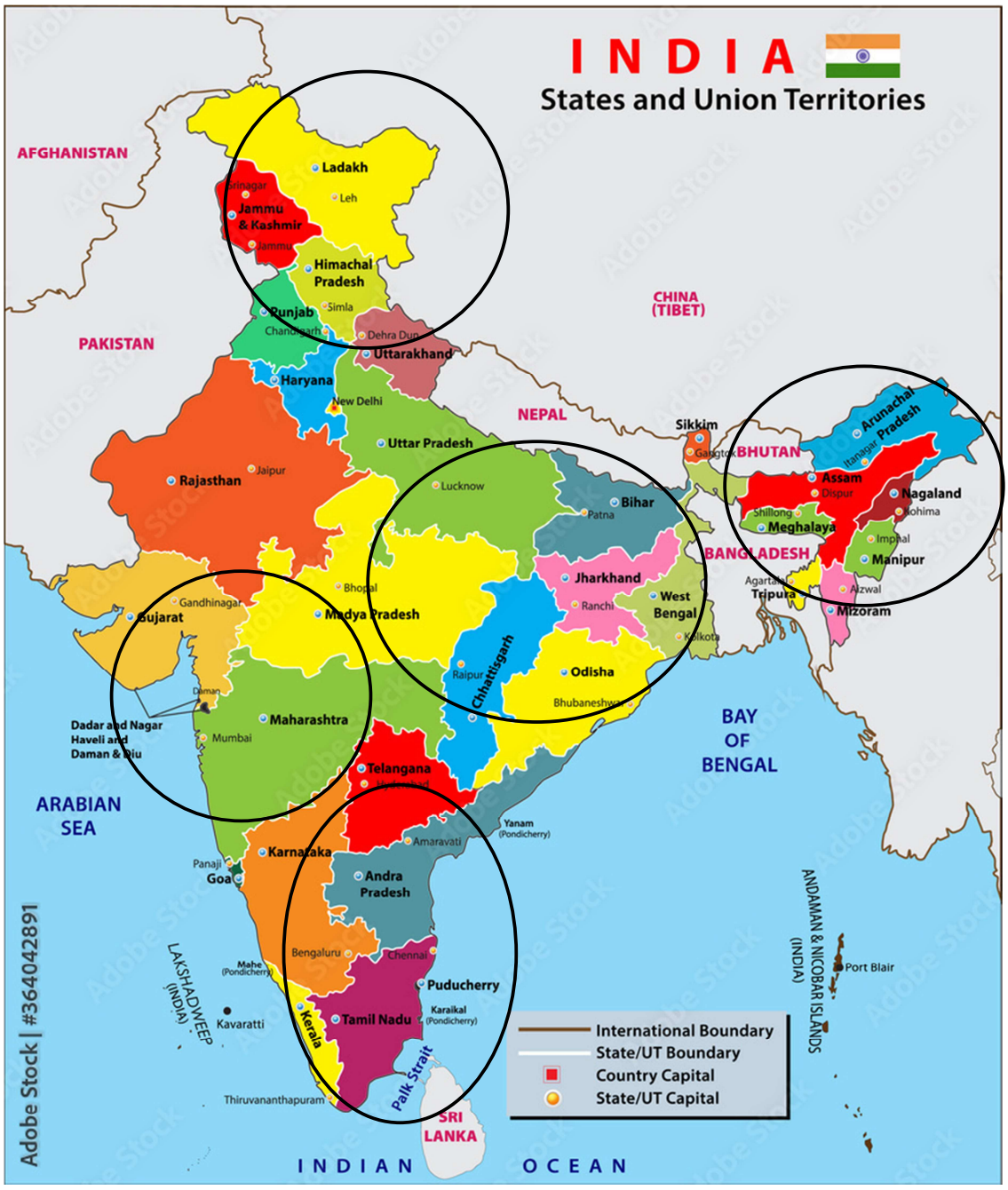


Figure No:1 Indian Map [6]

India's geographical regions are circled and divided into five categories: North, North-east, Central, Western, and South.

EMBRYOLOGY OF NOSE

During the fourth week of pregnancy, several mesenchymal processes surrounding primitive mouth give rise to the nose. Nasal placodes are formed by proliferating collections of neural crest cells. The nasal pits originate when nasal placodes sink, and nasal sac -formed when nasal pits deepen. Nasal pit and sac are surrounded by medial and lateral nasal prominences of frontonasal process, which develop from adjacent mesoderm cells to form the nares during development.[10]

The maxillary processes expand anteriorly and medially, fusing with the medial nasal prominences and frontonasal process to close nasal pits and produce distinct nasal cavities. The bucconasal membrane separates the primordial nasal cavity from the mouth. Lateral two-thirds of the upper lip, superior alveolar ridges, and palatal shelves are the result of the frontal and maxillary processes fusing together. The philtrum and medial crus of the lower lateral cartilage are formed when medial nasal prominences fuse with the maxillary process.[7]

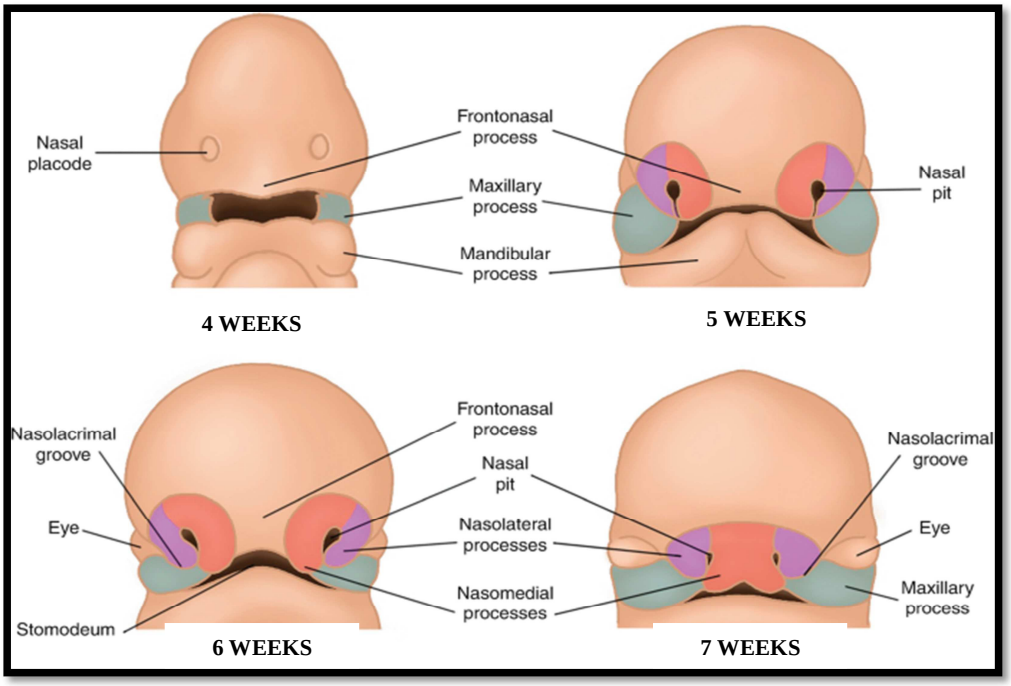


Figure No:2 Development of nose in weeks of gestation [8]

EXTERNAL ANATOMY OF NOSE

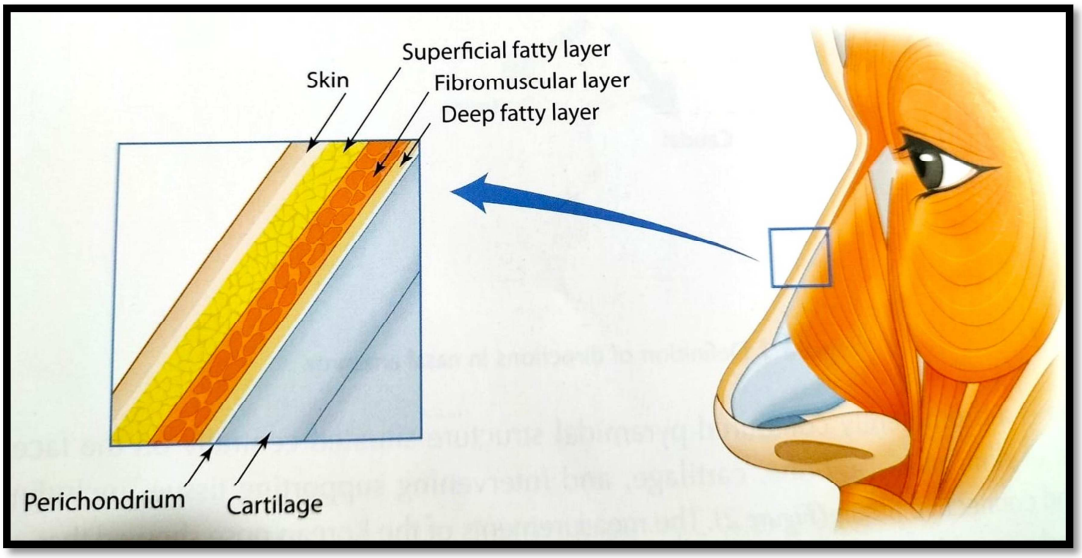


Figure No :3 Cross section of nasal skin soft tissue envelope [9]

Nose is distinctly marked pyramidal structure in the center of face It is made up of skin, mucosa, bone, cartilage, and supportive tissue.[7]

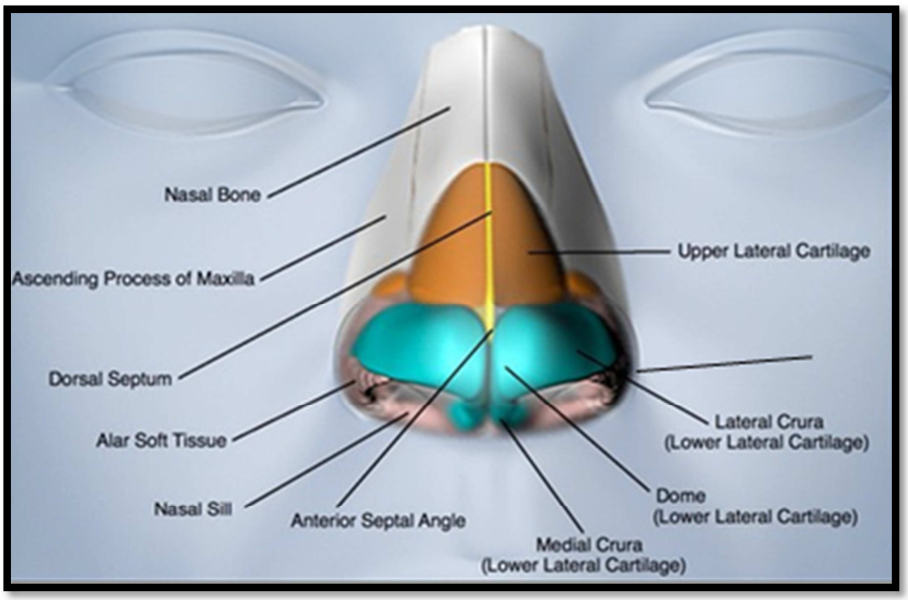


Figure No: 4 External anatomy of nose front view [10]

Skin

Skin thickness variations are a crucial component of reconstructive nose surgery. Understanding the blood supply of the nose is crucial for local flap surgery. Thickness of skin and soft tissues of the nasal bridge vary based on the individual's type of skin and anatomical location.[7]

The dorsum and sides of the nose have thin skin that is merely loosely connected to the underlying structure. The nasal skin thickens and adheres more towards the alar cartilages and nasal tip, which contains large number of sebaceous glands. Quality of the collagen fibers that hold the skin to the underlying tissues affects the elasticity of the skin and mobility of the nose as well.[7]

Subcutaneous Layer

Superficial fatty panniculus -layer consists of adipose tissue and vertical fibres between deep dermis and fibromuscular consists of nasal musculature and nasal SMAS (subcutaneous musculoaponeurotic system).

Deep fatty layer-contains the major superficial blood vessels and nerves no fibrous fibres. Periosteum and perichondrium-provide nutrient blood flow to the nasal bones and cartilage.[7]

Vestibule

Outermost portion of the nostrils is formed by the nasal vestibule is where external nares enter the nasal cavity. Limen nasi, positioned near the caudal boundary of the lower lateral cartilage, demarcates the vestibule. Limen nasi is the site of the marginal incision during external approach rhinoplasty.[7]

Vestibule is lined by keratinizing stratified squamous epithelium, coarse hairs called vibrissae, sebaceous glands, and sweat glands. A layer of mucous normally covers the outer surface of vibrissae, filtering airborne particles during inspiration. It is vital to note that most of the alar rim is made up of fibrofatty tissue, with only a little amount of cartilage from the lateral crus present.[7]

Muscular Layer

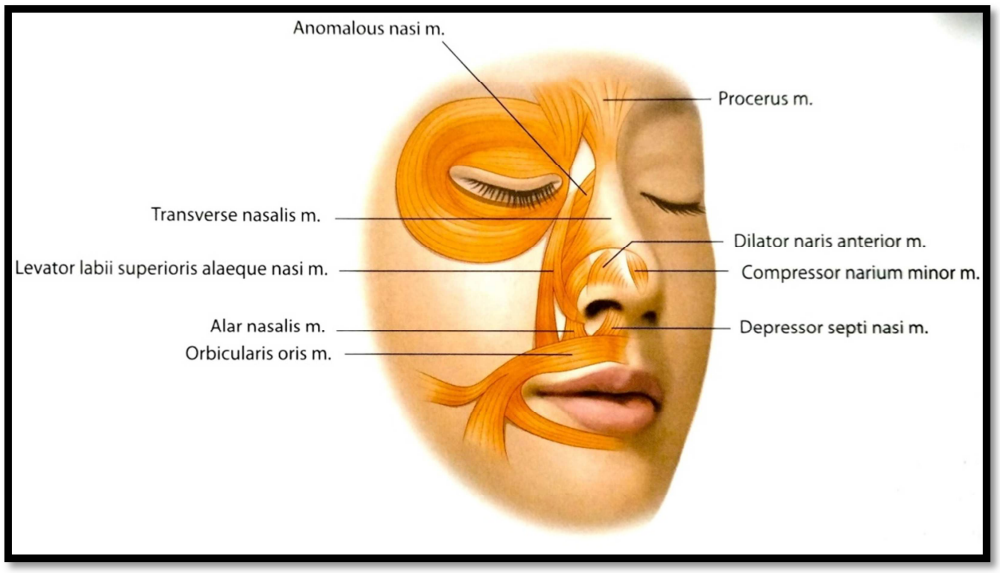


Figure No:5 Muscles of nose [11]

The facial SMAS (subcutaneous musculoaponeurotic system) layer extends over the nose, forming multiple external nose muscles that compress, dilate, depress, or elevate the nostrils and nose tip. The face nerve's branches supply all these muscles. Elevators of nose are the procerus, levator labii-superioris alaeque nasi, and anomalous nasi muscles. The depressors are the alar nasalis and depressor septi nasi muscles. The transverse nasalis and narium minor are compressor muscles. Naris anterior muscle serves as mild dilator of nose. [7]

Dissection deep into the third layer of the nose (deep fatty layer) reduces post-operative scarring and retraction because the neurovascular and SMAS components are intact.

Nasal Cartilages

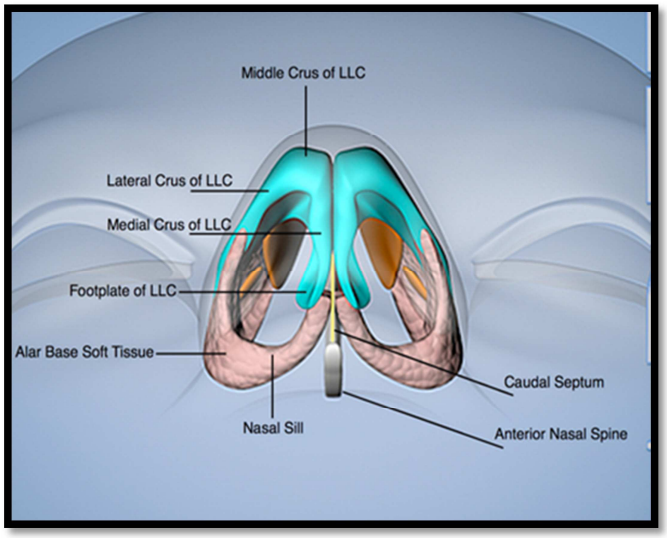


Figure No 6: External nasal anatomy Base View [10]

The hyaline cartilage that makes up the nasal cartilages attaches to the anterior nasal aperture bones to produce the external nose's skeletal structure. The septum, sesamoid complex, and external nasal cartilages of nose which includes upper and lower lateral cartilages.

