INTERNATIONAL JOURNAL OF PLANT, ANIMAL AND ENVIRONMENTAL SCIENCES

IJPAES

Volume-3, Issue-4, Oct-Dec-2013

ISSN 2231-4490

www.ijpaes.com

Received: 11th July-2013 *Revised: 20th July-2013* *Accepted: 23rd Aug-2013*

Research article

STUDY OF UPPER LIP PROPORTIONS IN NORTH INDIAN ADULTS

[1]Archana Goel, [2]Vinay Goel and [3]VVG Patnaik

[1]Assistant Professor, MM Medical College and hospital, Solan
[2]Medical officer, HCMS, Ambla
[3]Professor, MMIMSR, Mullana (Ambala)
E- mail – archanagoel23@yahoo.in Phone - +919729992211

ABSTRACT: The study comprises of upper lip proportion of 600 North Indian adults (300 males and 300 females). Prior informed written consent for this study was obtained from the subjects. The exclusion and inclusion criteria for the subjects were predefined. The purpose of the study was to create base data of the vertical measurements of the upper lips and proportion of upper lip parameters. The upper lip parameters showed sex dimorphism. This study depicted the various measurements of the upper lips in males & females and compared the same with the earlier studies. In case of upper lip, less than half of total upper lip height was occupied by upper vermilion and rest was covered by cutaneous portion of upper lip. This study highlights the applied significance of observations of present study to forensic namely personal identification, racial and sex dimorphic criteria of identification. Knowledge of proportion between the upper and lower lips helps in surgical correction of the region.

Key words: North Indian, Upper lip, Sex dimorphism, personal identification

INTRODUCTION

Upper lip has a shallow vertical groove, the philtrum which ends below in a slight tubercle limited by lateral ridges.[1]The lower lip shows a small depression in the midline that corresponds to the tubercle. The junction between the external, hair-bearing skin and the red hairless surface of upper lip has almost invariably taken the form of a double curved Cupid's bow.[2] This study seeks to expand scientific research on upper lip proportions for establishing baseline data for forensic, plastic surgeons & orthodontists treating the north Indians anywhere in the world. The objective of this study is to expand the baseline quantitative data of the north Indians including the comparison with available data from literature. It is impossible to specify any distinct characteristic exclusively to a particular race, but careful examination of physical, skeletal and dental structures may collectively support the racial identity of an individual. The recognition of inherited racial characteristics is essential in forensic investigation for determining personal identification. The four major racial groups of the world are Caucasoids, Mongoloids, Negroids and Australoids. The Indians belong to Indo-Dravidian or Indo European which is a sub-group of Caucasoid. The study of the "Anatomy of a beautiful face and smile", highlighted the importance of different proportions of the face and stated that rational proportion of the physical features is the primary factor in the conscious or subconscious perception of the beauty.[3]

MATERIAL AND METHOD

The present study was conducted on 600 north Indian adults chosen by simple random method and included 300 males and 300 females (aged between 18 to 40 years), having full dentition. Those with anomalies, malformation, deformities, inflammation, trauma and surgical scars (operations for cleft lip) of or around lips were excluded. Subjects above 40 years were excluded because most of the measurements have shown decline after fifth or sixth decade. [1] A written consent of all the subjects was obtained after explaining the contents of the study to them. For this study all parameters were taken with a digital sliding Vernier calliper. For taking measurement, following somatometric landmarks were selected.

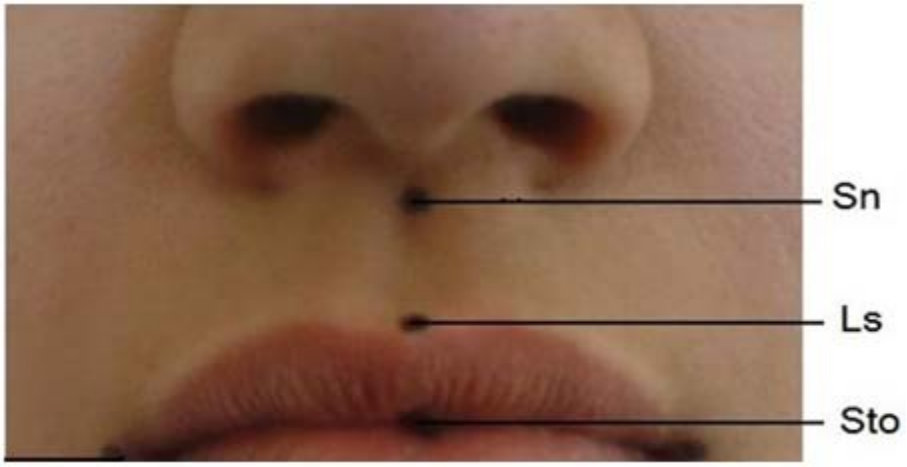

Figure 1 – Somatometeric Landmarks

Subnasale (Sn) - it is the point where the lower margin of the nasal septum meets the integument of upper lip , Labiale Superior (Ls) - it is the point on the upper margin of upper lip in the mid saggital plane, Stomion (Sto) - it is the point where the slit of mouth with close lips cuts the mid saggital plane (Figure 1). After marking these landmarks, following three parameters pertaining to upper lip were measured- Medial vertical height of cutaneous upper lip- i.e. distance between subnasale and labiale superior (Sn-Ls), Height of upper vermilion i.e. distance between labiale superior and stomion (Ls-Sto), Height of upper lip i.e. distance between subnasale and stomion (Sn-Sto).

