

# The Effect of Nutritional Status on Historical Infectious Disease Morbidity: Evidence from the London Foundling Hospital, 1892-1919\*

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## Abstract

There is a complex inter-relationship between nutrition and morbidity in human health. Many diseases reduce nutritional status, but on the other hand, having low nutritional status is also known to make individuals more susceptible to certain diseases and to more serious illness. Modern evidence on these relationships, determined after the introduction of antibiotics and vaccines, may not be applicable to historical settings before these medical technologies were available. This paper uses a historical cohort study based on records from the London Foundling Hospital to determine the causal effect of nutritional status of children, proxied by weight- and height-for-age Z-scores, on the odds of contracting five infectious diseases of childhood (measles, mumps, rubella, chicken pox and whooping cough) and on sickness duration from these diseases. I identify a causal effect by exploiting the randomisation of environmental conditions as foundling children were removed from their original homes, then fostered with families in counties nearby London and later returned to the Foundling Hospital's main site in London. I find no effect of nutritional status on the odds of contracting the five diseases, but I do find a historically important and statistically significant effect of nutritional status on sickness duration for measles and mumps. These findings have three implications. First, historical incidence of these diseases was unrelated to nutritional status, meaning that poor nutritional status during famines or during the Colombian Exchange did not affect the spread of epidemics. However, undernutrition in these events may have exacerbated measles severity. Second, improving nutritional status in the past 150 years would have reduced the severity of measles and mumps infections but not affect the decline in whooping cough mortality. Finally, selective culling effects from measles would be larger than those from whooping cough since whooping cough severity was not correlated with underlying nutritional status.

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