Journal Of Medical Science And Clinical Research
IGM Publication   An Official Publication Of IGM Publication

North Indian Population Based Study of the Cephalic Index

Authors
Laxmi Devi[1], Pankaj Singh[2*], M. Haque[3], Prerna Gupta[4]
[1]Lecturer, Maharani Laxmibai Medical College Jhansi
[2]Tutor, Saraswati Medical College, Unnao
[3]Professor, Integral Institute of Medical Science & Research Lucknow
[4]Associate Professor, Integral Institute of Medical Science & Research Lucknow
*Corresponding Author
Pankaj Singh
Saraswati Medical College, Unnao, India
Mob: 7054612422, Email: *drpankaj0014@gmail.com*

Abstract
Cephalic index is very important parameter to find out racial differences and sex of an individual whose identity is unknown. It is also known as cranial index or Index of breadth. There is lesser published literature about CI of north Indian population, that why we under took this study to document the cephalometric characteristics and gender differences in CI of north Indian population. Head length, head breadth and CI were determined for 400 adult (above the age of 20 years) of north Indian population. The mean Cephalic index was 77.88±4.57 and higher incidences of mesocephalic. Cephalic index is useful parameter for forensic experts, plastic surgeons, anatomists, anthropologists, oral surgeons, clinicians and in research studies.
Keywords: *Anthropology, Cephalic index Races, Anthropologists.*

Introduction

Cephalometry is the study of measurement of the human head[1,2]. it is evolution based and branch of anthropology[3]. It is the ratio between the maximum breadth & maximum length of head is termed as a cephalic index. It was the Swedish professor of Anatomy by name Anders Rezitus who was the first person to identify the cephalic index. It has forensic as well as Anthropological importance where variation in race and sex can be determined[4]. Cephalometry is of paramount importance in studying remains of the cranial bone which can be compared with same photographs of the same. It also helps in identifying disputed identity[5].

Material & Method

This study was conducted in the department of Anatomy IIMS&R, Lucknow on 400 adults, above the age of 20 years after taking their consent voluntarily. All the measurements were taken as per Hrdlicka's method[6].

C.I. = Max. HB / Max. HL × 100[7]

HB- Breadth of Head (distance between the two euryons)

HL- Length OF Head (distance between the glabella and inion)

C.I.- Cephalic index

All Measurements were taken with the help of spreading caliper. Data was analysed statistically.

Result

The minimum head length was found to be 15 and maximum head length was 21. The mean head length was 17.71 ± 0.99. The minimum head breadth was found to be 11.1 and maximum head breadth was 16.4. The mean head breadth was 13.78 ± 0.92. The minimum cephalic index was found to be 66.07 and maximum cephalic index was 93.02. The mean cephalic index was 77.88 ± 4.57.

Table- 1 Frequency of Head shapes according to cephalic index

DOLICOCEPHALIC	MESOCEPHALIC	BRACHYCEPHALIC	TOTAL
99 (24.75%)	189 (47.25%)	112 (28 %)	400

Above table shows higher incidences of mesocephalic (47.25%) followed by brachycephalic (28%) and dolicocephalic (24.75%).

Discussion

The present study provide valuable data pertaining to the cephalic index and shapes of head in an adult Uttar Pradesh population. In this study, mean cephalic index was 77.88 ± 4.57. So the dominant type of head shape was mesocephalic. The findings of mesocephalic was similar to study done by Vishal M.S et al in Andhra region[8], Sapana Shah et al in Gujrat[9], Sunita Patro et al in Southern Odisha[10]. The result didn't coincide with the work by Lobo SW et al in Nepal[11], Zahra Vojdani et al in Iran[12], Anupma Mahajan et al in Punjab[13], Mahesh Kumar & Patnaik V.V Gopichand in Haryana[14], Sanjay Gupta et al in North India[15], Seema & P. Verma in North India[16], Swapnil Khair et al Mumbai[17]

Conclusion

Cephalic index used in designing various equipments like helmets, caps, eye gears (sunglasses, spectacle) and ear gears (head phones) by formulating standard sizes. this study has revealed maximum number of mesocephalic (47.25%)

References

1. El-Feghi I, Sid-Ahmad MA & Ahmadi M. Automatic Localization of Craniofacial Landmarks for Assisted Cephalometry. Pattern Recognition. 2004; 37: 609 -621.

2. Grau V, Alcaniz M, Juan MC, Monserrat C & Knoll C. Automatic Localization of Cephalometry Landmarks. J. of Biomed. Informatics. 2001; 34: 146 - 56.

3. Rao NG. Text Book of Forensic Medicine & Toxicology. Jaypee: 2010. 2nd ed: 93-94.

4. Shah GV, Jadhav HR. The Study of Cephalic Index in Students of Gujarat. J. Anat. Soc. India. 2004; 53(1): 25-26.

5. Raveendranath V. & Manjunath K. Y.; An Anthropometric Study of Correlation Between Cephalic Index, Cranial Volume and Cranial Measurements in Indian Cadavers; Ind. Sci. Abstracts; Sep. 2010; 15(2): 55-58.

6. Hrdlicka. Practical Anthropometry. Philadelphia: The Wistar Institute of Anatomy and Biology, 1920: 55 - 57.

7. External skull. Susan Standring, Gray's Anatomy, The Anatomical Basis of Clinical Practice. London: Elsevier. 2008; 40th ed . 419-420.

8. Salve Vishal Manoharrao, Thota Naga Raghunandan, Patibandla Anupama. The Study of Cephalic Index of Andhra Region. Asian. J. Med. Sci. 2011; 2: 53-55.

9. Shah Sapana, Rathod SP, Patel SV, Single TC, Patel SM, Pandya Parth. The Study of Cephalic Index in Living Subjects in Gujrat Region. N. J. I. R. M. 2012; 3(4): 2230-9969.

10. Patro Sunita, Sahu Ramkristna, Rath Sadananda. Study of Cephalic Index in

Southern Odisha Population. Iosr. J. Den. Med sci. 2014; 13(1): 41-44.

11. Lobo SW, Chandrashekhar TS, Kumar S. Cephalic Index of Gurung Community of Nepal- An Anthropometric Study. Kath. Uni. Med. J. 2005; 3(11): 263-265.

12. Vojdani Zahra, Bahmanpour Soghra, Momeni Shahla, Vasaghi Atieh, Azadeh Yazdizadeh, Karamifar Amirali et al Cephalometry in 14-18 Years Old Girls and Boys of Shiraz-Iran High School. Int. J. Morphol. 2009; 27(1): 101-104.13

13. Mahajan Anupama, Khurana Balijeet Singh, Seema, Batra Arvind Pal Singh.The Study of Cephalic Index in Punjabi Students. J. Pun. Aca. Foren. Med Toxico. 2009; 9: 66-70

14. Kumar Mahesh, Gopichand Patnaik VV. The Study of Cephalic Index in Haryanvi Population. Int. J. Pure App. Biosci. 2013; 1(3): 1-6.15

15. Gupta Sanjay, Goppichand Patnaik V. V., Kaushal Subhash, Chabra Sudha. Cranial Anthropometry in 600 North Indian Adults. Int. J. Anat. Res. 2013; 1(2): 115-118.

16. Verma Seema & Poonam. The Study of Cephalic Index in North Indian Population. Int. J. Morphol. 2016; 34(2): 660-664.

17. Khair Swapnil, Bhandari Deepika, Wavhl Swati, Study of Cephalic Index among the Students of Mumbai Region. Ind. J App. Sci. 2013; 3(11): 64-66.