Medial, intermediate and lower lateral cartilage's lateral crus combine to form natural arch of nasal ala. The cranial nasal bones at the rhinion, trapezoid-shaped upper lateral cartilages attached to dorsal septum in midline, and lower lateral cartilages traversing scroll area caudally. [7]

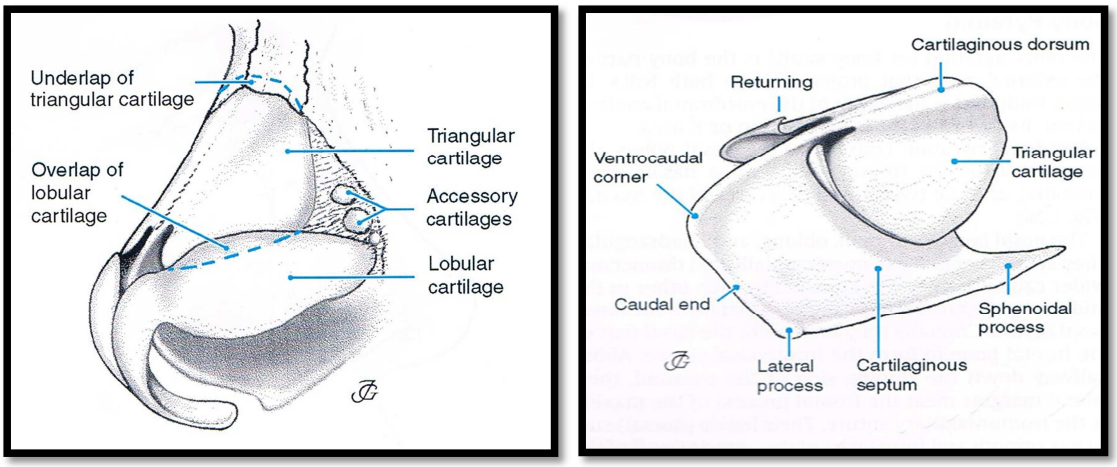


Figure No: 7 Upper lateral cartilage lateral view[11]

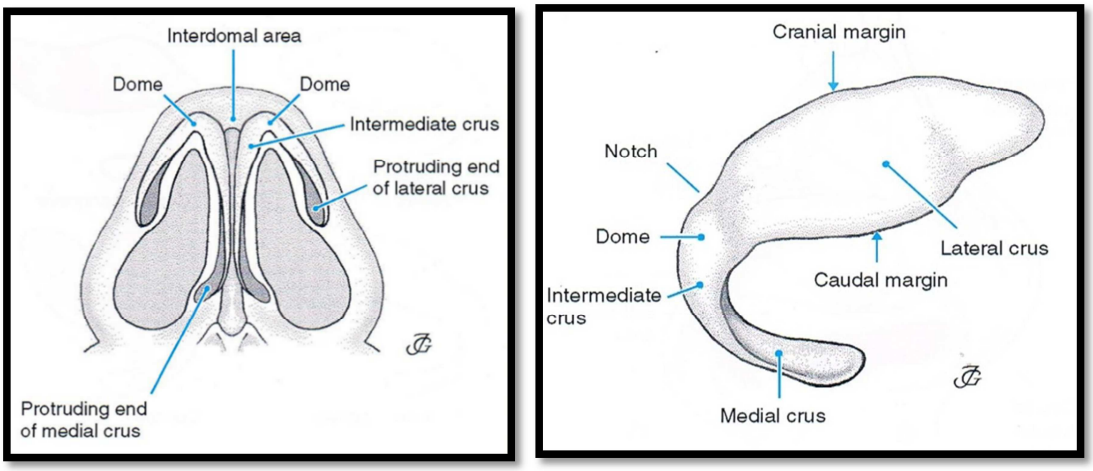


Figure No: 8 Lower lateral cartilage basal view[11]

The relationship and structure of these cartilages provide the external and internal nasal valves, which are essential for nasal airflow. External nasal valve consists of the septum medially, the alar rim (lateral crus, sesamoid complex and fibrofatty tissue) laterally, and the nasal sill inferiorly.[7]

The septum medially, the caudal border of the upper lateral cartilage, the head of the inferior turbinate laterally, and the nasal floor inferiorly forms the internal nasal valve. Apex of the internal in Caucasians and wider in non-Caucasian and nasal valve measures approximately 10-15 degrees n populations. Changes to the arrangement of any structure in this area may result in nasal blockage symptoms.[7]

Arterial supply of external nose

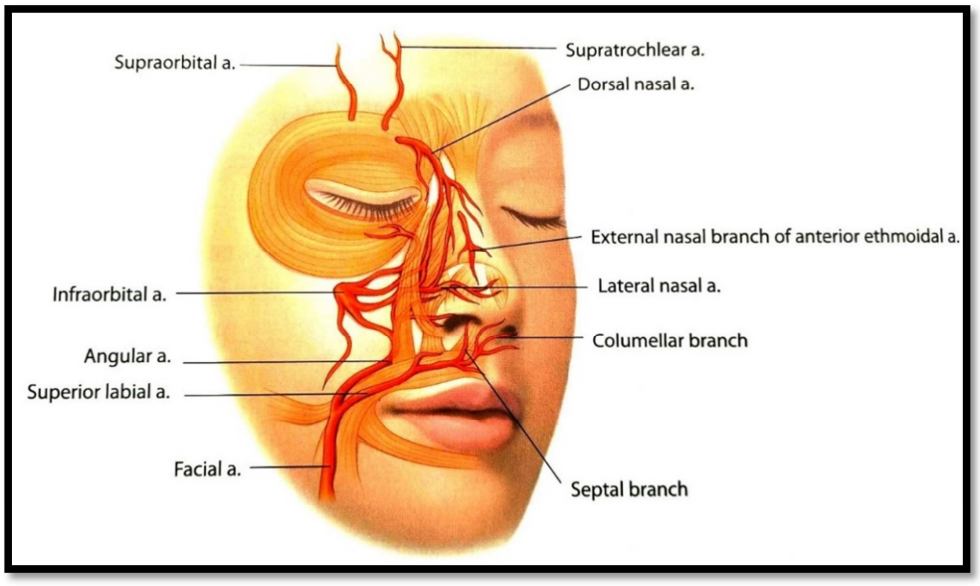


Figure no: 9 Arterial supply External nose [9]

Internal and external carotid arteries contribute to major arterial supply of the external nose. The branches of facial artery supply alar region and include angular and superior labial arteries. The nasal side wall and ala is supplied by the angular artery and its lateral nasal branch. The columellar branch of superior labial artery which provides blood supply to the nasal sill and columella, and the septal branch of superior labial artery which supplies the anterior nasal septum. The ophthalmic artery gives rise to a dorsal nasal branch that supplies the nasal side wall and dorsum by anastomosing with lateral nasal branch of angular artery. Additionally, external nasal branch of the anterior ethmoid artery and infraorbital artery provide blood supply to the nasal dorsum and side wall, respectively There are rich anastomoses between these vessels on each side and between right and left sides of the nose.[7]

Venous drainage of external nose

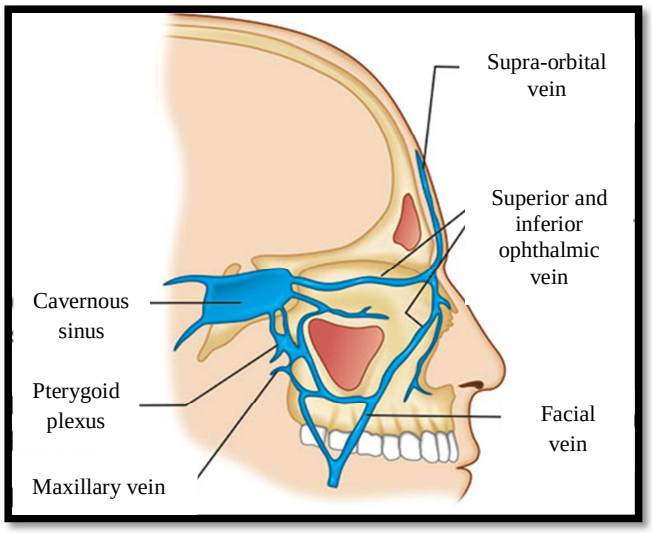


Figure no:10 Venous drainage of External nose[12]

The venous networks are not parallel to the arterial supply but correspond to arteriovenous units. The orbitopalpebral area drains into the ophthalmic vein, while the frontomedian area drains into the facial vein. The face vein begins as an angular vein in the inner canthus. The angular vein is formed when the supratrochlear and supraorbital veins join together.[7]

Lymphatic drainage of external nose

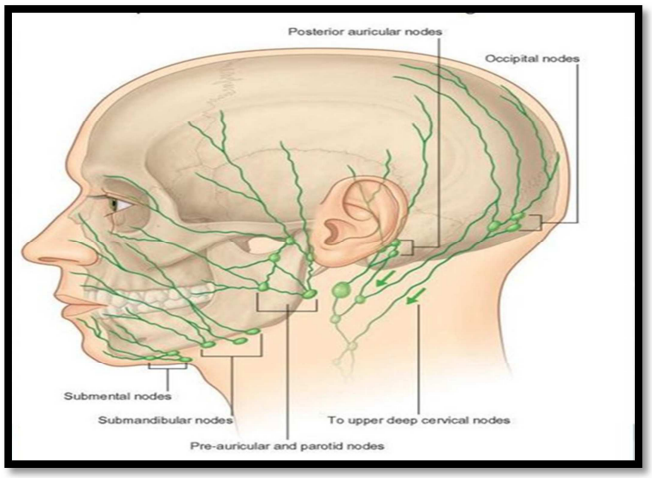


Figure No: 11 Lymphatic drainage of external nose [13]

Lymphatic drainage of external nose is primarily to submandibular group of lymph nodes but from drainage of tip of nose is superficial parotid lymph nodes.[10]

Nerve supply of external nose

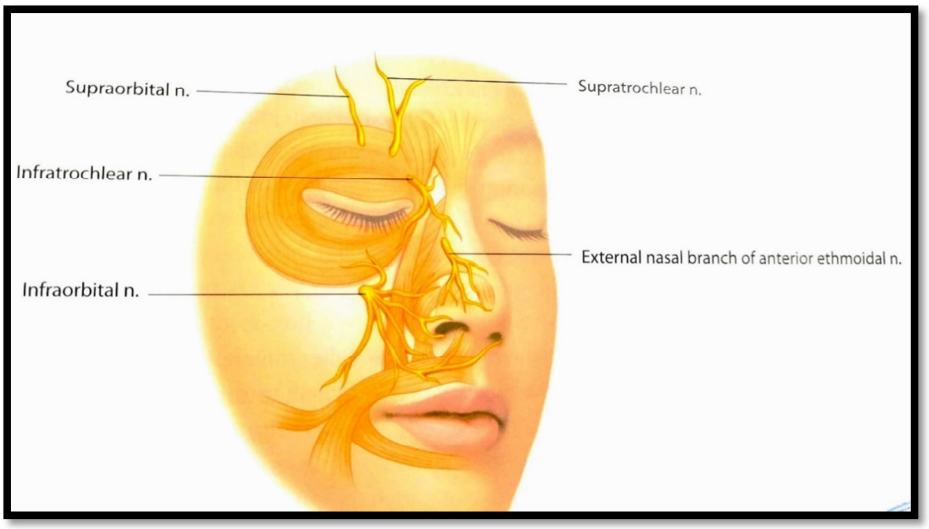


Figure No:12 Nerve supply of external nose [9]

The trigeminal nerve (V) provide sensory supply for external nose. The ophthalmic division is responsible for the ophthalmic nerve. The ophthalmic nerve's supratrochlear, infratrochlear branches provide nerve supply to skin of nasal root,

bridge, and upper section of side wall of the nose. Maxillary nerve's infraorbital branch supplies remaining skin on nasal sidewall. The skin across dorsum and nasal tip by the anterior ethmoid nerve's external nasal branch, which exits between the nasal bone and upper lateral cartilage. This is external nasal branch of anterior ethmoidal nerve.[8]

PRE – OPERATIVE ASSESMENT FOR RHINOPLASTY

Facial analysis

Beautiful faces are said to have optimal measurements and angles, which are apparently based on Leonardo da Vinci's original dimensions. Albrecht Duerer, Powell and Humphrey have since extended this concept. Though slight asymmetry may have an impact on how attractive a face is seen; facial symmetry is generally thought to be the basis of a beautiful face.[14]

Minor facial asymmetries are often undetected by patients, and their discovery during the post-operative period may cause Correcting a disproportionate nose that causes the perception of facial asymmetry might improve facial symmetry without requiring subsequent surgery, whereas a rhinoplasty on an uneven face can cause post-operative dissatisfaction. It is crucial to discuss these issues with the patient and record them prior to surgery. [14]

Midline facial landmarks are used to evaluate symmetry: The "rule of fifths" and the "rule of thirds" are used in facial proportion analysis to evaluate the face from a frontal perspective. The landmarks that characterize each of the three horizontal facial thirds (trichion to glabella, glabella to subnasale, and subnasale to soft tissue menton) are nearly equal.[14]

The concept of rule of fifths divides the ideal transverse proportions of the face vertically into equal fifths, with the alar base equal to the intercanthal distance and each fifth equal to the width of one eye.

The ideal nose size is one-third of the face's length and one-fifth of its width. Additional factors include the protrusion of the chin, as well as the position and volume of the lips. The ideal angles of the face aesthetic triangle were established by Powell and Humphrey.[10]

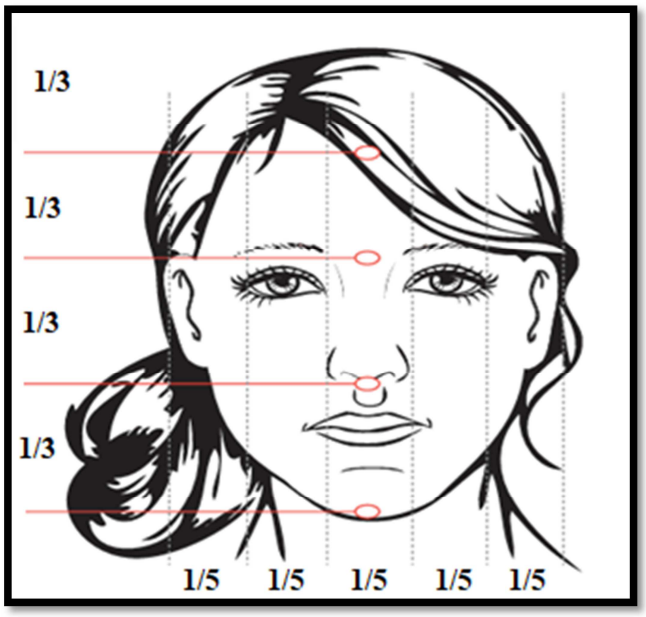


Figure no:13 Division of Symmetry of face into thirds and fifths[14]

Facial proportions act as a guide and are helpful in planning procedures but should not be taken as absolute. Each rhinoplasty should respect the individual's wishes, gender and character. It is important to recognize, too, that these ideal measurements vary between ethnicities.[6]

Several studies were done to analyse the morphology of nose in different parts of India and other countries. This data was used as reference for rhinoplasty according to race and ethnicity.

In study conducted by Ahmet Uzun, Fikri Ozdemir on morphometric analysis of nasal shape and angle in young adults, Ondokuz Mayis University, Samsun, Turkey in 56 males and 59 females. The different types of nostril shapes, types of nasal angles were measured. The average nasal parameters values in this population can be utilized to plan corrective aesthetic cosmetic surgery and treat burn scars on the nose.[1]

According to the study conducted by Fariborz Jafarpour, Gary A. Estomaguio, Elaheh Vahid Dastjerdi and Sepideh Soheilifar, Nasal Morphology in Filipino Samples with Class I, II, and III Jaw Skeletal Relationships in 2014. Shahid Beheshti University of Medical Sciences, Tehran, IR Iran, nose length and height and nasal index was calculated and conclude that nasal parameters were more in males and nose tip projection was larger in female and concluded that Filipino males have longer nose with less prominent tip compared to females .[15]

Michel R LeeM.D, Georges Tabbal M. D, T. Jonathan Kurjian M. D conducted a study in University of Texas South western Medical Center in 2013 .It was retrospective study in 100 patients posted for primary Rhinoplasty and photographs of basal view was assessed .It was concluded that only 16 %of patients was having ideal norms of nasal columella , 84 % had some kind of deformities. This comprised 18% of the Type 1 malformation caudal septum. Medial crura malformation type 2: 12%.6% is type 3 soft tissue, while 48% is type 4 mixed. A study found that the base of the nose has several different types of abnormalities, with added deformities being the most prevalent.[16]

Sami Alharethy, Turki Aldrees, Reem Aljirid analysed 248 patients in Saudi Arabia in2017 .A Retrospective study among patients seeking Rhinoplasty older than 15 years were included in the study. the most common deformity was broad dorsum

65.7 % followed by bulbous columella 62.1 % it was concluded that most common deformity in patients in Saudi Arabia was wide dorsum and bulbous nasal tip.[16]

A study conducted by Abdoljalil Kalantar Hormozi, Arash, Beiragi Toosi in the department of Plastic surgery in Medical University Tehran in Islam republic of Iran in 2005.A Prospective study of Preoperative evaluations and post operative outcomes were assessed. Among300 adult women and men of age group were assessed preoperatively and compared post operatively up to 3 months and concluded that Rhinometry can be used as a best tool for the analysis of Rhinoplasty outcome.[4]

A retrospective cohort study on 73 patients previously underwent surgery was taken for evaluation by Ji Heui Kim, Joon Pyo Park Yong Ju Jang in Department of ENT, Asan Medical Centre Uslan College of Medicine, Republic of Korea in 2013Among 60 patients with alar flaring 75% improved after the procedure. It was concluded that combined alar and sill excision effectively reduced alar base width. Measurements were made of nasal characteristics such as intercanthal distance, alar flare frequencies, nostril symmetry, and nostril shape, and photos were taken for evaluation. The interalar to intercanthal distance varied considerably ($P<0.01$) among 73 cases.[17]

MATERIALS AND METHODS

Study design

A hospital based one -year prospective observational study.

Study period

One year (September 2022 -August 2023)

Study population

Study population within age group of 18-55 years willing for clinical photography and nasal anthropometric measurements using sliding digital vernier calipers. This included patients visiting ENT OPD, medical students, postgraduates, paramedical staff, nursing staff in KLES Dr Prabhakar Kore Hospital.

Sample size formula

The minimum sample size formula based on prevalence rate is

$$n = \frac{z_\alpha{}^2 P(1-P)}{d^2}$$

P -prevalence rate, d - percentage likely difference in the prevalence.

z_α - the level of significance. For 5% level of significance $z_\alpha = 1.96$.

With P = 25%, d = 25% of P = 6.25%, the sample size is 184.

Rounding off sample size was increased to 200.

Statistical analysis

This is an observational study, the analysis plan for continuous quantitative variables mean and standard deviation will be calculated. For comparison, the data was divided into four groups with respect to specific qualitative characteristics; continuous variables will be compared using appropriate statistical techniques such as the student's unpaired t test, and discrete variables will be represented by median.

