



## Physical Anthropology Section - 2014

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### **H78 Age Estimation in the Indian Population by Ultrasonographic Evaluation of Apophyseal Ossification of the Iliac Crest**

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After attending this presentation, attendees will learn to what extent Ultrasonography (USG) as a diagnostic modality will correlate with the present gold standard radiography for age estimation.

This presentation will impact the forensic science community by providing insight into the feasibility of ultrasound at the iliac crest for age estimation in continuation of earlier research studies and also the inherent benefits of Ultrasonography as an age estimation modality in the presence of statistically valid results.

Age estimation of the living has a long tradition in Medicine and is a very important task for a forensic practitioner in criminal and civil cases. Presently, radiography is taken to be the gold standard for deducing age in the medicolegal age groups. However, it is associated with the inherent hazards of radiation. On the other hand, ultrasound is a radiation free, valid, rapid, cost-effective and non-ionizing imaging procedure which can be utilized for age estimation in the living while still relying on important skeletal maturity indicators concurrent with the chronological age. So, the present study was undertaken as an endeavor to compare radiographic evaluation of apophyseal ossification of the iliac crest with Ultrasonography for age estimation in the living.

The goal of this research is to study the sonographic evaluation of the apophyseal ossification of the iliac crest and to compare it with radiography in terms of sensitivity, specificity, and accuracy in the Indian population. Sixty subjects of both sexes, ranging in age from 10.6 years to 22.7 years, underwent Ultrasonography followed by X-rays of the iliac crest. X-rays were performed in the antero-posterior view followed by Ultrasonography scanning the entire length of the iliac crest. Age was deduced with the help of Ultrasonography and X-ray films by two separate, independent observers, in a double-blind manner. There was found an excellent degree of agreement and correlation between X-rays and Ultrasonography with a kappa value of 0.959 and p value of 0.995, respectively. Sensitivity and specificity of USG was 87.5 % and 94.1 % respectively. Accuracy was 92.0 %. Positive predictive value was 87.5%. Negative predictive value was 94.1%. It was possible to perform Ultrasonography for age estimation in all the subjects without any problems in general or particular. In view of the results obtained, it is concluded that Ultrasonography can be used to estimate age without undue risk of radiation. In addition to this, there may be a role for this new method as an adjunct to radiography for repeated measurements. By conducting more studies by Ultrasonography on a representative sample size, USG can be made a valid alternative to X-Rays for age estimation.

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#### **Ultrasonography, Iliac Crest, Age Estimation**