

Abstract

This diploma thesis is devoted to diachronic changes in skull morphology and sexual dimorphism of the early modern and recent population from the territory of Bohemia and Moravia.

The two populations are roughly 500 years apart in time, so it can be assumed that each group was affected by different environmental influences. While individuals from the early modern period, coming from the middle class, are assumed to be affected by unfavorable living conditions (insufficient hygiene, malnutrition, etc.), the recent population is exposed to more favorable socioeconomic conditions. A number of studies agree that quality living conditions have an effect on the morphology of the skull in the sense of narrowing and increasing the cranial vault, and at the same time have a positive effect on the manifestation of sexual dimorphism. The aim of this thesis is to evaluate the variability and degree of sexual dimorphism in skull morphology and to describe diachronic changes of the skull in early modern and recent populations. According to the established hypotheses, we assume that the skull of the recent population will have a higher and narrower cranial vault and facial part as a result of the improvement of living conditions and will show more pronounced sexual dimorphism.

A total of 174 skulls were analyzed in the work (137 individuals from the recent population including 57 females and 80 males; and 37 individuals from the early modern population including 15 females and 22 males). Individuals from both populations are in the age range of 20-69 years. For the analysis, CT scans of the skulls were used, which were evaluated using geometric morphometry.

The recent population showed a higher variability of skull morphology compared to the early modern population. The skulls of the recent population are larger, taller, with a narrower braincase and facial part. On the contrary, the skulls of the early modern population are smaller, more robust, with a lower and wider braincase. Variability was more pronounced between populations than within populations. In both evaluated populations, similar sexually dimorphic features were observed, and at the same time, a lower expression of sexual dimorphism in the early modern population, which confirmed our hypothesis about the influence of living conditions on the degree of expression of sexual dimorphism. When evaluating diachronic changes, significant differences in skull morphology were observed in the height and width of the braincase and splanchnocranium. The skulls of the recent population have a higher and narrower braincase as well as a narrower facial part, which confirms our hypothesis and is also consistent with the results described in many populations where living conditions have improved. In contrast, the skulls of the early modern population, exposed to adverse living conditions, are rather more globular with a lower and wider brain and a more robust facial part. The differences can be interpreted so that, in addition to genetic factors, the overall morphology of the skull is influenced by a combination of external factors such as different living conditions or socioeconomic status (quality and availability of food, hygiene, medical care, climate, etc.).

Key words: sexual dimorphism, environmental influences, interpopulation variability, skull, socioeconomic status, diet, early modern, geometric morphometrics