The categorical data was expressed in terms of rates, ratios and percentages. The association between the outcome, clinical and demographic characteristics will be tested using Chi-square test. Besides from the tools mentioned above, such as ANOVA and correlation, regression was utilized when needed. Graphs were employed wherever necessary to represent the comparison.

Sampling procedure

After taking informed consent from the patient, their details clinical history and examination was done. Clinical photographs were taken which included frontal view, lateral view and basal view followed by nasal anthropometric parameters were measured using sliding digital vernier calipers, stressing on the nasal parameters on the basal view and nasal angles were measured using clinical photographs and assessed using Imagemeter application.

Different views taken for analysis were

- Frontal view -ears on both sides should be equally visualised
- Lateral view -opposite eyelashes should not be seen.
- Basal view -between both the medial canthi nasal tip should be seen.[6]

Instruments used for data collection

1. Digital vernier calipers
2. Canon EOS 200D DSLR camera with 18-55mm lens

Photography room settings

Image:1 Canon EOS 200D DSLR camera with 18-55mm lens

Image 2: Photography room with 2 reflective umbrella light and background curtain

Inclusion criteria

Subjects of age group 18 to 55years among the study population in KLES Prabhakar Kore Hospital

Exclusion criteria

- Subjects below 18 years
- Subjects with previous history of orthodontic treatment
- Subjects with history of facial plastic surgery
- Subjects with history of facial bone fracture.
- Subjects with history of TMJ abnormalities.
- Subjects with medical conditions affecting maxilla and mandibular growth.
- Subject with medical syndromes and craniofacial disorders.

This study recorded nasal base parameters, nostril models, and nasal angles of subjects of age group 18-55 from different geographical regions of India. These individuals have no visible nasal or facial deformities, nor prior nasal or facial surgery. This study was approved by the Ethics Committee of University of Dr Prabhakar Kore hospital. These individuals had no visible nasal or facial deformities, nor previous nasal or facial surgery.

Nasal angles were measured in degrees (◦) by the same researcher in normal anatomical position and Frankfurt horizontal plane (FH). To assess the nose's position by judging the relationship of the upper and lower edges of the ear to the eyebrow level and the ala level, respectively, the subject's head must be in the FH, which is defined by a line connecting the orbital (the lowest point of the infraorbital margin) and the porion (point at the upper edge of the auditory meatus) or tragion.[1]

The following landmarks were used for measurement

- **Pronasale** (prn): The most prominent point on the nasal tip.
- **Subnasale** (sn): The midpoint of the columella base.
- **Labiale superius** (ls): The midpoint of the upper vermilion line.
- A**lare(**al**):** The point where the ala nasi extends farthest.

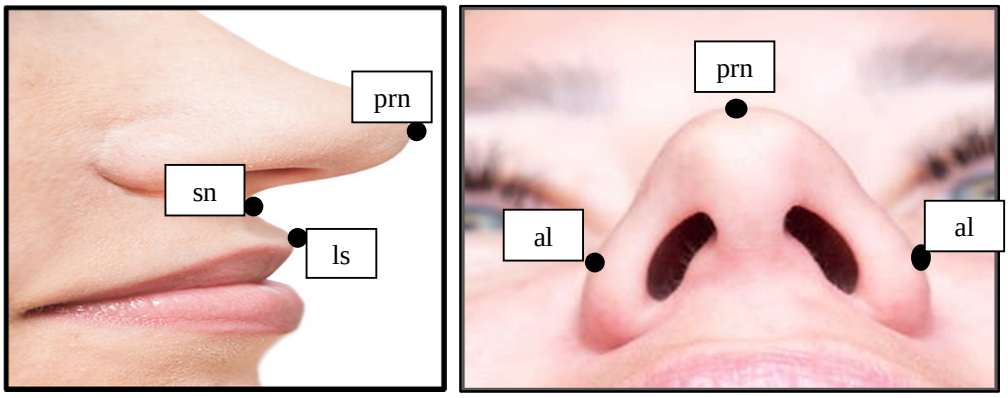


Figure No:14 lateral view of nose lateral view and basal view with landmarks points

Basal view

The patient's head was fully bent backward to see the base. The nasal base appears to be an equilateral triangle from below. The triangle's middle is where the columella is located. The base of the columella is the widest, while the middle is the thinnest. The upper lobule portion is clearly identifiable[18].

Nostril may be symmetrical or asymmetrical Asymmetrical nares can be due to anterior septal dislocations, projections of medial crura in the vestibule or in cleft lip nasal deformity.

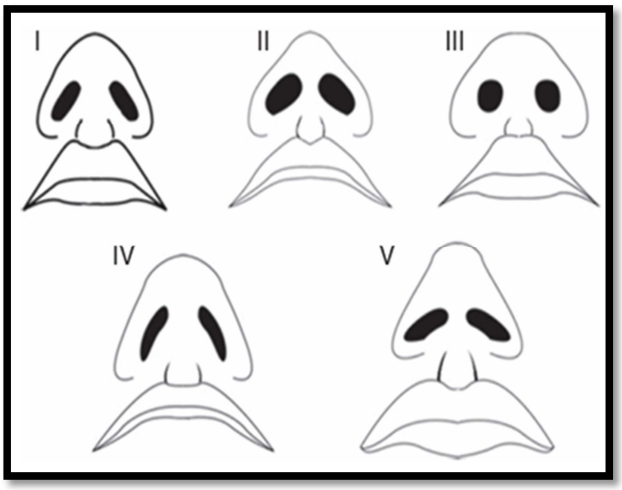


Figure no:15 Types of nostril[1]

Types of nostrils [1]

1. Narrow oval nostril: Type1
2. Triangular nostril: Type 2
3. Round nostril: Type 3
4. Long, narrow nostril: Type 4
5. Wide oval nostril: Type 5

In this study following parameters are noted.

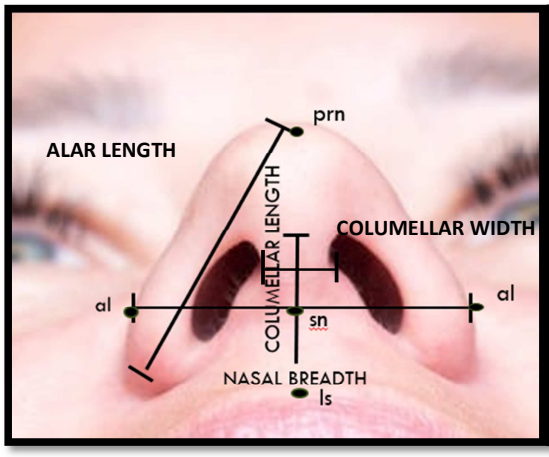


Figure No:16 showing nasal parameters

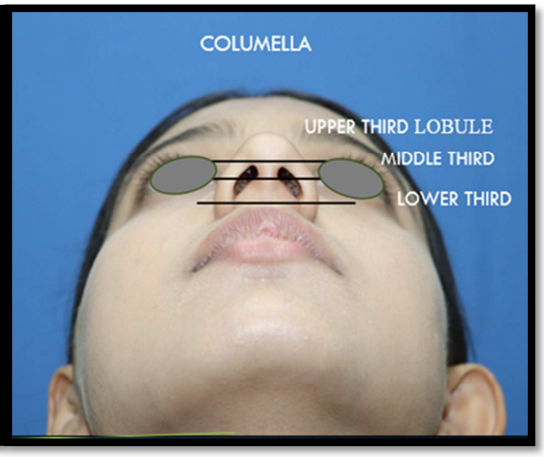


Image No: 3 Basal view with columellar divisions

Nasal anthropometric parameters

1. Nasal Breadth- The maximum distance between two ala (acr-acr)
2. Alar length -This measurement was taken from Pronasale (prn) to the lower most point in nasolabial groove.
3. Columellar length -Distance between base of the columella subnasale(Sn)and the connection level from the tip of nostrils.
4. Columellar Width-Distance between the average points of nostril.

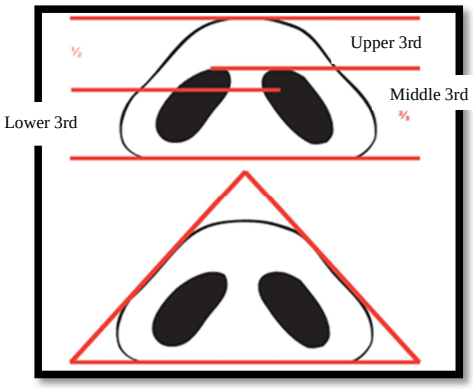


Figure 17: Basal view equilateral triangle[14]

Columella

- Upper third part of Lobule
- Middle third part of Columella
- Lower third part of Columella

The columella extends between the lip and tip of the nose. The shape of columella depends on the size and contour of the medial crura of the lower lateral cartilages. The columella, which has a break and a small convexity, forms a soft and delicate curve that is evident in profile just below the boundary of the lower nostrils.[18]

The columella is divided into three equal parts: the upper lobular section, the middle narrow part, and the wider bottom or basal part. The columella is made up of

two medial crura and intervening areolar tissue, all covered in thin skin. The medial crura support the tip but do not extend the whole length of the columella. The medial crura may be excessively long or too short to form a projecting or depressed tip. The columella shape is determined by the size and shape of the medial crura. The posterior extension of the medial crura varies greatly, resulting in widening of the columella at the base. The skin of the columella adheres to the medial crura.[18]

From the base, the nose can be divided into thirds. The upper third correlates to the lobule, while the bottom two-thirds belong to the columella. A line that passes through the columella at the point of medial crural footplate diversion divides the base into two halves. The overall basal view outline is an isosceles triangle with pear-shaped nostrils that are at 45 degrees from the vertical. There are numerous ethnic differences in alar base configuration.[14]

Measurement of Columellar show

The lateral view is used to evaluate the relationship between the ala and the columella. Ideally, only 3-5 mm of the caudal septum should be visible. This is the separation between two parallel lines drawn from anterior to posterior from the nasal vestibule. If the columella is more visible than this, it could be because of a hanging columella or anomalies in the alar margins, including retraction or notching.[14]

Measurement of nasal anthropometric parameters using Vernier calipers

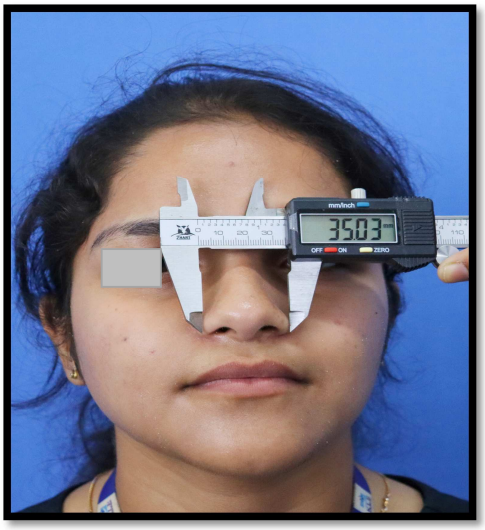


Image No:4 Measurement of Nasal breadth

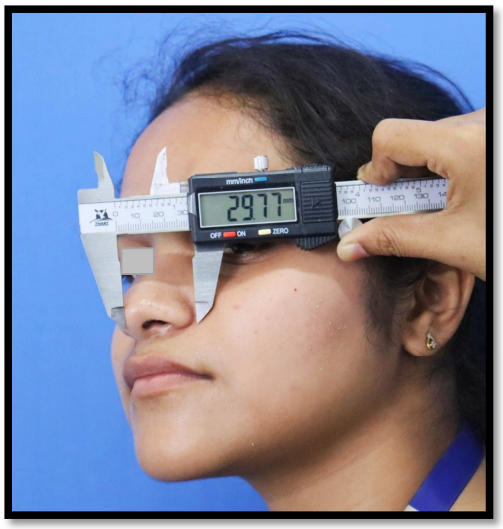


Image No:5. Measurement Alar length

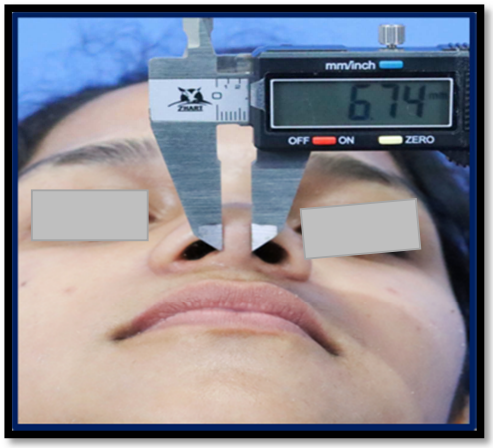


Image No:6 Measurement of Columella width

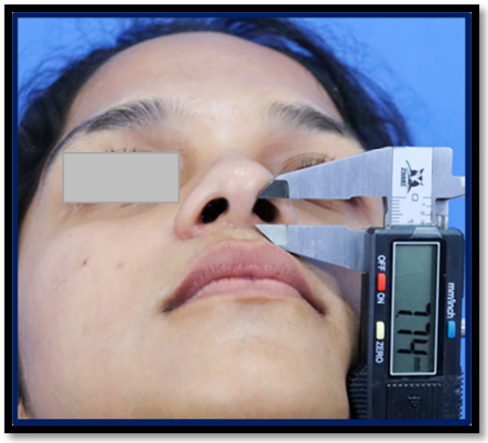


Image No:7 Measurement of columellar length

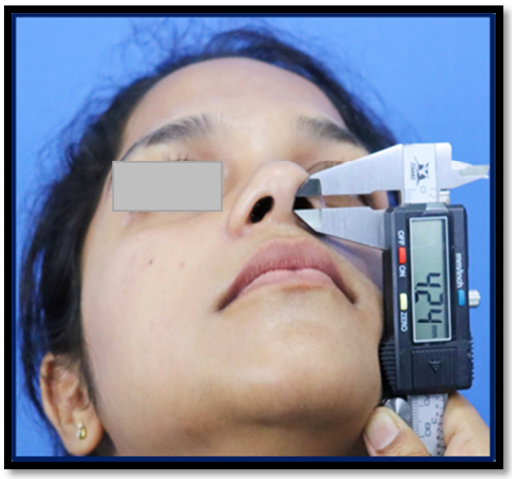


Image No:8 Measurement of columella – middle 1/3rd

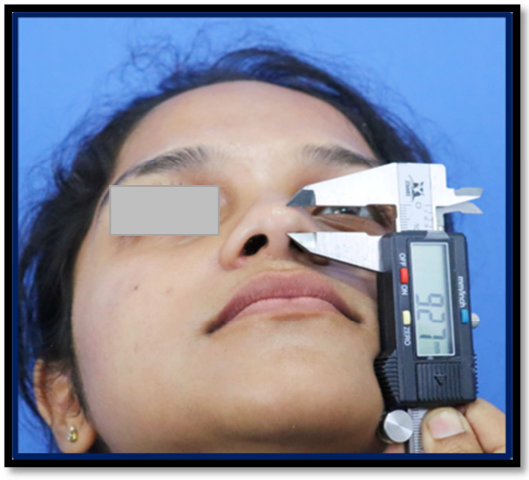


Image No:9 Measurement of lobule – upper 1/3rd

Image No: 10 Measurement of columella - lower 1/3rd

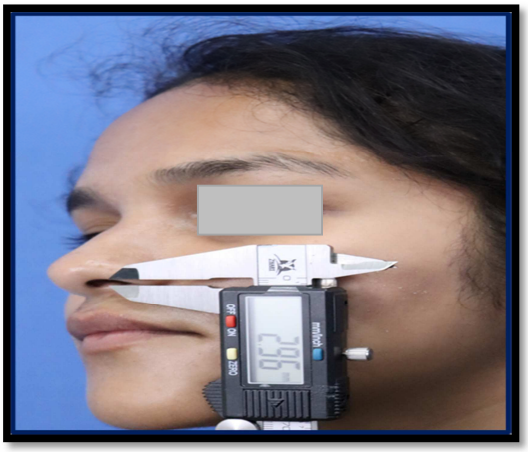


Image No:11 Measurement of columellar - show

Measurement of Nasal angles

Nasolabial angles: The ideal angle is 90-95 for males and 100-110 degrees The measurement of the nasolabial angle is made between the columella and the upper lip plane, with the subnasale situated at its apex. The upper lip will naturally lengthen slightly when the tip is surgically moved upward. This is the most significant assessment aspect.[18]

Columellar lobular angle: This angle is created by the junction between columella and the bottom -most part of the tip. The normal angle is 45 degrees.[17]

Interalar angle: The angle that is formed close to the tip by two tangents that touching the ala on opposite sides.[1]

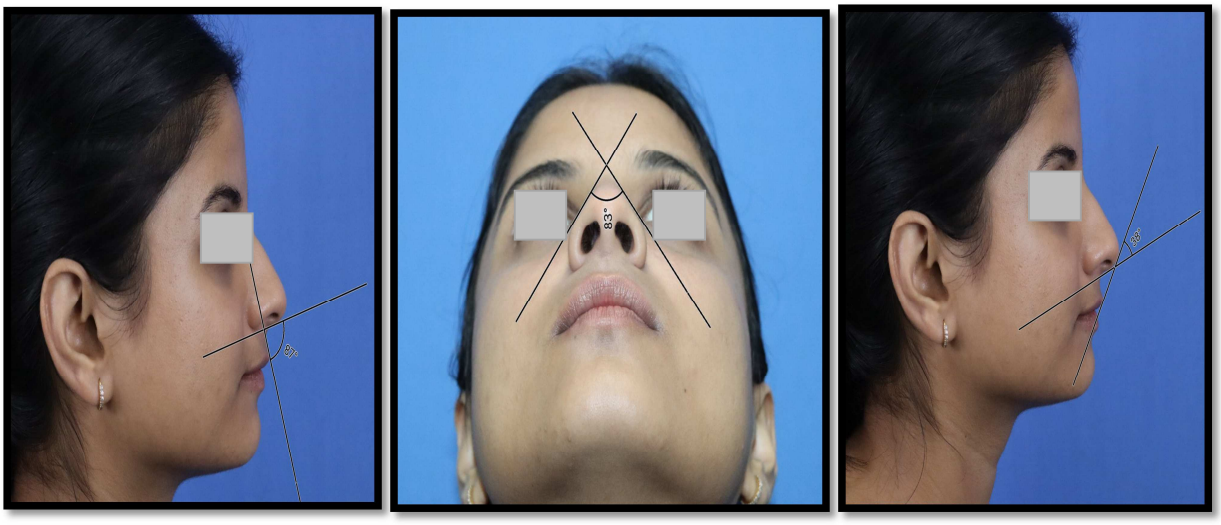


Image No:12Measurement of a) Nasolabial angles b) Interalar angle

c) Columellar- lobular angle

In order to give information for anthropometry and forensic medicine, medical aesthetics, and cosmetology, this morphometric study evaluated the nasal anthropometric measurements and nasal angles in both sexes and different geographical regions of India. For the purpose of planning cosmetic nasal surgery, evaluating the external nasal soft tissue, and performing preoperative and postoperative assessments of secondary rhinoplasty for nasal deformity, this study may offer the surgeon reliable and objective reference material.[21]

