

Abstract

In forensic anthropology, the estimation of sex is important for eliminating half of the possible identities the skeletal remains may have, as a result, sexing standards were set from fully dentate mandibles. Edentulous mandibles were excluded from studies that set these standards. Thus, this study intended to determine the effect of tooth loss on accurately estimating sex from the mandibular morphology of black South Africans. The mandibles sampled included 79 (31 males and 48 females) full dentition and 117 (57 males and 60 females) variable degrees of tooth loss mandibles from the Raymond A. Dart Collection of Human Skeletons. Outlines of the non-alveolar regions of the mandibles were digitised. The alveolar regions were rated according to the level of resorption that had occurred. A two block partial least square was performed to determine the effect of tooth loss on the mandibular morphology and a two sample permutation test was conducted to determine the sexing accuracies from all sampled mandibles. Tooth loss had a significant effect on the mandibular morphology. The overall accuracies determined were 85.5% from mandibles with tooth loss and 63.3% from full dentition mandibles. The overall mandible morphology is sexually dimorphic irrespective of the presence of tooth loss. The main factor that may affect the outcome was the mandibular mechanics in males and females. The results suggest that mandibles with high levels of tooth loss could be used in studies of identification. Further studies may want to set sexing standards from both dentate and edentate mandibles.