A65 The Application of Morphometric and Morphoscopic Features of the Nose in Facial Reconstruction: A Study on a North Indian Population

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Learning Overview: After attending this presentation, attendees will be better informed about metric and non-metric traits of the human nose, which may help to identify a particular population group or an individual.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by providing a new dataset on noses that will help in facial reconstruction and sex determination in forensic casework.

Forensic facial reconstruction is an ancillary method used to identify the dead. The goal of forensic facial reconstruction is to recreate the face of the deceased with the help of anthropological analysis of the skull followed by facial reconstruction. The face of the person has several different types of exclusionary features that are of great importance in the identification and recognition of a person. The nose is considered to be one of the conspicuous features for facial approximations during the recognition process. Therefore, subtle changes in nasal morphology may lead to considerable differences in the appearance and face characteristics of an individual. In cases of mass disasters, such as earthquakes, terrorists attacks, road accidents, and landslides, mutilated parts of the bodies are brought for identification. When part of the face is disfigured, ethnic-specific models can be of great help in reconstructing the face. In forensic facial reconstruction, both metric and non-metric data serve as the basis of reliable approximations by comparing antemortem and postmortem data.

The current study aims to provide a wide range of morphometric and morphoscopic data on the nose. The study was conducted on a total of 508 subjects (264 males and 244 females) on two ethnic populations, Rajputs and Brahmins (Highland Himalayan population), of the Himachal Pradesh State in North India. Morphometric variables of the nose include nasal height, nasal breadth, nasal depth, anatomical width of the nose, and total length of the nasal bridge; morphoscopic traits include nose size, nasal bridge profile, nasal root shape, tip of the nose, its projection, alare profile, nasal septum features, and the nasal cavity. Each measurement was taken with the help of a sliding caliper. The action was performed on all subjects by the same examiner. For non-metric traits, the subjects were first photographed from basal, lateral, and frontal nose view by a Sony Cyber-shot™ DSCW80 7.2MP digital camera, then studied. The results of the statistical analysis (descriptive) performed using SPSS reveal that mean values of nasal and facial parameters are larger for males. *T*-test and chi-square statistics confirm the significant sexual dimorphism in metric and non-metric variables, respectively. To keep this in mind, Binary Logistic Regression statistics were applied to formulate models for sex determination from these variables. The overall sex predictive accuracy from nose variables were 78.1%. For nose reconstruction from facial variables, regression models were prepared for each sex separately. The correlation coefficient for morphological and physiognomic facial length with nasal length was 0.539 and 0.382 for males; 0.349 and 0.251 for females, respectively.

Highland Himalayan populations are more prone to natural disasters resulting in mass deaths. In such cases, reconstruction of the nose from the remaining face can boost the identification process. The present study confirms the sexual dimorphism in facial features and forms. Robust statistical procedures were adopted for reliable construction of the nose from facial measurements.

Forensic Anthropology, Facial Reconstruction, Identification

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