RESULTS

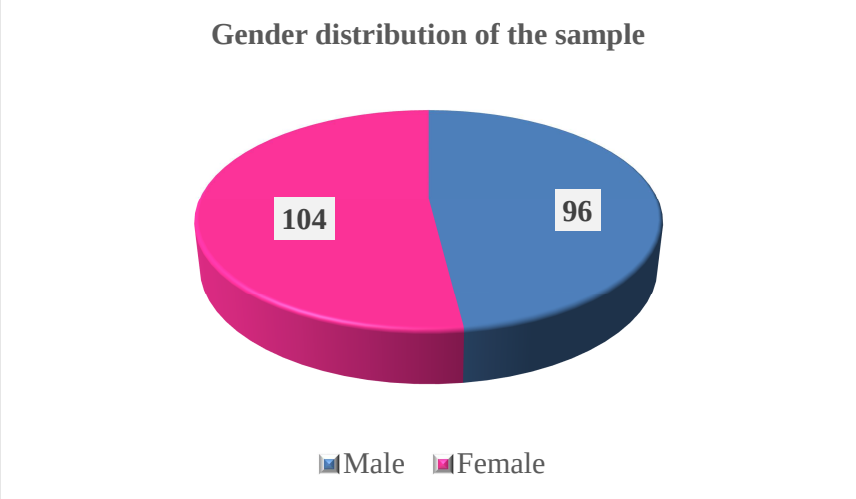
This study conducted in 200 subjects in Department of Otorhinolaryngology and Head & Neck Surgery in Dr Prabhakar Kore Hospital, Belagavi from October 2022 to September 2023. All observations were recorded in the study as described under the following headings.

Gender distribution

Table No.1: Gender distribution

Gender	Number	%
Male	96	48.00
Female	104	52.00
Total	200	100.00

The study consists of 96 males (48%) and 104 females (52%).



Graph No 1: Gender distribution of the sample

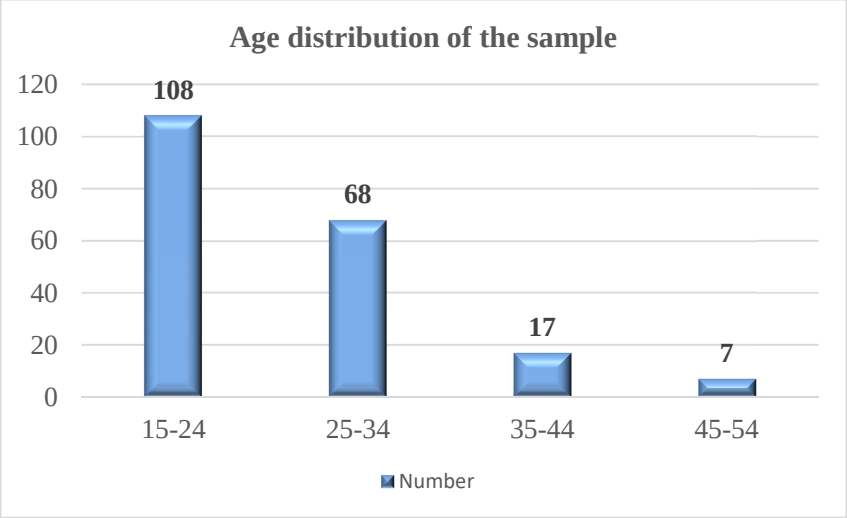
Age distribution of the sample

Majority of subjects were in age group 15-24, with mean age group was 26 years, with youngest patient of age -18 years, oldest patient age- 54 years.

Table No.2: Age distribution of the sample

AGE	NUMBER	%
15 - 24	108	54.00
25 - 34	68	34.00
35 - 44	17	8.50
45 - 54	7	3.50
TOTAL	200	100.00

In the study population, mean age was 26.07 years. 7 subjects were aged more than 45 years (3.50%). 17 subjects -age group 35-44 years (8.50%). 68 subjects- age group of 25-34 years (34%). Majority in age group of 15-24 years (54%).



Graph No 2: Age distribution of the sample

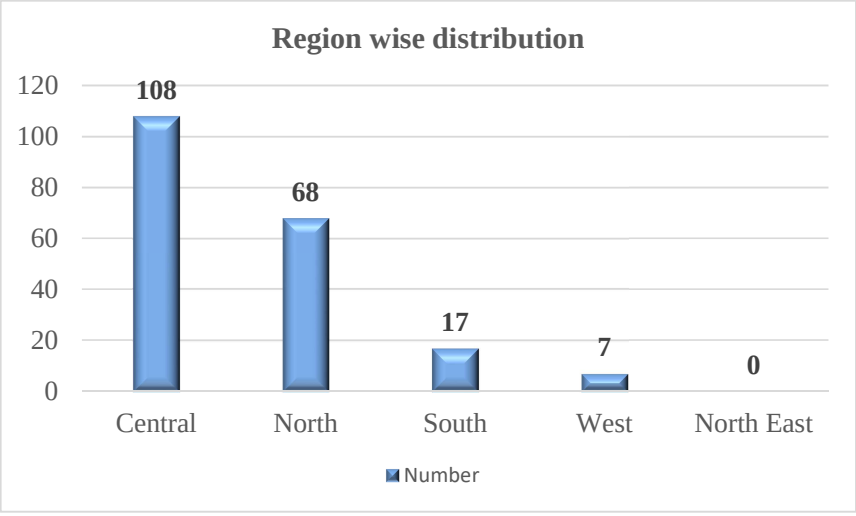
Region wise distribution

In this study the subjects were distributed all over India hence categorized according to the regions. Maximum number of subjects were from South India 113 (56.50%) followed by western part of India 36 (18%).

Table No.3: Region wise distribution

REGIONS	NUMBER	%
Central	33	16.50
North	18	9.00
South	113	56.50
Western	36	18.00
North East	0	0
Total	200	100.00

This graph shows that majority of subjects analysed was from South India 113 (56.50%) followed by western India 36 (18%).



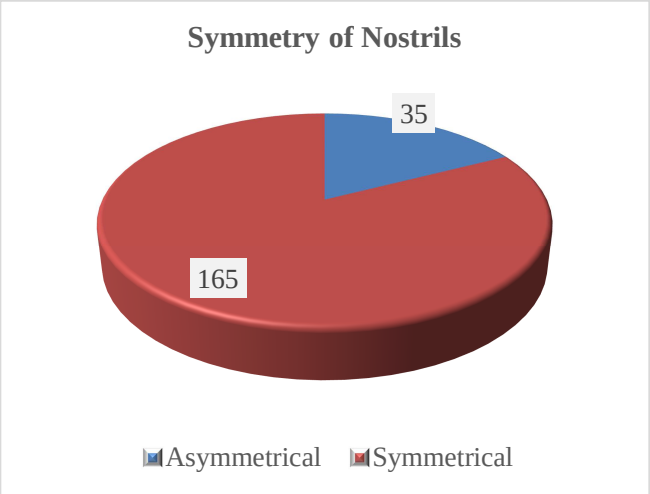
Graph No 3: Region wise distribution

Comparison of symmetry of nostrils

Table No.4: Comparison of symmetry of nostrils

SYMMETRY	NUMBER	%
Asymmetrical	35	17.50
Symmetrical	165	82.50
Total	200	100.00

Among the 200 subjects, 35 (82.50%) had symmetrical nostrils and 165 (17.50%) had asymmetrical nostrils.



Graph No 4: Symmetry of Nostrils

Comparison of symmetry of the nostrils based on the region

Table No.5: Comparison of symmetry of nostrils based on the region

PARAMETERS	REGIONS				TOTAL	p VALUE	INFERENCE
	CENTRAL	NORTH	SOUTH	WEST			
Asymmetrical	2	3	21	8	34	0.296	NS
Symmetrical	31	15	92	28	166		
TOTAL	33	18	113	36	200		

Symmetry of nostrils according to the results shows 31 from central,15 from north ,92 from south ,28 from western region had Symmetrical.

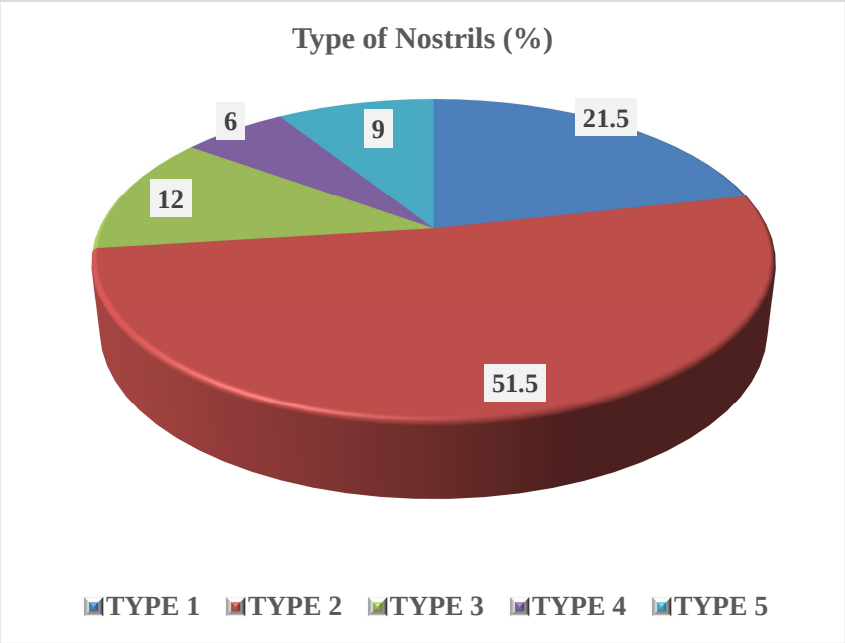
Regarding asymmetry 2 from central ,3 from north ,21 from south 8 from west had asymmetry of nostrils**.** The results show there is no association between regions of India based on symmetry of nostrils. p value 0.2966 is not significant.

Distribution of types of nostrils

Table No.6: Distribution of types of nostrils

NOSTRIL SHAPE	NUMBER	%
Type 1	43	21.50
Type 2	103	51.50
Type 3	24	12.00
Type 4	12	6.00
Type 5	18	9.00
TOTAL	200	100.00

This result shows, maximum number of subjects among Indian population had Type 2 nostrils 51.50 %, followed by Type 1 is 21.50%. The type of nostrils least seen in the population was Type 4 is 6.00%.



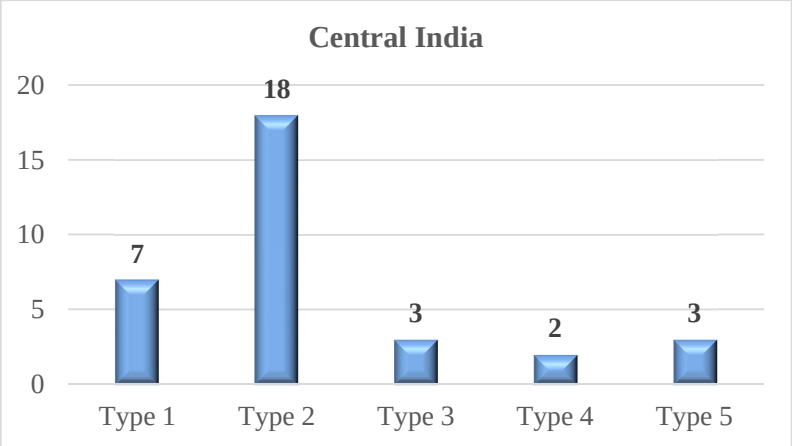
Graph No 5: Distribution of types of nostrils

Comparison of types of nostrils based on the region

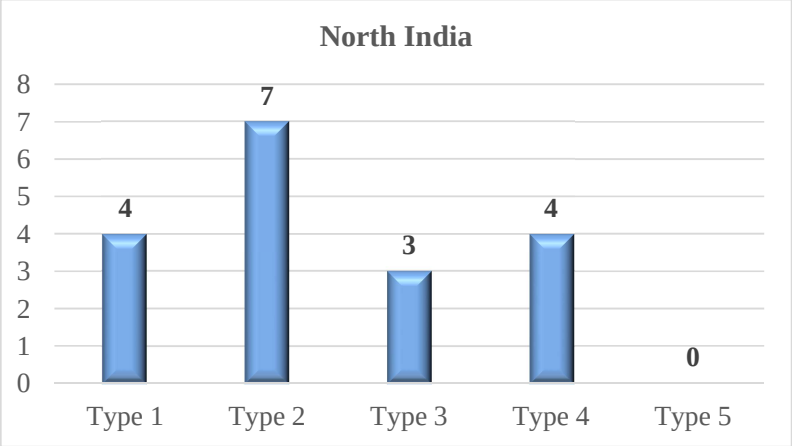
Table No.7: Comparison of types of nostrils based on the region

NOSTRIL SHAPE	REGIONS				TOTAL	p VALUE	INFERENCE
	CENTRAL	NORTH	SOUTH	WEST			
Type 1	7	4	22	10	43	0.0079	VS
Type 2	18	7	61	17	103		
Type 3	3	3	12	6	24		
Type 4	2	4	3	3	12		
Type 5	3	0	15	0	18		
TOTAL	33	18	113	36	200		

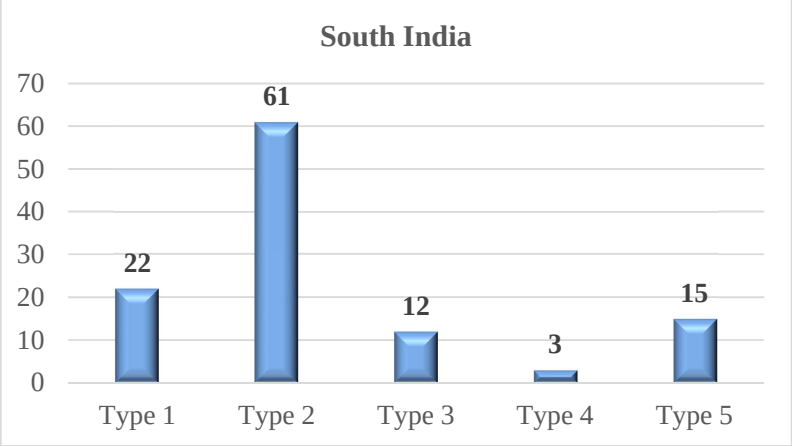
This tables shows the comparison of different regions of India with type of the nostrils P value of (0.0079) shows very significant. There is association of type of nostril with type of nostril. Most common type of nostril is Type2> Type1> Type3> Type5> Type4.



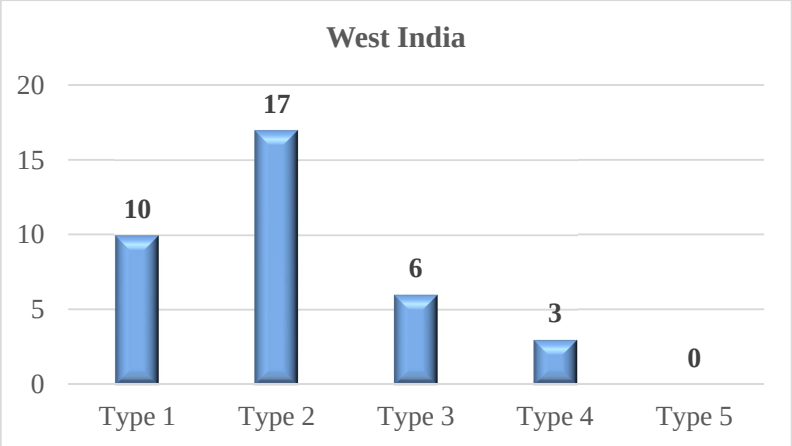
Graph No 6: Distribution of type of nostril- Central India



Graph No 7: Distribution of type of nostril- North India



Graph No 8: Distribution of type of nostril- South India



Graph No 9: Distribution of type of nostril- West India

This graph shows the different types of nostril type in different regions of India. All regions of India Type 2 is the most common followed by type1.

Different types nostrils

TYPE-1 NARROW | TYPE-2 TRIANGULAR | TYPE-3 ROUND

TYPE-4 NARROW LONG | TYPE-5 WIDE OVAL

Image No.13: Different type of nostrils

Nasal anthropometric parameters of Indian population-

Parameters included Nasal breadth, Alar length, Columellar length, Columellar breadth, Columella upper third (Lobule), Middle third, Lower third, Columellar show:

Table No.8: Nasal anthropometric parameters of Indian population

PARAMETERS	MEAN	S.D.	MIN	MAX
Alar length (mm)	29.90	2.71	22.82	39
Nasal breadth (mm)	34.36	2.81	22.9	40.3
Columellar length (mm)	9.39	1.26	6.18	12.38
Columellar width (mm)	5.76	1.00	3.23	8.1
Upper third(lobule)	9.35	1.56	1.38	13.35
Middle third (columella)	3.88	0.76	2.35	6.18
Lower third (columella)	5.37	0.92	3.47	9.24
Columellar show	2.47	0.94	0.25	5.26
Nasolabial angle	89.19	8.49	61	112
Columellar- lobular angle	41.30	5.70	25	59
Interalar angle	76.06	10.14	49	107

The nasal anthropometric parameters of the Indian population were analysed

According to the results obtained mean values of the parameters

- Alar length 29.90 +/-2.71, Nasal breadth -34.36+/-2.81, Columellar length -9.39+/-1.26, Columellar width -5.76+/1

- Upper third(lobule) – 9.35+/-1.56, Middle third -3.88+/-0.76, Lower third -5.37+/-0.92, Columellar show-2.47 +/-0.94.
- Nasolabial angle -89.19 degree +/-8.49, Columellar lobular angle-41.30+/-5.70, Interalar angle -76.06+/-10.14.

