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The construction of sex discriminant functions from a large collection of skulls of known sex

The suitability of the large collection of skulls of known sex ($n\delta = 357$, $n\eta = 213$), housed in the Department of Anthropology of the University of Coimbra, as a reference series for sex diagnosis from skulls, was investigated. This was done by calculating estimates for the maximum «actual discriminatory value for samples being diagnosed», here called $D_t \text{ max}$. The estimates for this statistic were found to be relatively low. Depending on the estimation procedure used, values of 1.68 and 1.64, were obtained, which correspond with theoretical percentages of correct classification of 79.8 and 79.3, respectively. An attempt was then made to investigate whether the low level of sexual dimorphism was due to heterogeneity in the series, which was therefore partitioned into Northern, Central and Southern groups according to place of birth. Only in the Southern group was the level of sexual dimorphism found to be slightly higher than in the whole series.

The need for large well documented reference series for deriving techniques for sex determination from the skull and other skeletal elements is discussed and an extensive description of the methods employed in this study is given.

Introduction

When investigating populations on the basis of their skeletal remains it is clear that the determination of sex is of crucial importance. Morphological differences between the males and females of the same population can markedly exceed the morphological differences between sections of different populations of the same sex (see e.g. VAN VARK, 1984). As a consequence, anthropologists try to make a diagnosis of sex before venturing into the area of comparing populations.

The skull is one of the parts of the skeleton which survives best and from which can be obtained scores on a large number of metric and non-metric variables. The skull has probably been used more than any other bone for the description and interpretation of human variation in historic and prehistoric times. We may quote Howells here who remarked that «this bone provides excellent laboratory material on which to learn the methods of analysis of morphological variation» (HOWELLS, 1969). Besides, it is after the pubis the bone from which the sex can be determined most easily (UBELAKER, 1978). This altogether means that it is of great importance for many types of anthropological studies that procedures be developed for the determination of sex of the skull.

At present, basically two alternative approaches exist for the diagnosis of the sex from the skull. The first is based on a visual examination of morphology, the second one on the application of mathematical methods which make use of morphometric and/or other numerical data. Essentially, both are multivariate statistical approaches but they use different techniques and different types of data (VAN VARK, 1987).