

# The expendables: Health consequences of child labor in 19th-century England

May 17 2023

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Example of a coffin plate excavated from the cemetery. Credit: Gowland et al, *PLOS ONE*, 2023. CC-BY 4.0 (<https://creativecommons.org/licenses/by/4.0/>)

Skeletal remains preserve direct evidence of the health issues faced by children born into poverty and forced into labor in 19th century England,

according to a study published May 17, 2023, in the open-access journal *PLOS ONE* by Rebecca Gowland of Durham University and colleagues.

The large-scale employment of children during industrialization in 18th and 19th century England is well-documented. In many cases, pauper children were forcibly moved out of cities and into [labor](#) in rural mills and farms. The poor working conditions at these sites are associated with malnutrition, various diseases, and low life expectancy, but there is little direct evidence of the struggles of these children.

In this study, Gowland and colleagues examine [skeletal remains](#) of 154 individuals from a rural cemetery in the village of Fewston, North Yorkshire. These remains date mostly to the 19th century and include an unusually high proportion of people aged 8–20. Analysis of strontium and oxygen isotopes suggests many of these children were not born in the North Yorkshire region.

Comparing these remains to those of local individuals, the researchers found that the non-local children exhibited higher incidences of skeletal issues related to growth delays, vitamin deficiencies, and respiratory disease. Additionally, carbon and nitrogen isotopic signatures of the non-local children indicate low-protein diets. Combined with historic documentation of child labor in a nearby mill, these results present a convincing case for children born into poverty and transferred to this village to work in dangerous, even fatal, conditions.

This study provides the first direct insights into the harrowing lives of children in forced labor during industrialization in England. Child labor is considered the most common form of child abuse and neglect in the world today. In highlighting the effects of [poverty](#) and forced labor on children, this analysis has implications for the past as well as the present.

The authors add, "This is the first bioarcheological evidence for pauper

apprentices in the past and it unequivocally highlights the toll placed on their developing bodies. To see direct evidence, written in the bones, of the hardships these [children](#) had faced was very moving. It was important to the scientists and the [local community](#) that these findings could provide a testimony of their short lives."

**More information:** The expendables: Bioarchaeological evidence for pauper apprentices in 19th century England and the health consequences of child labour, *PLOS ONE* (2023). [DOI: 10.1371/journal.pone.0284970](https://doi.org/10.1371/journal.pone.0284970)

Provided by Public Library of Science

Citation: The expendables: Health consequences of child labor in 19th-century England (2023, May 17) retrieved 3 May 2024 from <https://phys.org/news/2023-05-expendables-health-consequences-child-labor.html>

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