These average values are also used to compared on the basis of different geographical regions of India and gender

Comparison based on regions of India

Alar Length

Table No.9: Comparison of alar length based on region

REGION	ALAR LENGTH (MM)				p VALUE	INFERENCE
	MEAN	S.D.	MIN	MAX		
Central	30.37	1.99	25.12	33.82	0.5795	NS
North	30.17	3.56	25.03	39		
South	29.68	2.71	23.31	35.46		
Western	30.03	2.84	22.82	33.52		

The Alar length based on different geographical regions is not significant with p value of 0.5795

Nasal breadth

Table No.10: Comparison of nasal breadth based on region

REGION	NASAL BREADTH (MM)				p VALUE	INFERENCE
	MEAN	S.D.	MIN	MAX		
Central	35.14	2.45	29.93	40.3	0.2279	NS
North	33.90	2.60	28.67	39.76		
South	34.11	2.73	24.83	40.25		
Western	34.67	3.36	22.9	40.21		

The nasal breadth based on different geographical regions is not significant with p value of 0.2279

Columellar length

Table No.11: Comparison of columellar length based on region

REGION	COLUMELLAR LENGTH (MM)				p VALUE	INFERENCE
	MEAN	S.D.	MIN	MAX		
Central	9.74	1.28	7.75	12.38	0.1495	NS
North	9.74	1.05	7.95	11.82		
South	9.27	1.27	6.18	11.86		
Western	9.27	1.25	6.62	12.08		

The columellar length based on different geographical regions is not significant with p value of 0.1495

Columellar width

Table No.12: Comparison of columellar width based on region

REGION	COLUMELLAR WIDTH (MM)				p VALUE	INFERENCE
	MEAN	S.D.	MIN	MAX		
Central	5.86	1.17	3.23	8.1	0.1398	NS
North	5.94	0.86	4.34	7.6		
South	5.62	0.90	3.26	7.98		
Western	6.02	1.15	3.9	7.93		

The columellar width based on different geographical regions is not significant with p value of 0.1398

Upper third (lobule)

Table No.13: Comparison of upper third lobule based on region

REGION	UPPER THIRD (MM)				p VALUE	INFERENCE
	MEAN	S.D.	MIN	MAX		
Central	9.29	1.30	6.93	11.83	0.0583	NS
North	10.20	1.43	7.31	12.35		
South	9.17	1.56	1.38	13.35		
Western	9.53	1.72	4.36	12.84		

The Upper third (lobule) based on different geographical regions is not significant with p value of 0.0583

Middle third (Columella)

Table No.14: Comparison of middle third columella based on region

REGION	MIDDLE THIRD (COLUMELLA MM)				p VALUE	INFERENCE
	MEAN	S.D.	MIN	MAX		
Central	3.91	0.77	2.85	5.66	0.4175	NS
North	4.07	0.70	3.02	5.56		
South	3.81	0.74	2.35	6.18		
Western	3.98	0.81	2.48	6.08		

The Middle third columella based on different geographical regions is not significant with p value of 0.4175

Lower third (columella)

Table No.15: Comparison of lower third columella based on region

REGION	LOWER THIRD (COLUMELLA MM)				p VALUE	INFERENCE
	MEAN	S.D.	MIN	MAX		
Central	5.57	0.79	4.5	6.92	0.0532	NS
North	5.87	0.86	3.93	6.98		
South	5.26	0.87	3.47	8.08		
Western	5.29	1.10	3.49	9.24		

The lower third Columella based on different geographical regions is not significant with p value of 0.0532

Columellar show

Table No.16: Comparison of columellar show based on region

REGION	COLUMELLA SHOW				p VALUE	INFERENCE
	MEAN	S.D.	MIN	MAX		
Central	2.44	1.17	0.86	5.25	0.3723	NS
North	2.37	0.72	1.34	3.56		
South	2.57	0.92	0.25	5.26		
Western	2.27	0.86	0.78	3.78		

Columellar show based on different geographical regions is not significant with p value of 0.3723

Nasolabial angle

Table No.17: Comparison of nasolabial angle based on region

REGION	NASOLABIAL ANGLE				p VALUE	INFERENCE
	MEAN	S.D.	MIN	MAX		
Central	89.52	7.63	66	100	0.9717	NS
North	89.44	9.50	74	107		
South	88.93	9.05	61	112		
Western	89.56	7.06	70	104		

The nasolabial angle based on different geographical regions is not significant with p value of 0.9717

Columellar- lobular angle

Table No.18: Comparison of columellar lobular angle based on region

REGION	COLUMELLAR- LOBULAR ANGLE				p VALUE	INFERENCE
	MEAN	S.D.	MIN	MAX		
Central	42.03	5.22	33	59	0.5529	NS
North	40.06	6.34	25	51		
South	41.50	5.88	30	58		
Western	40.58	5.29	31	50		

The columellar -lobular angle based on different geographical regions is not significant with p value of 0.5529

Interalar angle

Table No.19: Comparison of interalar angle based on region

REGION	INTERALAR ANGLE				p VALUE	INFERENCE
	MEAN	S.D.	MIN	MAX		
Central	76.70	9.19	59	98	0.0542	NS
North	69.94	9.35	57	90		
South	76.95	10.57	51	107		
Western	75.75	9.19	49	91		

The Interalar angle based on different geographical regions is not significant with p value of 0.0542.

For the all the above tables the nonsignificant value of p indicates that the means for the four regions are more or less the same. One-way analysis of variance (ANOVA) was used to generate the p values in the following table.

Comparison nasal parameters between males and females

Table No.20: Comparison of nasal parameters of males and females

Parameters	MALE				FEMALE				p Value	INFERENCE
	MEAN	S.D.	MIN	MAX	MEAN	S.D.	MIN	MAX		
Age	25.53	5.39	18	45	26.55	7.34	18	54	0.2635	NS
Alar length (mm)	31.20	2.11	24.97	39	28.70	2.67	22.82	33.54	< 0.0001	HS
Nasal breadth (mm)	35.80	2.23	29.53	40.3	33.03	2.63	22.9	39.1	< 0.0001	HS
Columellar length (mm)	9.63	1.25	6.62	12.18	9.16	1.23	6.18	12.38	0.0102	S
Columellar width (mm)	6.00	0.97	3.28	8.1	5.54	0.98	3.23	7.98	0.0011	VS
Upper third(lobule)	9.48	1.75	1.38	13.35	9.23	1.35	4.94	12.14	0.2644	NS
Middle third (columella)	3.95	0.77	2.5	6.18	3.81	0.74	2.35	6.08	0.1874	NS
Lower third (columella)	5.54	0.95	3.49	9.24	5.22	0.86	3.47	7.77	0.0149	S
Columellar show	2.57	1.03	0.25	5.25	2.38	0.84	0.86	5.26	0.1869	NS
Nasolabial angle	88.57	8.85	61	109	89.75	8.14	64	112	0.3465	NS
Columellar-lobular angle	41.53	5.68	25	59	41.08	5.75	30	58	0.6039	NS
Interalar angle	76.58	10.87	55	107	75.58	9.44	49	98	0.5653	NS

NS –NOT SIGNIFICANT, S-SIGNIFICANT,

VS-VERY SIGNIFICANT, HS-HIGHLY SIGNIFICANT

- On analysis the comparison of nasal anthropometric parameters with gender shows that alar length mean value for males were 31.20 in comparison with females 28.70 with p value of <0.0001 shows highly significant.
- Values of nasal breadth in males mean value of 35.80 in comparison to females 33.03 with p value of 0.0001 shows highly significant.
- Mean values of columellar length in males is 9.63 in comparison to females is 9.16 with p value of 0.0102 significant.
- Mean values of columellar length in males is 6.00 in comparison to females is 5.54 with p value of 0.0011 shows significant.

In the above tables p values calculated using student's unpaired t test

DISCUSSION

The nose forms the midline of face and has a major cosmetic role in appearance of the face. Many publications have been written regarding frontal & lateral views of the nose However, there is very little information available about the base of the nose.

A useful method for determining sexual dimorphism and plurality among various racial and tribal groups is nasal anthropometry. The most reliable indicator of tribe identity is nasal anatomy. Climate-related nasal anthropometric characteristics are often associated with a broad nose in hot and moist whereas narrow nose cool and dry climate.[6]

Few studies claim that a low, broad nose helps to dissipate heat in hot, humid environments, which changes the curvature of the nose. It has been observed that children of African heritage tend to be born in extremely cold climates, On the other hand, Caucasian children are usually born in hot, humid settings. In any situation, their nose size and shape remain the same regardless of the influence of the surroundings. It suggests that nasal parameters are more influenced by their own race than by external circumstances.[5]

Before a rhinoplasty, a surgeon can greatly benefit from nasal analysis, thus it is crucial to analyse the ethnic group and their face features to have better results.[4]

Several studies have been conducted to evaluate nasal index. Nasal length and width were measured to calculate nasal index. In a study conducted by Jolly Agarwal etal.,[22] reference data for anthropometry and aesthetic surgery was provided by measuring several nose measurements and indices. Another study by Masoumeh Majidi Zolbin.,[3] evaluated nasal index and found that racial and gender differences

might be expected in nasal width, height, and index. These characteristics also demonstrated how similar the people of Qazvin were to the European racial group.

But studies involving base of nose which included nasal breadth, alar length, columellar measurements like columellar length, columellar width in detail dividing to upper 3rd, middle 3rd and lower 3rd, measurement of columellar show few articles are available in literature. So we concentrated on base of nose and its overall contribution to the aesthetic outcome and asses the nostril shape, columella, ala, nasal lobule, and nasolabial angle, columellar-lobular angle and interalar angle. Due to its distinct shape, sparse vascularity, and restricted availability of surrounding skin, the nasal columella has proven to be the most challenging subunit to repair. Without a methodical approach, it is extremely difficult to achieve the good outcomes in Rhinoplasty from both an aesthetic and functional standpoint.[16]

In this study 200 subjects within the age group of 18-55 of which mean age was 26 years with 52% females and 48% males. Nevertheless, Senthil Kumar etal., research 32 Participants in the study comprised 200 subjects 50 men and 50 women from Malaysia and 50 men and 50 women from South India in the 20–30 age range. Daisy Sahni et al. conducted another study31.The study group included 127 female and 173 male participants, ranging in age from 18 to 70 years (mean age 36.3 ± 13.4 years)[23].Here 70-year-old was also included in the study but according to the study done by Hesham Aly Helal, MD Histological and anthropometric changes in the aging nose They came to the conclusion that the aging process causes the nasal cartilages and attachments to deteriorate in quality, as well as the nasolabial angle and projection to diminish. These results not only advance our knowledge of the aging process naturally, but they may also influence surgical decision-making in the context of Rhinoplasty when suturing or grafting are taken into account.[19]

Symmetry of nose was another parameter assessed in the study of which 82.50 % had symmetrical nostrils and 17.50 % had asymmetrical nostrils. The shape of the nostril in basal view has been evaluated in this study. A challenging issue in rhinoplasty is asymmetric nostril sills. While a few studies have been done on nose shape in general, fewer studies have been done on nostril shape in Indian population. In the research done by Zhenyu Yang etal Zhejiang Province's 155 Han women participated in this study.[24]

Figure No 18: landmarks used in Zhenyu etal study

After analysis, the basal view revealed that the nasal base is made up of the nasal tip triangle upper portion and the trapezoidal nostril lower part Therefore, we assume that the nasal tip triangle's bottom, the alar rim tangent, is where the upper bottom (a) connects the two sides of the nostril intersection's upper poles. (i.e., the upper bottom part of the nostril trapezoidal). The height of the nasal tip triangle is (c-prn). The height of the nostril trapezoidal is the As the lower bottom of the nostril trapezoidal, the lower bottom (b) joins the two sides of the nostril intersection's lower poles at the alar rim tangent, columella length (c-sn). All patients underwent analysis using a computer-assisted system of measurement and analytical software for beauty on a ViewSonic computer (Bit Science & Technology Co. Ltd., Guangzhou, China). This system also included a video camera (G11; Canon, Tokyo, Japan).[24]But in this

study measurements of nasal base parameters were done using vernier calipers manually by single investigator and hence more accurate compared to the softwares used as it can be affected by the poor quality of pictures and errors due to change in angulation and view of the photographs uploaded in the softwares. But nasal angles were measured after taking clinical photographs in FH plane and analysed using Imagemeter application.Evaluation of different types of nostrils were evaluted based on study by Ahmet Uzun etal. [1]

TYPE 1: Narrow oval nostril, wide blunt nasal base, parallel to ala of the nose

TYPE 2: Narrow, blunt nasal base, triangular nostril, parallel to the ala of the nose.

TYPE 3: Round nostrils and a broad, pointed nasal base.

TYPE 4: Long, broad nostril with a blunt base that is broad and parallel to ala of the nose.

TYPE5: Broad, oval nostril with a sharp, wide base that runs parallel to the nasolabial groove.

The results were compared between males and females. Nostril models were determined based on the number and percentage of female nostril models: 17 (28.81%) model I, 17 (28.81%) model II, eight (13.55%) model III, ten (16.94%) model IV, and seven (11.86%) model V. Male nostril models identified included 12 (21.42%) model I, 21 (37.50%) model II, five (8.92%) model III, 15 (26.78%) model IV, and three (5.35%) model V.

In this study conducted in 200 subjects both males and females. The results shows, maximum number of subjects among Indian population had Type 2 nostrils 51.50 %, followed by Type 1 is 21.50%. The type of nostrils least seen in the

population was Type 4 is 6.00%.The comparison done based on different geographical areas of India also sugggested that most commonly Type 2 nostrils were seen in south ,western ,north ,central regions of India with p value very significant 0.0079.

This suggests that the type of nose is influenced by its shape, and that India, being a tropical country, has a tropical climate. Research indicates that nasal parameters are influenced by climate; typically, a hot and humid environment is linked to a broad nose, whereas a cool and dry environment results in a narrow nose.[26]

According to some researchers, a low, broad nose helps to dissipate heat in hot, humid circumstances, which might alter the curve of the nose. Therefore, our research clearly indicates that a wider nose with wide oval nostrils that adapts to the climate is beneficial in hot and humid climates.[25]

Table No.21: Comparing the nasal angles of the male and female participants in this study with those of other racial groups based on existing literature

AUTHOR	RACES	SEX (M/F)	n	NLA (◦)	ILA (◦)	CLA (◦)
Rhee, 2004[27]	Korean	F	22	103.43	-	-
	Japan	F	15	99.87	-	-
	Chinese	F	16	113.51	-	-
	Western	F	18	106.52	-	-
Husein, 2010[28]	Indian American	F	102	97.2	-	-
	NAW	F	200	104.2	59.4	-
Choes KS, 2006[29]	Korean American	F	72	92.1	81.9	-
Aung SC, 2000[30]	Chinese	F	45	97.91	90.89	-
Dong Y, 2011[31]	Chinese (Han)	F	143	103.42	-	-
Milosevic AS, 2008[32]	Croatian	F	58	109.39	-	-
Sforza C, 2011[33]	Italian	F	66	-	75.43	-
Ahmet Uzun1	Turkish	F	59	98.91	80.89	-
Present study	India	F	104	89.75	75.58	41.08
Porter, 2004[34]	African American	M	109	83.1	-	-
Nguyen and Turley, 1998[35]	Caucasian	M	116	-	-	-
Aung SC, 2000[30]	Chinese	M	45	99.91	89.07	-
Dong Y, 2011[31]	Chinese (Han)	M	146	104.3	-	-
Sforza C, 2011[33]	Italian	M	126	-	74.45	-
Ahmet Uzun[1]	Turkish	M	56	97.91	85.98	-
Present study	India	M	96	88.57	76.58	41.53

In this study, nasal base anthropometric characteristics and external nasal angles were compared to existing literature. There is a significant difference in type of nostrils among different regions of India.

- The mean values of nasolabial angle in Indian male was 88.57 degree was narrower than Chinese (104.30)[30] Turkish (97.91) [1], Croatian (105.42)[32], but wider than African Americans (83.10).[34]
- The mean values of nasolabial angle in Indian female was 89.75 degree was narrower than Turkish (98.91)[1], Chinese (103.42),[30] Croatian (109.39) ,[32] Korean (103.43)[27] and Japan (99.87).[27]
- The mean values of interalar angle in Indian male was 76.58 degree wider than Italian (74.45)[33] but narrower than Turkish (85.98)[1] and Chinese (89.07)[30].
- The mean Inter alar angle in Indian female is 75.58 narrower than Turkish (80.890),[1] Chinese (90.89)[30], same as Italian (75.43),[33] wider than North American white (59.40).[28]
- The mean columellar lobular angle in males was 41.53 degree and females were 41.08 degree.