RESULTS

The present study establishes the basal values for various parameters of upper lips amongst the local population of the northern region of India (sub Himalayan plains). The results obtained from the present study are given in Table-1. It depicts the various measurements of the two lips in both the sexes. It is seen that all the parameters were significantly more in males as compared to their female counterparts in the present study (p-value < 0.001 in all). These results show that sexual dimorphism do exists and further showed that the difference between these sexes in the morphological measurements was statistically significant and can help in differentiating between the two genders. The measurements were statistically analyzed using SPSS version 15 (arithmetic mean and Standard deviation were calculated and tabulated) (Table 1).

Table 1 - Comparison of Mean Medial Vertical Height (mm) of Upper Lip Parameters of Males and Females of Present Study

Parameter	population	sex	No. of subjects	Mean ± S.D.(mm)	p -value
Cutaneous upper lip height	North Indian	M	300	12.53± 2.0	0.001***
		F	300	11.18± 1.8	
Vermilion upper lip height	North Indian	M	300	8.85 ± 1.5	0.001***
		F	300	8.06 ± 1.1	
Total Upper lip height	North Indian	M	300	20.51 ± 2.2	0.001***
		F	300	18.72 ± 2.0	

0.001***- highly significant

DISCUSSION

The results were compared with the other available data for North white Americans, Malays and Malaysian Indians (Table 2). We have compared males of present study with males of previous studies and females of present study with females of previous studies.

Table 2 – Comparison of Mean Medial Vertical Height (mm) OF Upper lip Parameters of Males and Females of Present Study with Previous Studies

parameter	population	sex	No. of subjects	Mean ± S.D.	p value
Cutaneous upper lip height	North Indian	M	300	12.53± 2.0	
		F	300	11.18± 1.8	
	American	M	50	16.70 ± 2.2	0.001***
		F	39	13.30 ± 2.1	0.001***
	Malay	M	50	13.1± 1.7	Insignificant
		F	50	12.2± 1.8	0.001***
	Malaysian Indian	M	50	12.9± 2.5	Insignificant
		F	50	11.1± 1.6	Insignificant
Vermilion upper lip height	North Indian	M	300	8.85 ± 1.5	
		F	300	8.06 ± 1.1	
	American	M	50	7.4 ± 1.7	0.001***
		F	39	7.7 ± 1.1	Insignificant
	Malay	M	50	9.8 ± 1.1	0.001***
		F	50	9.1 ± 1.0	0.001***
	Malaysian Indian	M	50	9.2 ± 1.3	Insignificant
		F	50	8.6 ± 0.9	0.001***
Total Upper lip height	North Indian	M	300	20.51 ± 2.2	
		F	300	18.72 ± 2.0	
	American	M	50	22.7 ± 2.3	0.001***
		F	39	19.6 ± 2.1	0.001***
	Malay	M	50	22.7 ± 2.0	0.001***
		F	50	18.2 ± 2.9	0.001***
	Malaysian Indian	M	50	21.6 ± 2.0	0.001***
		F	50	19.4 ± 1.7	0.001***

0.001***- Hi**ghly significant**

The mean values for cutaneous upper lip, vermilion upper lip and total upper lip were more in males in the present study and difference was statistically significant ($p<0.001$) (Table 2). This was in consonance with previous studies done on North White Americans, Malays & Malaysian Indians by other workers (Table 2). The mean values observed in Malaysian Indians were similar to those as observed in the present study in both the sexes (Table 2). This may be due to the fact that the Malaysian Indians were genetically more closer to Indians and having closer or same ancesteral origin though residing in Malaysia.[4] Mean values for all upper lip parameters for Malays are significantly higher than those in the present study in both the sexes (Table 2). This could be due to racial differences. On the other hand the difference between Malays and Malaysian Indians were also statistically significant ($p<0.001$).[4] Environmental factors do not contribute much to variation in sizes of upper lip parameters among these populations. As in case of North white Americans the mean values were higher than the males and female subjects of present study on North India but the difference was statistically significant ($p<0.001$) (Table 2). Farkas et al[5] found that Indians also have similar orofacial parameters as Caucasions and correlated it to the racial similarity between Indians and caucasoids. Difference with present study may be due to less no. of cases observed in their study on North Americans which is not a representative data. The relationship between two measurements was indicated as a ratio (index) in which small measurements were expressed as a percentage of larger. In upper lip proportions - Mean lip index 1 was more in males as compared to females and the difference was statistically significant (p 0.01) (table 3). Mean lip index 2 was almost same in both the sexes and the difference was statistically in significant table 4.

