

Press release

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Work and gender

New insights into the everyday life of early industrial women workers

The hand skeletons of female workers from early industrial Basel reflect the diverse and unstable conditions of their daily lives and shed new light on one of the most formative eras of contemporary society. The results from a new study led by paleoanthropologist Alexandros Karakostis of the University of Tübingen and anthropologist Gerhard Hotz of the Natural History Museum Basel have now been published in the prestigious American Journal of Biological Anthropology. The skeletons studied come from the Basel hospital cemetery.

The division of labor according to biological sex is one of the most fundamental components of human behavior and reflects the organization, culture and ideologies of a society. New research led by Alexandros Karakostis, a paleoanthropologist and lecturer at the University of Tübingen, and Gerhard Hotz, an anthropologist and curator of anthropology at the Natural History Museum Basel, has shown for the first time: Hand bones preserve extensive information about what daily life was like for women and men from pre-industrial Basel, what activities they engaged in, how much work was shaped by gender and how society at the time perceived women's work.

Division of labor between the sexes

Reconstructing the history of the division of labor by biological sex is a necessary step in understanding how our society has evolved. Because there are no 19th century female skeletal specimens with associated known, well-documented life activities, anthropologists initially did not know how to reconstruct this history. Indeed, there is little in the archives that would shed light on the occupation of women of past centuries. This often has to do with how older societies and states perceived women's work.

Gap closed thanks to innovative method

By focusing on the hand bones of historical low-status female workers from early industrial Basel in the 19th century, researchers Karakostis and Hotz were presented with a completely different starting point in Basel. This is because the everyday life of these workers has been documented in a level of detail that is unique in the world. The extensive files in the Basel-Stadt State Archives associated with each of these skeletons were carefully transcribed over 15 years by a large number of volunteers from Citizen Science Basel under the lead of Gerhard Hotz.

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The researchers reconstructed the daily manual activities of the workers based on an innovative method developed by Alexandros Karakostis known as the "V.E.R.A. approach." This was based on clearly documented, female and male workers from 19th century Basel. "*This validated approach relies on 3D analysis of the bones and focuses on the areas where muscles attach throughout life,*" said researcher Karakostis, lead author of the study and an expert in hand biomechanics. "*This virtual method is the first to be experimentally validated based on laboratory animal studies and human skeletons with known life histories,*" he says.

What hand bones reveal

The results revealed that hand bones preserve clear evidence of the gendered division of labor during one of the most formative periods of modern societies. The researchers found impressive morphological variability among female workers. This directly reflects their unstable and diverse living conditions. Patterns differed among men from women, especially those who held occupations exclusively associated with their biological sex, for example, construction workers.

Women workers with more specific occupations, such as seamstresses and tailors, have impressively distinct features in their hand bones. "*These results directly reflect the rich historical sources about the daily lives of working-class women and men in early industrial Basel and show the promise of our methods and documented samples for studying the lives of other people in the past,*" Karakostis emphasizes.

Publication:

Karakostis, F. A., Hotz, G. (2022): Reflections of manual labor in the hand entheses of early industrial women workers with extensively documented life histories. *American Journal of Biological Anthropology*.

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