According to the study conducted by N Ankita Atin Mukherjee,Shivaam etal., Nasolabial angle Among males, the mean nasolabial angle was 115.2 degree and it varied from 107.95 to 122.45 degree. Out of 27, 18 (66.66%) was in the range, 4(14.81%) more than the range and 5 (18.52%) less than the range. The mean nasolabial angle among females was 116.5. degree and it varied from 108.38 to 124.62 degree. Out of 34, 25 (73.53%) lied within the range, 3 (8.82%) more than the range and 6 (17.65%) less than the range.[2]

According to our study the mean nasolabial angle in males were 88.57+/-8.85 degree it varied from the range of (61 -109) degree. In case of females mean nasolabial angle was 89.75 +/- 8.14 and was within the range of (61-112) degrees. External nasal angles many studies have been found in literature. According to results there is a significant difference in the Nasal Parameters- Nasal breadth, Alar length,

Columellar width, Columellar width between males and females but not based on ethnicity in the basal parameters of nose. Jolly Aggarwal etal., also concluded that there is sexual dimorphism in nasal indices but not based on ethnicity.[22]

According to study conducted by Geetha Siddapur etal., nasal columellar show was evaluated 118 participants from south India Tamil population , mean value of columellar show was 2-5 mm in males and 1.5 - 4 mm in females and mean value of whole group was 1.5 -3.5 mm .In the present study the average value of columellar show of whole group was 2.47 +/-0.97 and in range of 0.25-5.35 in males and 3.47-7.77 in females. There was no significant difference with mean values males (2.57) and females (2.38).[36]

According to this study nasal parameters of base of the nose which included Alar length, Nasal breadth, Columellar width, Columellar length, Columellar upper third (Lobule), middle third and lower third along with nasal angles Nasolabial angle, Columellar -lobular angle, Interalar angle were compared based on geographical areas of India. But values were more or less the same with p value not significant for these parameters.

The results of comparing the anthropometric measurements obtained from the current observations with those reported in various racial and ethnic groups did not show any statistical significance. This could be attributed to factors such as the diversity of ethnic and regional populations, the use of different techniques by immigrants, and the fluctuating number of study subjects. There were no subjects available for comparison in the northeastern area of India.

SUMMARY

The study conducted in "KLES Dr. Prabhakar kore hospital, Belagavi during a study period of 1 year on patients, medical students, postgraduates nursing staff, paramedical staff from different geographical regions of India aged between 18-55.

Subjects gave consent for the procedure, clinical pictures of nose basal view, frontal view and lateral view was taken. The nasal anthropometric parameters were measured using vernier calipers. Nasal angles were measured using Imagemeter software.

According to the results

The study consists of 96 males (48%) and 104 females (52%). Among the 200 subjects, (82.50%) had symmetrical nostrils and (17.50%) had asymmetrical nostrils.

There was no relation between symmetry of nostrils based on region.

Type 2 triangular type of nostril was most common among the population of India.

Type2 nostril was seen in majority of population from different geographical regions of India hence significant.

Nasal antropometric parameters like nasal breadth, alar length, columellar length and width was more in males compared to females and was significant.

Nasal parameters and angles based on geographical regions of India was not significant in this study.

This study shows there is sexual dimorphism for the nasal parameters of base of the nose and type of the nostril based on ethnicity and tropical climate of India.

CONCLUSION

The present study shows there is a significant difference in Nasal breadth, Alar length, Columellar length, Columellar width between males and females.

The most common type of nostril among Indian population is type-2 triangular type broader nose in topical humid climate of India.

The nasal parameters are different for gender, ethnic and geographical variation. But the mean value of nasal parameters of base of nose. The results of the study could be taken as baseline data for therapeutic, forensic, and research applications in the Indian population.

Thus, requires attention while planning for corrective surgeries of nose. These results can be used to extrapolate reference to plan for Rhinoplasty surgeries.

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ANNEXURE - I – INFORMED CONSENT FORM

MORPHOMETRIC ANALYSIS OF BASE OF THE NOSE IN RELATION TO AESTHETIC CONCEPT -A ONE YEAR OBSERVATIONAL STUDY IN KLE DR PRABHAKAR KORE HOSPITAL

Name of Student/Principal Investigator:

Name of Guide/Co Investigators:

Objective: To analyse the various aesthetic structural components contributing to the formation of base of the Nose and analysing the variations of the same in relation to each other on the study population

Background: The morphology of the nose varies greatly between races and between individuals within the same race. Age, sex, and cultural background are factors that affect anthropometric parameters. Attempting to determine normal values may act as a guide for medical professionals doing reconstructive and cosmetic nose surgery. Few publications have been written about the basal view of nose, despite several articles being written about the frontal and lateral perspectives. This study examines the structural elements of base of the nose to see if they possess the ideal aesthetics.

Withdrawal from participation in the study: Participation in this study is voluntary. You will be free to decide whether to participate in this study or continue participation once enrolled. In case you decide to withdraw your participation, you are free to do so. However, please convey the decision to the principal investigator.

Possible benefits from participating in the study: You will/will not have nor get any benefits by participating in this study. The data gathered will help the population at large.

Possible risks from participating in the study: There are no risks involved in participating in this study.

Privacy and confidentiality: The information collected from you will be coded, to prevent any person from identifying you. Your identity will never be revealed. The data collected from you will be kept confidential and only processed or aggregated data will be used for publication.

Financial incentives: You will not receive any payment for participating in this study.

Authorization for publication of aggregated data: Results obtained after processing of the aggregated data will be published for scientific purposes and or presented to scientific groups. However, your identity will never be revealed.

Questions: In case of any questions with regard to this study, you are free to contact: "Name of student/PI, mobile number, email ID" If you have any question or complaints with regard to your right as study participant you may contact Dr Harsha Hegde, Chairperson, Ethical committee of JNMC, 0831-2473777 Extension 4052.

Legal rights: By signing this consent form, we are not waving any of your legal rights.

CONSENT STATEMENT

I am making a voluntary decision to participate in the study **MORPHOMETRIC ANALYSIS OF BASE OF THE NOSE IN RELATION TO AESTHETIC CONCEPT -A ONE YEAR OBSERVATIONAL STUDY IN KLE DR PRABHAKAR KORE HOSPITAL**. My signature below indicates that I have decided to participate and I have read the information provided above or the information provided above has been read to me in the language that I understand best. I was given the opportunity to ask questions and that they have been answered to my satisfaction.

Name of the participant:

Signature or left thumb impression of the participant:

Name of the witness:

Signature or left thumb impression of the witness:

Name of the investigator:

Signature of the investigator:

ANNEXURE - II – PROFORMA

MORPHOMETRIC ANALYSIS OF BASE OF THE NOSE IN RELATION TO AESTHETIC CONCEPTS: A ONE YEAR OBSERVATIONAL STUDY IN KLE DR PRABHAKAR KORE HOSPITAL

Date: IP/ OP No:

Name: Occupation:

Age: Phone No:

Sex:

Address:

CLINICAL PROFILE:

Chief Complaint:

History of Present Illness:

Past History:

Personal History:

Family History:

I) General Physical Examination -

Blood Pressure:

Pulse:

Respiratory Rate:

Pallor

Icterus

Clubbing

Cyanosis

Lymphadenopathy

Oedema

II) ENT Examination

1. EAR EXAMINATION:

	Right	**Left**
Pinna		
Pre auricular area		
Post auricular area		
Tragal Tenderness		
Mastoid Tenderness		
External auditory canal		
Tympanic membrane		

TUNING FORK TESTS:

Rinne's Test: 256 Hz

512 Hz

1024 Hz

Weber's Test:

Absolute Bone Conduction test

3. THROAT EXAMINATION:

Oral cavity:

- Lips
- Labial and buccal mucosa
- Gingivolabial and gingivobuccal sulci
- Gingiva
- Teeth
- Hard palate
- Floor of mouth
- Anterior 2/3rd of tongue
- Retromolar trigone

Oropharynx:

- Soft palate
- Uvula
- Anterior pillar
- Tonsills
- Posterior pillar
- Posterior and lateral pharyngeal wall

Indirect Laryngoscopy

3. NECK EXAMINATION:

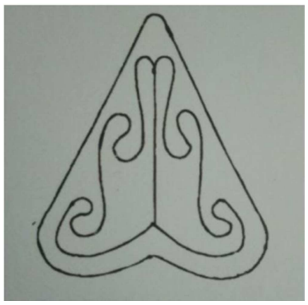
4. NOSE EXAMINATION:

External appearance

- Root
- Bridge
- Dorsum
- Ala
- Tip
- Columella

Cold spatula test

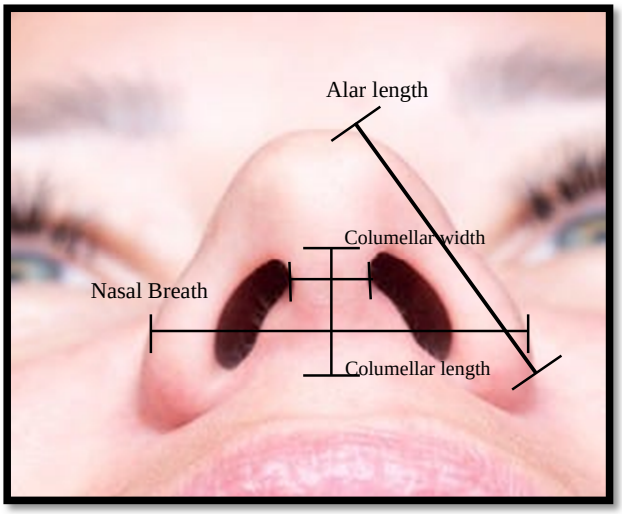
Anterior Rhinoscopy



Posterior Rhinoscopy

Paranasal sinusTenderness

5.ANALYSIS OF BASAL VIEW OF NOSE



1.NOSTRIL SHAPE AND SYMMETRY

2.COLUMELLA

3.ALAR BASE

4.ALAR FLARING

5.NASAL LOBULE

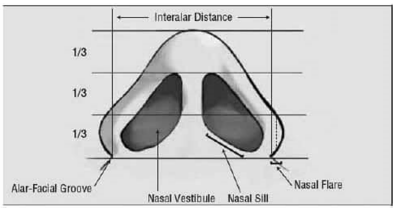
6.NASAL SILL

7.NASAL VESTIBULE

8.ALAR FACIAL GROOVE

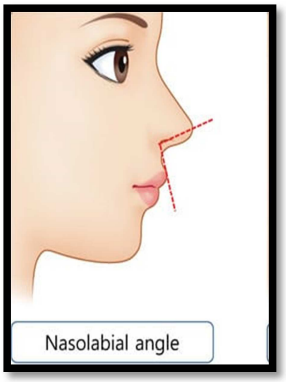
RHINOMETRIC MEASUREMENTS

1. NASAL WIDTH
2. ALAR LENGTH
3. INTERALAR WIDTH
4. COLUMELLAR LENGTH

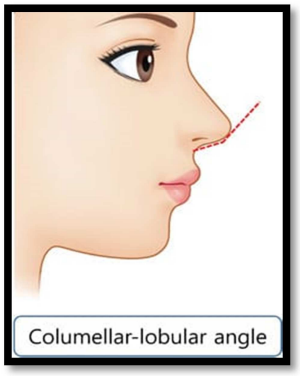


UPPER THIRD LENGTH (LOBULE)	
MIDDLE THIRD LENGTH	
LOWER THIRD LENGTH	

5. COLUMELLAR WIDTH
6. COLUMELLAR SHOW
7. NASOLABIAL ANGLE



8. COLUMELLARLOBULAR ANGLE



9. INTERALAR ANGLE

ANNEXURE – III – KEY TO MASTER CHART

NLA	Nasolabial angle
CLA	Columellar lobular angle
IAA	Interalar angle

ANNEXURE – III – KEY TO MASTER CHART																
S No	**AGE/ SEX**	**OCCUPATION**	**STATE**	**REGION OF INDIA**	**NOSTRIL SHAPE AND SYMMETRY**	**Alar length (mm)**	**Nasal breadth (mm)**	**Columellar length (mm)**	**Columellar width (mm)**	**Upper 1/3(lobule)**	**Middle 1/3 (columella)**	**Lower 1/3 (columella)**	**Columellar show**	**NLA (degree)**	**CLA (degree)**	**IAA (degree)**
1	24/M	MBBS STUDENT	BIHAR	CENTRAL	SYMMETRICAL,TYPE1	31.45	33.78	9.03	6.79	8.15	3.83	5.2	2.55	82	59	76
2	24/F	MBBS INTERN	KARNATAKA	SOUTH	SYMMETRICAL, TYPE1	23.31	29.91	9.73	5.04	6.32	3.05	3.68	3.04	112	58	72
3	25/F	STUDENT PHYSIO	MADYA PRADESH	CENTRAL	SYMMETRICAL, TYPE1	25.12	31.39	8.9	5.2	7.42	3.77	5.13	1.94	88	50	77
4	21/F	MBBS INTERN	KARNATAKA	SOUTH	SYMMETRICAL, TYPE 4	28.17	22.9	10.82	5.29	9.02	4.16	6.66	1.02	102	41	66
5	23/F	MBBS INTERN	MAHARASHTRA	WESTERN	SYMMETRICAL,TYPE1	26.72	31.35	9.06	4.22	7.75	4.05	5.01	2.21	85	48	70
6	25/F	HOUSE WIFE	KARNATAKA	SOUTH	SYMMETRICAL,TYPE4	24.19	30.23	9.53	5	10.41	4.22	5.31	2.45	90	48	73
7	22/F	MBBS STUDENT	UTTAR PRADESH	CENTRAL	SYMMETRICAL,TYPE 2	27.3	31.13	8.46	4.95	8.03	3.93	4.53	1.52	98	42	60
8	2O/M	MBBS STUDENT	KARNATAKA	SOUTH	ASYMMETRICAL,TYPE5	30.39	34.92	10.01	6.88	5.98	4.34	5.67	3.8	92	46	62
9	24/M	MBBS STUDENT	KERALA	SOUTH	SYMMETRICAL, TYPE1	30.06	33.58	9.1	5.34	10.42	3.49	5.81	2.48	98	45	70
10	20/M	LABOURER	KARNATAKA	SOUTH	SYMMETRICAL,TYPE 2	30.62	34.74	9.94	6.04	6.7	4.45	5.49	2.09	92	46	66
11	24/M	MBBS INTERN	UTTAR PRADESH	CENTRAL	SYMMETRICAL,TYPE 2	32.12	40.3	9.92	6.96	9.14	3.99	5.93	4.36	96	42	74
12	24/F	MBBS INTERN	UTTAR PRADESH	CENTRAL	SYMMETRICAL,TYPE 2	28.42	38.69	12.38	6.62	10.82	5.66	6.72	1.26	98	40	67
13	22/M	MBBS STUDENT	KARNATAKA	SOUTH	ASYMMETRICAL,TYPE 2	33.98	29.53	11.83	5.31	8.11	5.45	6.38	4.12	96	41	67
14	23/M	MBBS STUDENT	UTTAR PRADESH	CENTRAL	SYMMETRICAL,TYPE 2	31.33	34.3	9.3	5.02	7.44	4.43	5.87	5.2	96	45	83
15	32/F	HOUSE WIFE	KARNATAKA	SOUTH	SYMMETRICAL, TYPE 2	26.76	32.78	8.82	5.98	8.21	4.04	4.78	3.05	88	46	66
16	32/M	MBBS STUDENT	TAMIL NADU	SOUTH	SYMMETRICAL, TYPE5	30.92	35.79	7.59	4.22	7.92	3.07	4.52	2.14	95	42	88
17	23/M	MBBS STUDENT	UTTAR PRADESH	CENTRAL	SYMMETRICAL TYPE 3	32.22	35.76	10	6.56	10	4.5	5.5	1.86	82	42	66
18	24/M	MBBS STUDENT	UTTAR PRADESH	CENTRAL	SYMMETRICALTYPE 2	28.32	32.79	8.07	3.28	8.08	3.51	4.56	2.12	80	40	88
19	25/F	STUDENT PHYSIO	GOA	WESTERN	ASYMMETRICAL,TYPE 3	22.82	31.8	6.86	4.55	5.95	2.93	3.93	1.2	98	46	84
20	44/F	HOUSE KEEPING	KARNATAKA	SOUTH	ASYMMETRICAL,TYPE 2	27.35	28.84	10.3	3.68	4.94	5.68	4.62	3.82	86	44	68
21	25/M	MBBS STUDENT	DELHI	NORTH	SYMMETRICAL, TYPE 3	29.86	31.46	9.64	4.34	9.26	4.22	5.42	1.34	76	43	90
22	21/M	NURSING STAFF	MAHARASHTRA	WESTERN	SYMMETRICAL, TYPE 2	28.86	30.86	7.76	4.56	4.36	3.2	4.56	2.54	88	46	85
23	37/F	HOUSE WIFE	KARNATAKA	SOUTH	SYMMETRICAL,TYPE 2	25.83	35.69	8.71	4.55	8.53	5.24	3.47	5.26	78	30	81
24	18/F	STUDENT	KARNATAKA	SOUTH	SYMMETRICAL,TYPE 2	31.71	25.62	9.09	5.66	8.57	4.83	4.26	4.39	100	39	78
25	24/F	MBBS STUDENT	UTTAR PRADESH	CENTRAL	SYMMETRICAL, TYPE5	29.76	36.34	11.27	6.32	9.81	4.56	6.71	2.85	86	49	72
26	46/F	HOUSE WIFE	KARNATAKA	WESTERN	SYMMETRICAL,TYPE 2	24.44	28.93	9.67	3.9	9.26	4.58	5.09	2.35	101	31	68
27	25/F	RADIOLOGY STAFF	KARNATAKA	SOUTH	ASYMMETRICAL,TYPE 2	26.22	32.7	8.09	4.64	9.13	3.53	4.56	2.16	99	42	79
28	22/F	BSC OPTOMETRY	KARNATAKA	SOUTH	ASYMMETRICAL,TYPE 2	30.28	32.46	10.5	5.24	10.25	4.25	5.75	1.26	92	38	74
29	22/M	BSC OPTO	KARNATAKA	SOUTH	ASYMMETRICAL ,TYPE1	28.34	36.84	9.07	6.42	8.89	3.86	5.21	1.96	104	44	83
30	25/F	PHYSIOTHERAPY	HARYANA	NORTH	ASYMMETRICAL,TYPE1	26.22	32.9	10.88	6.03	9.44	3.9	6.98	3.39	97	46	68
31	18/F	STUDENT	KARNATAKA	SOUTH	SYMMETRICAL ,TYPE1	26.51	32.14	9.95	5.41	9.75	4.23	5.72	2.42	102	40	74
32	21/F	B PHARM STUDENT	KARNATAKA	SOUTH	SYMMETRICAL,TYPE1	27.22	35.11	11.16	4.41	9.9	3.39	7.77	1.56	94	42	86
33	22/F	PHARM D	KARNATAKA	SOUTH	SYMMETRICAL,TYPE1	28.5	33.7	8.44	5.55	6.58	3.32	5.12	1.52	104	34	74
34	21/F	MBBS STUDENT	DELHI	NORTH	SYMMETRICAL,TYPE4	25.03	29.73	9.14	5.6	9.59	4.19	4.95	1.59	80	40	64
35	22/M	MBBS STUDENT	MAHARASHTRA	WESTERN	SYMMETRICAL,TYPE1	30.55	38.8	9.22	7	12.84	4.35	4.87	2.47	73	39	75
36	24/M	MBBS STUDENT	ORISSA	CENTRAL	SYMMETRICAL, TYPE1	27.9	33.94	9.74	5.55	7.08	4.66	4.98	5.25	85	33	65
37	24/F	PHYSIOTHERAPY	MAHARASHTRA	WESTERN	SYMMETRICAL,TYPE1	30	35.99	11.06	6.84	9.67	6.08	4.98	2.85	104	45	76
38	20/F	STUDENT	KARNATAKA	SOUTH	SYMMETRICAL ,TYPE 2	25.33	28.99	9.73	5.41	8.63	5.72	4.01	3.11	75	43	69
39	20/F	STUDENT	KARNATAKA	SOUTH	ASYMMETRICAL,TYPE 2	27.52	30.94	10.01	4.58	7.39	3.36	6.35	2.78	99	39	66
40	19/M	NURSING STUDENT	KARNATAKA	SOUTH	ASYMMETRICAL, TYPE 2	28.84	32.99	9.04	6.55	9.89	4.23	4.81	3.17	92	45	58