Table 3: Comparison of Lip index-1 of males and females of present study with previous studies

Related measurements	Lip Index	Name of Authors	Sex	No. of subjects	MEAN±S.D. (in %)	p value
Medial height of cutaneous upper lip – Upper lip height	Lip Index-1	Present study	M	300	61.13 ± 7.83	
			F	300	59.57 ± 6.34	
		Farkas et al	M	50	73.5 ± 6.1	<0.001***
			F	39	68.0 ± 6.9	<0.001***

<0.001*** - Highly significant

Table 4: Comparison of Lip index-2 of males and females of present study with previous studies

Related measurements	Lip Index	Name of Authors	Sex	No. of subjects	Mean±S.D. (in %)	p value
Upper lip vermilion height- Upper lip height	Lip Index-2	Present study	M	300	43.40 ± 7.40	
			F	300	43.30 ± 6.22	
		Farkas et al	M	50	32.7 ± 7.2	<0.001***
			F	39	39.9 ± 6.7	<0.001***
		Milosevic et al	M	52	35.69 ± 4.42	<0.001***
			F	58	41.60 ± 6.38	=0.05

=0.05- significant <0.001***- highly significant

So, in upper proportions (indices 1&2) - The cutaneous part occupied significantly greater portion ($p < 0.01$) i.e. more than half of the entire upper lip height and in males (61.13%) is slightly more than the females (59.57%) as shown in table 3. But in case of Farkas et al[4] study- cutaneous part occupied nearly 2/3rd area of upper lip. So, in present study cutaneous part of upper lip occupied significantly less area in relation to entire upper lip than the Farkas et al [4] study. This may be due to racial differences. In present study, the height of upper vermilion in relation to the upper lip was significantly equal in both the sexes ($p < 0.001$). This disagrees with the study of Farkas et al [4] on Americans and Milosevic et al [6] on caucasions which states that height of upper vermilion in relation to upper lip was more in females. The height of upper vermilion occupied less than half of entire upper lip height, it was almost equal in both cases [(43.40%) in males and (43.30%) in females]. Statistically it was insignificant as shown in table 4. While in Farkas et al[4] and Milosevic et al[6] studies, height of upper vermilion in relation to upper lip was significantly larger in females than in males as shown in table 4. As compared to previous studies of Farkas et al [4] and Milosevic et al [6], height of upper vermilion occupying significantly larger area in present study in both the sexes as shown in table 4. This difference may be due to lesser height of upper cutaneous lip in present study than Farkas et al [4] study. Facial patterns and facial types differ significantly among various ethnic groups and races. [7]. It becomes obvious from the available literature/data that soft tissue relationship of North Indian adults differ from white standards or others and can not be applied on each other. Therefore, these findings suggests that it will help to correct the inappropriateness of using other populations data and as different populations needs different standards to carry out the cosmetic surgery. Further researches is very much required to laid down the standards of adopting for the cosmetic surgery, however this preliminary data will provide a useful information. The mean values for all parameters of lip morphometry reported in literature varies in different populations by different scientists. This could be due to several factors such as differences in age, number of subjects, gender of the subjects and geographical conditions, moreover the method was adopted. Therefore it is concluded that all the measurement of upper lip parameters are higher in males as compared to females and sexual dimorphism exists. Cutaneous upper lip occupied more than half of entire upper lip height while vermilion upper lip occupied less than half of upper lip height. Indian males and females differ significantly in certain parameters from that of Malays & North white Americans, but show resemblance to Malaysian Indians and it concludes that same standards cannot be used on each other populations for identification and cosmetic surgery.

REFERENCES

[1] Drake RL, Vogl W, 2005. Mitchell AWM. Gray's anatomy for students. Ist ed. Edinburg: Elsevier Churchill Livingstone; p. 1007.

[2] Standring S, Wigley C. Face and scalp. In:Standring S, Borley NR, Collins P, Crossman AR, Gatzoulis MA, Healy JC 2005. Gray's anatomy. 40th ed. Spain. Elsevier Churchill livingstone; P. 497-8.

[3] Patnaik VVG, Singla RK, Bala S. 2003. Anatomy of 'a beautiful face and smile'. J Anat Soc India;52(1):74-80.

[4] Farkas LG, Katic MJ, Hreczko TA, Deutsch C, Munro IR. 1984. Anthropometeric proportions in the upper lip-lower lip-chin area of the lower face in young white adults. Am J Orthod Jul;86 (1):52-60.

[5] Sarver DM. 2001. The importance of incisor positioning in the esthetic smile: The smile arc. Am J Orthod Dentofacial Orthop;120 (2):98-111.

[6] Milosevic SA, Mestrovic S, Prlic A, Slaj M. 2010. Proportions in the upper lip-lower lip-chin area of the lower face as determined by photogrammetric method. J Craniomaxillofac Surg;38:90-95.

[7] Mir CF, Silva E, Barriga MI, Lagravere MO, Major PW. 2004. Lay person's perception of smile aesthetics in dental and facial views. J Orthod;31:204-9.