



ESTIMATION OF STATURE FROM MAXILLO FACIAL ANTHROPOMETRY IN SOUTH INDIANS

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ABSTRACT

Estimation of stature is considered as an important parameter in medico-legal and forensic examinations for establishing identity. When highly decomposed and mutilated dead bodies with fragmentary remains are brought for postmortem examination, it becomes difficult to identify the deceased. Sometimes, maxilla-facial or cephalo-facial remains are brought in for forensic and postmortem examination. In such a situation, estimation of stature becomes equally important along with other parameters like age, sex, race, etc. Anthropometry refers to the study and measurement of body dimensions. The stature was measured in standing position to the vertex in Frankfurt plane by using anthropometric rod. The maxillo-facial dimensions such total facial height and nasal height was measured by using sliding caliper. All the measurements were taken at a fixed time only, to eliminate the discrepancies due to diurnal variation. The measurements were taken three times and their mean value was taken as a final measurement. The data were analyzed using regression analysis and correlation coefficient.

KEYWORDS: maxilla-facial or cephalo-facial.

INTRODUCTION

Estimation of stature is an important tool in forensic examination especially in unknown, highly decomposed, fragmentary and mutilated human remains. In such cases while conducting a medico-legal autopsy, forensic pathologist is often asked to opine about the identity of the deceased. Stature being one of the criteria of personal identification helps in narrowing down the investigation process, and thus provides useful clues to the investigating agency.^[1]

Stature has a definite and proportional biological relationship with each and every part of the human body, i.e. head, face, trunk, extremities. This relationship helps a forensic scientist to calculate stature from dismembered and mutilated body parts in forensic examinations. For such a calculation, two methods, i.e. regression analysis and correlation coefficient have been extensively used by the scientists all over the world.^[2, 3]

Many studies have been conducted for estimation of stature from percutaneous measurements of various body parts such as arm, leg, feet, finger, etc. Since all these parts of the body and bones are not always available for forensic examination, it becomes necessary to make use of other parts of the body like head and face region.^[4, 5, 6] But only few studies are available for stature estimation from face alone. Total facial height was measured from

nasion to gnathion with closed mouth. While nasal height was measured from nasion and nasospinale. It is an established fact that each race requires its own findings for stature estimation because of ethnic, dietary and climatic variations.^[7, 8] There was separate equation for each facial parameter. The regression equations had been calculated by regression analysis of the data and the values of constants 'a' and 'b' are calculated; where 'a' was the regression coefficient of the stature and 'b' was the regression coefficient of any of the facial dimensions. Therefore stature = a + bx, where x was any facial parameter.^[9, 10] Hence results of studies done in one population cannot be applicable to other populations entirely. Therefore there is a need for systematic study from this region. Considering this fact, many studies was undertaken to estimate stature from maxilla-facial anthropometry in this region.^[11]

DISCUSSION

Estimation of stature for the purpose of identification had a significant forensic importance. This technique was based on a principle that bones or human body parts correlate positively with the stature. The results indicate that one can successfully estimate stature from different maxillo-facial dimensions such as total facial height & nasal height in situations where maxillo-facial remains are brought for forensic examinations.^[12] The stature estimation in these cases can supplement the other

personal identification data like estimation of age, sex, race, and identification from facial morphological characteristics as well as peculiar individualistic features.^[13, 14]

Stature can be estimated, either by multiplying the parameter with derived multiplication factor or can be measured by employing regression equation. Now most of the researchers considered that regression analysis is best for stature estimation.^[15] Statistically speaking, correlation coefficient is considered significant. In many studies, they have noted that total facial height and nasal height have lower value in both sexes. They also noted that TFH is a better parameter in males than NH whereas NH is a better parameter than TFH in females for estimation of stature. This difference could be attributed to geographic, climatic, and ethnic variation.^[16, 17]

The method of using TFH and NH has several advantages as the method is easy, the anatomical landmarks are standard, well-defined and easy to locate and required least instrumentation. The disadvantage is that the parameters may have insignificant correlation in comparison with bare bone measurements since the studies have conducted with intact soft tissues covering the face. However, such studies have assumed significance when the body is mutilated into multiple parts or only isolated facial structure is presented for forensic examination.^[18]

CONCLUSION

From the past studies, it has been concluded that, like other parts of the human body, the maxillo-facial dimensions can also be used for estimation of stature when maxillo-facial remains are brought for forensic examination. The measurements of the facial region gave better reliability of estimate of stature.^[19] It is also stated that percutaneous facial dimensions are not good predictors of accurate stature estimation and can be used when other parameters are not available. An important point to remember is that the people from different regions of India bear different morphological features depending upon their geographical distribution and primary racial characteristics hence a single formula cannot represent all parts of the country.^[20]

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