S No	AGE/ SEX	OCCUPATION	STATE	REGION OF INDIA	NOSTRIL SHAPE AND SYMMETRY	Alar length (mm)	Nasal breadth (mm)	Columellar length (mm)	Columellar width (mm)	Upper 1/3(lobule)	Middle 1/3 (columella)	Lower 1/3 (columella)	Columellar show	NLA (degree)	CLA (degree)	IAA (degree)
41	22/F	MBBS INTERN	MAHARASHTRA	WESTERN	ASYMMETRICAL,TYPE 3	25.06	32.36	9.83	5.23	9.19	4.66	5.17	2.33	83	46	77
42	20/M	NURSING STUDENT	KARNATAKA	SOUTH	SYMMETRICAL , TYPE 5	30.91	37.9	10.33	4.01	9.63	4.71	5.62	1.78	82	45	83
43	22/F	MBBS INTERN	PUNJAB	NORTH	SYMMETRICAL,TYPE1	26.28	33.38	10.1	4.46	7.31	3.24	6.86	1.91	85	36	74
44	35/F	HOUSE WIFE	KARNATAKA	SOUTH	ASYMMETRICAL TYPE 2	29.1	31.96	6.72	4.57	7.54	2.76	3.96	4.29	71	32	76
45	23/F	MBBS INTERN	UTTAR PRADESH	CENTRAL	SYMMETRICAL,TYPE 1	30.05	36.7	8.14	5.28	6.93	3.5	4.64	2.23	83	37	78
46	22/M	MBBS INTERN	KARNATAKA	SOUTH	SYMMETRICAL TYPE 2	30.91	39.22	7.57	5.72	9.11	3.34	4.23	1.8	85	42	94
47	22/M	MBBS INTERN	TAMIL NADU	SOUTH	SYMMETRICAL,TYPE 2	31.23	39.22	10.97	5.42	10.45	4.74	6.23	1.53	76	43	82
48	38/M	CONSTRUCTION	KARNATAKA	SOUTH	SYMMETRICAL TYPE 1	29.76	33.04	10.53	6.29	7.89	4.63	5.9	3.28	109	39	60
49	40/M	DAILY WAGE WORKER	KARNATAKA	SOUTH	SYMMETRICAL ,TYPE 2	31.22	39.14	10.59	4.84	5.52	3.88	3.71	3.27	98	42	68
50	21/M	MBBS STUDENT	MAHARASHTRA	WESTERN	SYMMETRICAL ,TYPE1	28.8	32.75	10.68	5	7.54	4.65	6.03	3.78	86	46	86
51	26/M	MBBS INTERN	PUNJAB	NORTH	SYMMETRICAL,TYPE1	33.4	37.06	9.95	6.24	11.23	3.09	6.86	3.56	87	48	64
52	23/F	MBBS INTERN	DELHI	NORTH	SYMMETRICAL, TYPE 2	32.19	34.23	8.22	5.38	10.98	4.55	6.67	2.68	81	51	81
53	24/M	MBBS INTERN	MADYA PRADESH	CENTRAL	SYMMETRICAL ,TYPE 2	33.82	38.89	12.18	6.61	11.23	5.51	6.67	3.83	93	41	64
54	24/F	MBBS INTERN	GOA	WESTERN	SYMMETRICAL, TYPE 2	32.29	33.76	8.33	7.5	11.54	4.2	4.11	1.97	87	40	63
55	18/F	STUDENT	KARNATAKA	SOUTH	SYMMETRICAL TYPE1	31.97	24.83	6.36	5.42	6.85	2.37	3.99	2.42	90	38	82
56	35/M	DAILY WAGE WORKER	KARNATAKA	SOUTH	SYMMETRICAL ,TYPE5	30.2	39.57	7.83	5.7	7.91	3.18	4.65	3.42	84	53	92
57	21/M	MBBS STUDENT	DELHI	NORTH	SYMMETRICAL,TYPE4	30.55	34.53	11.16	6.31	9.58	4.56	6.6	2.5	98 dgree	38	57
58	21/M	MBBS STUDENT	UTTAR PRADESH	CENTRAL	SYMMETRICAL,TYPE 2	28.41	32.66	11.54	5.2	9.85	4.67	6.87	1.5	95	41	80
59	19/M	MBBS STUDENT	MADYA PRADESH	CENTRAL	SYMMETRICAL,TYPE 2	32.42	35.86	10.14	6.52	9.48	5.62	4.52	3.54	94	44	66
60	20/M	MBBS STUDENT	UTTAR PRADESH	CENTRAL	SYMMETRICAL,TYPE5	29.87	36.17	9.12	6.92	8.32	2.92	6.2	2	77	42	79
61	22/F	STUDENT OPTO	KARNATAKA	SOUTH	SYMMETRICAL,TYPE 3	32.54	35.36	7.89	4.25	10.54	3.54	4.35	1.58	88	46	93
62	23/F	STUDENT OPTO	GOA	WESTERN	SYMMETRICAL,TYPE 2	33.24	34.25	9.85	5.24	9.25	4.21	5.64	2.54	90	38	79
63	23/M	STUDENT OPTO	KARNATAKA	SOUTH	SYMMETRICAL ,TYPE 2	32.5	35.21	10.35	5.23	9.56	3.24	4.25	2.54	84	35	75
64	24/M	MBBS STUDENT	BIHAR	CENTRAL	SYMMETRICAL ,TYPE 3	31.54	34.24	11.65	4.65	10.56	3.21	5.26	1.54	86	42	72
65	24/M	MBBS STUDENT	KARNATAKA	SOUTH	ASYMMETRICAL,TYPE 3	32.54	35.12	10.48	5.23	9.84	4.25	4.21	2.4	96	34	84
66	25/F	STUDENT	KARNATAKA	SOUTH	SYMMETRICAL ,TYPE1	31.65	33.21	9.85	4.29	10.32	3.24	5.21	2.56	98	32	64
67	36/M	BUSINESS	DELHI	NORTH	SYMMETRICAL,TYPE 3	33.56	36.54	10.21	5.23	9.54	4.23	5.24	2.46	100	35	84
68	32/M	ENGINEER	KERALA	SOUTH	SYMMETRICAL,TYPE 2	34.23	36.21	9.54	5.23	8.41	4.23	5.41	3.58	98	45	86
69	23/M	MBBS STUDENT	PUNJAB	NORTH	SYMMETRICAL,TYPE 2	32.54	34.21	10.35	5.41	10.54	5.23	6.51	2.13	97	42	73
70	30/F	PG STUDENT	KERALA	SOUTH	SYMMETRICAL,TYPE 2	33.54	35.24	11.36	5.32	10.46	4.23	5.31	2.54	98	42	85
71	31/M	PG STUDENT	KERALA	SOUTH	SYMMETRICAL,TYPE 2	35.46	36.45	11.86	6.23	9.45	5.23	6.54	3.89	99	41	83
72	27/M	PG STUDENT	MADYA PRADESH	CENTRAL	SYMMETRICAL,TYPE 3	32.56	36.45	10.23	6.89	10.58	4.23	5.43	2.45	97	38	84
73	22/F	MBBS STUDENT	UTTAR PRADESH	CENTRAL	SYMMETRICAL ,TYPE 2	31.28	33.24	10.56	6.54	10.36	3.24	4.58	1.36	98	42	75
74	45/M	DAILY WAGE WORKER	KARNATAKA	SOUTH	SYMMETRICAL ,TYPE 2	32.54	34.13	10.85	5.23	10.86	3.24	5.46	2.54	93	42	72
75	32/F	HOUSE WIFE	KARNATAKA	SOUTH	SYMMETRICAL ,TYPE1	31.56	33.24	11.46	5.23	9.46	3.15	5.26	2.47	98	46	76
76	45/F	HOUSE WIFE	KARNATAKA	SOUTH	SYMMETRICAL ,TYPE 2	29.46	32.45	9.56	4.25	9.56	3.24	5.46	3.54	94	34	83
77	30/F	PG STUDENT	KERALA	SOUTH	SYMMETRICAL,TYPE1	32.54	34.16	10.53	4.23	11.89	3.24	5.84	2.54	96	32	73
78	32/F	PG STUDENT	KERALA	SOUTH	SYMMETRICAL ,TYPE 5	32.41	35.46	9.56	5.23	9.56	3.47	5.36	3.48	91	32	75
79	29/M	PG STUDENT	MAHARASHTRA	WESTERN	SYMMETRICAL,TYPE 3	31.86	34.86	10.89	5.26	10.58	4.23	5.46	2.13	96	42	82
80	26/M	MBBS INTERN	UTTAR PRADESH	CENTRAL	SYMMETRICAL,TYPE1	30.7	39.62	9.91	8.1	11.83	2.99	6.92	1.22	66	40	98

S No	AGE/ SEX	OCCUPATION	STATE	REGION OF INDIA	NOSTRIL SHAPE AND SYMMETRY	Alar length (mm)	Nasal breadth (mm)	Columellar length (mm)	Columellar width (mm)	Upper 1/3(lobule)	Middle 1/3 (columella)	Lower 1/3 (columella)	Columellar show	NLA (degree)	CLA (degree)	IAA (degree)
81	22/F	MBBS INTERN	MAHARASHTRA	WESTERN	ASYMMETRICAL ,TYPE 2	32.16	39.1	10.68	6.18	11.82	4.56	6.12	1.16	96	43	71
82	23/M	MBBS INTERN	MAHARASHTRA	WESTERN	ASYMMETRICAL,TYPE 2	33.26	38.28	8.99	7.09	8.55	2.74	6.25	1.28	88	34	69
83	27/M	MBBS INTERN	KERALA	SOUTH	SYMMETRICAL,TYPE4	32.58	40.25	9.7	5.44	10.27	4.05	5.65	1.29	88	42	78
84	26/M	MBBS INTERN	KERALA	SOUTH	SYMMETRICAL , TYPE 2	30.09	37.48	11.44	4.69	10.78	3.36	8.08	1.49	67	43	58
85	22/F	MBBS INTERN	MAHARASHTRA	WESTERN	SYMMETRICAL, TYPE 2	26.3	35.49	9.62	6.79	8.24	4.26	5.36	3.33	92	45	88
86	22/M	MBBS STUDENT	ANDHRA PRADESH	SOUTH	SYMMETRICAL , TYPE 5	27.19	39.74	11.04	6.31	8.15	4.59	6.45	2.17	77	43	92
87	21/F	MBBS STUDENT	UTTAR PRADESH	CENTRAL	SYMMETRICAL TYPE1	29.09	29.93	11.23	4.8	8.54	4.72	6.51	0.86	89	41	85
88	28/F	HOUSE KEEPING	KARNATAKA	SOUTH	SYMMETRICAL,TYPE 2	26.42	32.44	8.55	4.58	7.31	3.69	4.86	2.85	91	45	83
89	22/M	MBBS STUDENT	ANDHRA PRADESH	SOUTH	ASYMMMEYRICAL,TYPE 2	28.29	34.58	10.79	6.14	6.87	3.18	7.61	2.2	86	36	74
90	28/M	PG STUDENT	KARNATAKA	SOUTH	SYMMETRICAL,TYPE 1	27.99	37.94	9.2	5.42	7.85	4.35	4.85	2.9	80	42	85
91	24/F	PG STUDENT	ANDHRA PRADESH	SOUTH	SYMMETRICAL,TYPE1	30.25	33.94	9.49	5.6	10.18	3.83	5.63	1.2	77	49	84
92	36/F	PG STUDENT	KARNATAKA	SOUTH	SYMMETRICAL, TYPE 2	26.14	33.17	10.57	4.8	9.15	4.7	5.87	2.14	89	39	73
93	28/F	PG STUDENT	TAMIL NADU	SOUTH	SYMMETRICAL, TYPE 2	28.33	30.7	9.13	5.04	10.05	3.79	5.34	2.8	81	38	76
94	25/F	PG STUDENT	ANDHRA PRADESH	SOUTH	SYMMETRICAL , TYPE 3	26.97	35.13	8.1	5.13	10.93	3.92	4.18	1.91	92	44	65
95	25/F	PG STUDENT	HARYANA	NORTH	SYMMETRICAL , TYPE4	25.26	28.67	8.11	6.09	8.38	3.02	5.09	2.02	99	40	63
96	28/M	PG STUDENT	UTTAR PRADESH	CENTRAL	SYMMETRICAL,TYPE 2	29.52	35	9	5.2	9.5	3.2	5.8	2.25	91	41	59
97	29/M	PG STUDENT	KARNATAKA	SOUTH	SYMMETRICAL, TYPE 2	30.57	37	10.64	5.9	13.35	3.99	6.65	4.01	93	39	70
98	28/M	PG STUDENT	ANDHRA PRADESH	SOUTH	SYMMETRICAL,TYPE 3	26.66	32.25	8.74	5.06	10.39	2.83	5.91	2.66	96	33	78
99	28/M	PG STUDENT	GOA	WESTERN	SYMMETRICAL,TYPE 2	31.54	36.5	12.08	4.67	11.49	3.84	9.24	3.66	91	36	55
100	28/M	PG STUDENT	BIHAR	CENTRAL	SYMMETRICAL,TYPE 2	32.2	38.5	8.29	5.89	10.74	3.31	4.98	0.98	93	49	79
101	23/M	MBBS INTERN	ANDHRA PRADESH	SOUTH	SYMMETRICAL,TYPE 2	31.08	36.2	9.68	6.5	1.38	4.58	5.1	2.2	81	49	60
102	25/M	PG STUDENT	RAJASTHAN	WESTERN	ASYMMETRICAL,TYPE 2	32.35	37.89	10.06	7.93	8.36	4.83	5.23	3.77	90	49	76
103	26/F	PG STUDENT	UTTAR PRADESH	CENTRAL	SYMMETRICAL, TYPE 2	28.37	35.3	8.98	3.23	9.46	3.51	5.47	2.23	80	49	80
104	28/M	PG STUDENT	KERALA	SOUTH	SYMMETRICAL,TYPE 2	30.62	32.55	8.81	5.85	10.52	4.05	4.76	2.2	94	50	59
105	27/M	PG STUDENT	KARNATAKA	SOUTH	ASYMMETRICAL,TYPE1	30.95	36.15	10.71	6.75	11.7	4.76	5.94	0.68	82	38	74
106	24/M	MBBS INTERN	DELHI	NORTH	SYMMETRICAL,TYPE 3	28.28	39.76	10.42	6.59	11.51	3.83	6.59	3.29	86	25	82
107	26/F	PG STUDENT	ANDHRA PRADESH	SOUTH	SYMMETRICAL,TYPE 2	28.55	37.67	9.83	5.9	10.54	4.81	5.02	2.7	85	35	91
108	35/M	SERVICE STAFF	KARNATAKA	SOUTH	SYMMETRICAL,TYPE 2	29.27	37.71	8.72	6.08	9.11	3	5.72	4.77	86	45	88
109	27/M	PG STUDENT	ANDRA PRADESH	SOUTH	SYMMETRICAL,TYPE 2	29.74	38.05	9.76	6.94	8.79	4.74	5.02	2.68	82	51	93
110	23/F	SHOP	KARNATAKA	SOUTH	SYMMETRICAL,TYPE 2	25.05	30.61	8.94	4.72	8.75	4.58	4.36	1.9	72	44	71
111	35/M	ACCOUNTS	KARNATAKA	SOUTH	SYMMETRICAL,TYPE 1	32.35	36.25	8.45	5.74	9.84	3.39	5.06	2	94	37	73
112	20/M	SHOP	KARNATAKA	SOUTH	SYMMETRICAL,TYPE 2	32.12	36.13	11.24	6.51	9.52	5.31	5.93	2.64	93	50	84
113	46/F	BUSINESS	KARNATAKA	SOUTH	SYMMETRICAL,TYPE 2	27.87	35.06	9.28	7.98	8.88	3	5.28	2.52	64	41	94
114	19/F	BSC OPTO	KARNATAKA	SOUTH	SYMMETRICAL, TYPE 2	29.74	35.86	8.1	5.36	9.98	3.76	4.34	3.56	93	40	88
115	19/F	BSC OPTO	KARNATAKA	SOUTH	SYMMETRICAL,TYPE 3	27.86	34.84	9.59	6.83	10.76	4.23	5.36	3.26	98	44	76
116	39/F	STAFF NURSE	KARNATAKA	SOUTH	SYMMETRICAL, TYPE 2	27.63	34.21	9.4	6.8	9.63	3.05	6.35	3.64	81	52	71
117	26/F	STAFF NURSE	KARNATAKA	SOUTH	SYMMETRICAL,TYPE 2	25.28	33.28	8.96	5.7	7.89	3.32	5.76	3.48	92	36	74
118	19/F	NURSING STUDENT	GOA	WESTERN	SYMMETRICAL ,TYPE1	27.75	35.44	8.06	4.78	9.15	2.48	5.58	2.18	84	46	72
119	19/F	NURSING STUDENT	GOA	WESTERN	SYMMETRICAL, TYPE1	25.06	31.09	8.34	4.4	8.95	3.66	4.68	1.76	92	40	82
120	23/M	MBBS INTERN	HARYANA	NORTH	SYMMETRICAL, TYPE 2	30.81	33.26	8.67	6.62	12.35	3.43	5.24	1.47	84	40	65

S No	AGE/ SEX	OCCUPATION	STATE	REGION OF INDIA	NOSTRIL SHAPE AND SYMMETRY	Alar length (mm)	Nasal breadth (mm)	Columellar length (mm)	Columellar width (mm)	Upper 1/3(lobule)	Middle 1/3 (columella)	Lower 1/3 (columella)	Columellar show	NLA (degree)	CLA (degree)	IAA (degree)
121	26/F	PG STUDENT	KARNATAKA	SOUTH	SYMMETRICAL, TYPE1	27.73	32.6	10.91	6.16	10.3	3.73	7.18	2.21	88	45	69
122	31/M	PG STUDENT	KERALA	SOUTH	SYMMETRICAL,TYPE4	34.69	37.36	9.78	6.62	10.88	3.78	6	2.16	91	40	57
123	30/F	PG STUDENT	KERALA	SOUTH	SYMMETRICAL ,TYPE 2	27.54	34.12	9.09	6.87	11.92	3.43	5.66	1.62	90	51	71
124	27/F	PG STUDENT	KARNATAKA	SOUTH	SYMMETRICAL ,TYPE 2	28.58	33.03	7.22	5.92	10.14	2.94	4.28	1.4	87	50	71
125	24/M	PG STUDENT	GUJARAT	WESTERN	SYMMETRICAL ,TYPE 2	31.71	38.54	10.01	5.31	10.28	2.75	7.26	0.78	89	39	91
126	50/F	STAFF NURSE	KARNATAKA	SOUTH	ASYMMETRICAL,TYPE 2	25.11	31.51	10.23	6.73	7.59	4.36	5.87	4.26	88	48	69
127	31/F	PG STUDENT	KARNATAKA	SOUTH	SYMMETRICAL, TYPE 1	26.53	32.05	9.26	6	10.16	4.26	5	1.86	96	42	59
128	27/M	PG STUDENT	ANDHRA PRADESH	SOUTH	SYMMETRICAL, TYPE5	24.97	35.04	6.65	5.99	8.85	2.57	4.08	1.99	82	35	98
129	23/F	MBBS INTERN	TAMIL NADU	SOUTH	SYMMETRICAL,TYPE1	29.54	33.16	10.7	5.22	8	3.2	7.5	2	89	39	72
130	28/F	PG STUDENT	KERALA	SOUTH	SYMMETRICAL, TYPE 2	26.23	34.45	8.46	6.78	7.04	3.2	5.26	2.42	74	37	92
131	29/F	PG STUDENT	KERALA	SOUTH	SYMMETRICAL, TYPE 2	26.28	30.44	6.18	5.57	9.3	3.19	4.99	1.44	93	45	64
132	27/M	PG STUDENT	ANDHRA PRADESH	SOUTH	ASYMMMETRICAL,TYPE 2	29.25	36.24	9.09	6.35	8.54	3.19	5.9	1.62	88	48	82
133	24/F	DIETICIAN	KARNATAKA	SOUTH	SYMMETRICAL , TYPE 2	27.37	31.23	9.39	5.64	9.3	3.73	5.63	1.98	88	45	51
134	28/F	PG STUDENT ENT	KERALA	SOUTH	SYMMETRICAL, TYPE 2	25.38	28.91	7.15	4.35	8.85	2.8	4.35	1.9	93	40	77
135	25/F	DIETICIAN	KARNATAKA	SOUTH	SYMMETRICAL, TYPE 2	25.66	30.35	6.88	4.55	8.5	2.64	4.24	2.28	79	32	78
136	26/F	DIETICIAN	KARNATAKA	SOUTH	ASYMMETRICAL, TYPE 3	25.93	32.73	10.05	5.85	10.07	4.57	5.48	1.31	84	40	73
137	24/F	MBBS INTERN	RAJASTHAN	WESTERN	ASYMMETRICAL,TYPE 2	32.45	34.5	9.5	7.6	10	4.5	5	2	84	33	73
138	30/F	PG STUDENT OPHTHAL	MAHARASHTRA	WESTERN	SYMMETRICAL, TYPE1	29.08	33.33	8.52	6.65	8.85	3.17	5.35	1.1	80	50	82
139	22/M	MBBS STUDENT	KERALA	SOUTH	SYMMETRICAL,TYPE 2	31.76	36.55	10.9	7.36	10.25	4.65	6.25	2.5	79	54	86
140	28/M	PG STUDENT ENT	TAMIL NADU	SOUTH	SYMMETRICAL ,TYPE 2	29.65	34.36	8.4	5.98	9.89	4.4	4.2	2.98	87	48	81
141	26/M	PG STUDENT ENT	GOA	WESTERN	SYMMETRICAL, TYPE 2	31.28	34.56	9.5	6.5	9	4.5	5	2.5	70	39	71
142	22/M	MBBS STUDENT	DELHI	NORTH	SYMMETRICAL,TYPE 2	39	35.9	11.82	7.6	12	5.56	6.26	1.5	74	49	73
143	24/F	MBBS INTERN	KERALA	SOUTH	SYMMETRICAL, TYPE 3	26.5	31.23	8.7	5.6	7.5	3.2	5.5	2	83	42	89
144	20/M	MBBS STUDENT	MAHARASHTRA	WESTERN	SYMMETRICAL ,TYPE 3	28.4	38.6	9.5	7.56	8	3.5	6	3.52	94	39	87
145	21/M	MBBS STUDENT	BIHAR	CENTRAL	ASYMMETRICAL,TYPE4	31.72	35.52	11.5	7.5	8	4	6.5	1.5	98	37	78
146	26/F	MBBS INTERN	WEST BENGAL	CENTRAL	SYMMETRICAL ,TYPE 4	33	36.26	10	6.5	8.3	3.5	4.5	2.5	83	33	86
147	22/M	MBBS STUDENT	DELHI	NORTH	SYMMETRICAL ,TYPE4	33.24	33.52	9.9	7.36	10.76	4.63	5.3	3.2	107	43	65
148	22/F	MBBS STUDENT	DELHI	NORTH	ASYMMETRICAl,TYPE 2	28.6	33.56	9.45	6	8.3	3.45	6	2.3	92	34	72
149	22/M	MBBS STUDENT	GUJARAT	WESTERN	SYMMETRICAL,TYPE4	33.52	40.21	9.1	6.5	10.4	4.6	4.5	2.8	87	38	70
150	25/M	PG ENT	MAHARASHTRA	WESTERN	SYMMETRICAL,TYPE 2	30.97	38.32	6.62	6.13	11.83	2.5	4.12	2.65	90	41	81
151	23/F	MBBS INTERN	RAJASTHAN	WESTERN	SYMMETRICAL, TYPE1	28.56	32.36	9.88	6.8	9.36	4.25	5.63	2.28	87	38	83
152	22/F	MBBS INTERN	ANDHRA PRADESH	SOUTH	SYMMETRICAL,TYPE1	29.73	34.82	8.59	6.72	10.16	3.24	5.35	2.25	96	45	71
153	21/M	BSC OPTO	KARNATAKA	SOUTH	ASYMMETRICAL,TYPE 2	29.43	36.22	11.83	6.32	10.11	6.18	5.65	3.18	100	38	80
154	26/F	BSC OPTO	KARNATAKA	SOUTH	SYMMETRICAL,TYPE 2	27.72	33.26	7.58	5.95	10.01	3.33	4.25	2.18	93	41	83
155	24/F	PG STUDENT DERMAT	CHATTISGARH	NORTH	SYMMETRICAL,TYPE1	27.58	31.96	9.72	6.27	12.14	3.76	5.96	2.05	95	36	64
156	50/F	STAFF NURSE	KARNATAKA	SOUTH	SYMMETRICAL,TYPE 2	27.68	30.01	9.07	5.81	9.86	4.37	4.7	2.85	89	50	66
157	24/F	PG STUDENT	ANDHRA PRADESH	SOUTH	SYMMETRICAL,TYPE 3	28.22	33.91	7.06	6.85	10.49	2.84	4.22	2.2	91	38	77
158	27/M	PG STUDENT ENT	UTTAR PRADESH	CENTRAL	SYMMETRICAL,TYPE 2	28.5	37.02	8.89	6.67	8.85	3.74	5.15	2.68	88	41	84
159	24/F	PG DERMAT	CHATTISGARH	CENTRAL	SYMMETRICAL,TYPE 2	28.92	32.75	7.75	3.44	8.06	2.85	4.9	3.26	96	46	84
160	25/F	MBBS INTERN	RAJASTHAN	WESTERN	ASYMMETRICAL,TYPE1	31.56	35.63	8.5	6.25	10.5	4.5	4	1.2	90	39	80

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161	23/F	MBBS INTERN	KARNATAKA	SOUTH	SYMMETRICAL, TYPE 2	32.17	38.98	8.79	6.66	10.29	3.53	5.26	2.62	85	42	88
162	23/F	MBBS INTERN	WEST BENGAL	CENTRAL	SYMMETRICAL, TYPE1	28.79	35.83	10.06	7.01	10.53	3.52	6.44	2.22	94	46	87
163	21/F	STAFF NURSE	KARNATAKA	SOUTH	SYMMETRICAL TYPE 2	30.14	32.42	8.46	6.62	8.97	3.75	4.71	2.45	81	32	72
164	24/M	MBBS INTERN	MAHARASHTRA	WESTERN	SYMMETRICAL ,TYPE4	31.26	35	7.05	6.67	10.38	3.56	3.49	2.92	88	31	78
165	23/M	MBBS INTERN	MAHARASHTRA	WESTERN	ASYMMETRICAL, TYPE 2	27.43	34.32	8.91	7.67	10.63	4.35	4.56	3.22	85	47	68
166	25/F	MBBS INTERN	HARYANA	NORTH	ASYMMETRICAL, TYPE 2	29.55	35.53	7.95	6.16	11.12	4.02	3.93	3.25	94	41	62
167	24/F	STAFF NURSE	KARNATAKA	SOUTH	SYMMETRICAL, TYPE 2	25.63	33.67	7.34	6.85	9.18	2.35	4.99	2.54	106	42	93
168	23/M	MBBS INTERN	KARNATAKA	SOUTH	ASYMMETRICAL,TYPE 2	30.98	33.69	7.33	6.76	8.89	3.69	3.64	2.44	96	35	72
169	23/M	MBBS INTERN	RAJASTHAN	WESTERN	SYMMETRICAL,TYPE1	32.64	37.59	9.56	7.14	12.46	2.7	6.86	1.87	94	41 dgree	74
170	25/M	MBBS INTERN	UTTAR PRADESH	CENTRAL	SYMMETRICAL ,TYPE 2	30.82	35.96	8.21	5.81	10.31	3.44	4.77	4.98	92	39	72
171	22/F	MBBS INTERN	MAHARASHTRA	WESTERN	SYMMETRICAL, TYPE 2	31.24	35.56	8.46	5.34	9.54	4.64	3.82	2.89	92	33	87
172	22/F	MBBS INTERN	RAJASTHAN	WESTERN	SYMMETRICAL,TYPE 2	32.15	36.54	10.7	7.54	11.28	4.92	5.78	1.25	99	31	49
173	24/F	MBBS INTERN	HARYANA	NORTH	SYMMETRICAL ,OVAL	31.15	33.98	9.54	5.24	9.56	4.36	5.18	1.98	78	34	58
174	25/M	MBBS INTERN	BIHAR	CENTRAL	SYMMETRICAL ,TYPE 2	30.16	33.56	10.9	6.24	10.54	4.54	6.36	2.58	86	41	86
175	24/M	MBBS INTERN	JHARKHAND	CENTRAL	SYMMETRICAL ,TYPE1	31.02	33.96	8.92	5.46	8.59	3.56	5.36	2.14	100	36	75
176	39/M	NURSING STAFF	KARNATAKA	SOUTH	SYMMETRICAL , TYPE 3	31.24	35.28	8.74	5.48	9.46	3.48	5.26	3.74	61	30	95
177	27/F	PG STUDENT	KARNATAKA	SOUTH	SYMMETRICAL, TYPE5	31.54	33.45	9.11	5.24	9.46	3.56	5.55	3.56	79	31	81
178	28/F	PG STUDENT	TAMIL NADU	SOUTH	ASYMMETRICAL,TYPE1	29.25	32.54	9.45	6.47	8.95	4.02	5.43	2.48	94	47	80
179	26/F	PG STUDENT	TAMIL NADU	SOUTH	SYMMETRICAL,TYPE 2	28.58	32.23	8.22	5.24	8.65	3.65	4.58	2.28	100	39	77
180	27/M	PG STUDENT	MAHARASHTRA	WESTERN	SYMMETRICAL,TYPE 2	33.21	34.58	10.09	6.24	9.54	4.25	5.84	3.24	87	43	85
181	54/F	HOUSE KEEPING	KARNATAKA	SOUTH	SYMMETRICAL,TYPE 3	32.4	34.2	10.24	5.24	8.46	4.28	5.46	4.56	86	37	80
182	30/F	HOUSEKEEPING	KARNATAKA	SOUTH	SYMMETRICAL ,TYPE 5	32.58	33.95	11.08	5.27	9.54	4.56	6.52	2.54	88	43	94
183	38/F	NURSING STAFF	KARNATAKA	SOUTH	SYMMETRICAL,TYPE 2	32.46	33.24	8.54	5.24	8.52	3.48	5.26	2.41	81	36	77
184	18/F	BSC STUDENT	KARNATAKA	SOUTH	SYMMETRICAL ,TYPE 5	32.58	33.82	9.1	5.23	7.54	3.58	5.42	3.54	82	39	98
185	21/F	MBBS INTERN	UTTAR PRADESH	CENTRAL	SYMMETRICAL,TYPE5	31.98	32.46	8.35	6.54	10.54	3.21	5.14	2.15	95	36	65
186	24/M	STUDENT	KARNATAKA	SOUTH	SYMMETRICAL,TYPE1	32.45	34.58	8.66	7.54	9.86	3.24	5.42	2.64	86	33	57
187	18/M	STUDENT	KARNATAKA	SOUTH	SYMMETRICAL,TYPE1	32.46	34.86	9.01	6.24	8.56	3.54	5.47	4.51	95	32	65
188	21/M	STUDENT	KARNATAKA	SOUTH	SYMMETRICAL,TYPE 2	33.45	35.42	8.41	6.45	9.34	3.56	4.85	0.54	83	51	71
189	21/M	STUDENT	KARNATAKA	SOUTH	ASYMMETRICAL,TYPE5	33.41	35.42	8.47	7.52	9.84	3.52	4.95	1.98	82	37	86
190	2O/M	STUDENT	KARNNATAKA	SOUTH	SYMMETRICAL TYPE 3	32.54	33.58	8.12	6.54	9.24	3.24	4.86	1.95	102	43	81
191	21/F	STUDENT OPTO	GOA	WESTERN	SYMMETRICAL,TYPE 3	31.84	32.94	7.74	5.23	8.24	3.26	4.48	1.58	92	35	74
192	21/F	STUDENT OPTO	MAHARASHTRA	WESTERN	SYMMETRICAL ,TYPE 3	32.45	33.24	8.2	5.21	9.35	3.52	4.68	1.25	90	43	70
193	25/M	MBBS STUDENT	KARNATAKA	SOUTH	SYMMETRICAL,TYPE5	33.58	35.62	8.1	4.25	10.02	3.56	4.54	4.25	99	37	78
194	25/M	MBBS STUDENT	BIHAR	CENTRAL	SYMMETRICAL,TYPE 2	33.45	35.24	8.76	5.12	9.52	3.12	5.64	1.56	89	43	87
195	18/M	STUDENT	KARNATAKA	SOUTH	SYMMETRICAL ,TYPE 2	32.46	33.58	10.07	5.23	9.54	4.23	5.84	2.25	88	32	64
196	18/M	STUDENT	KARNATAKA	SOUTH	SYMMETRICAL,TYPE5	33.56	35.28	8.1	4.23	8.56	3.24	4.86	1.2	81	46	107
197	38/F	HOUSE WIFE	KARNATAKA	SOUTH	ASYMMETRICAL,TYPE5	31.56	33.21	7.54	3.26	10.54	2.98	4.56	2.52	88	49	92
198	39/M	PEON	KARNATAKA	SOUTH	ASYMMETRICAL,TYPE 3	32.85	35.26	9.04	4.25	10.56	3.26	5.78	0.25	88	41	76
199	35/F	HOUSE WIFE	KARNATAKA	SOUTH	SYMMETRICAL ,TYPE 2	31.56	33.48	8.17	4.56	8.94	3.21	4.96	1.86	88	41	67
200	39/M	BUSINESS	KARNATAKA	SOUTH	SYMMETRICAL,TYPE5	33.25	35.48	10.01	6.25	11.56	4.25	5.86	2.48	72	50	76
Total																**200**