Cholera and TB Now and Then
Revisiting the Determinants of Two 19th Century Diseases
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Introduction and Goals
19th Century Europe was infected with diarrhea, tuberculosis (TB), cholera and multiple infectious diseases. Cholera and TB are examples of diseases that had been deadly in the 19th century and declined rapidly independently of the discovery of medication. In particular, in the UK there was a shift from ubiquitous mortality to extremely low mortality from the mid-19th to the mid-20th century.

The goals of this paper are:
(i) to survey the prevalence of two diseases, cholera and tuberculosis, in 19th century London;
(ii) to assess the decline of each in relation to its determinants;
(iii) to present original data using modern software.

19th Century London
Slums arose in response to the rapid population growth (due to the flow of people from the countryside) in industrial cities (Birmingham, Liverpool, London, Manchester).

The Victorian era mortality and conditions have been paralleled with those today in Africa, Asia and Latin America (Worlds, 2005).

London slums: Whitechapel, Spitalfields, Bethnal Green and The Old Nichol – disappeared with the clearance programmes of the late 19th and early 20th century.

Chadwick is considered the father of the public health system and believed that diseases were "caused, or aggravated, or propagated chiefly amongst the lower classes". His Public Health Act (1848) fixed a maximum number of lodgers per house and shed light on the need for ventilation and public health. The Miasma theory sustained that bad smell was the cause of diseases. Most social reformers (e.g. Chadwick) were miasmacists but this theory was questioned by John Snow.

On the Mode of Communication of Cholera (1855)
First noticed in Madras, 1769.
First pandemic originated in the delta of the Ganges, 1817.
Hits Britain, 1832.

1848-1849 Snow links water supply with cholera.

On the Broad Street Pump’s handle was removed. John Snow was acknowledged as the father of Modern Epidemiology.

There was already some evidence suggesting that cholera couldn’t be transmitted with the wind/miasma, but rather: (i) it was communicated from person to person (i.e. something had to be passed from one to the other), (ii) someone didn’t necessarily contract cholera just by being near a sick person. (iii) cholera could be contracted even without being physically near a cholera patient.

The code from Bingham (1848) fixed a maximum number of lodgers per house and shed light on the need for ventilation and public health.

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Modern Rise of Population

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Social determinants

The trend is
- low tuberculosis incidence in high annual-value districts
- high incidence in low annual-value (and, thus, poorer) districts (e.g. St George, Southwark; St Giles, St Saviour, St Olave; Whitechapel).

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There have been great advances in the pharmaceutical treatment of tuberculosis but resistance to treatment by drugs has also grown.

The incidence of TB is highest in Africa, followed by Asia and South America but it is present in every country, and is today the second greatest mortal infectious agent (behind HIV) (WHO, 2015). In the UK most cases affect Black and Minority Ethnic groups (especially Indian), as well as homeless people, prisoners and drug-users.

Conclusions
Reduction in the mortality and morbidity of cholera and tuberculosis was greatly facilitated by the discovery of their water-borne and air-borne nature. The problem with cholera was very much solved once it was discovered how it was transmitted and building the proper infrastructure to shun the contamination of water was a city-scale effort. Meanwhile, tuberculosis is still present within the UK, showing how despite the great advances in medicine and biology, social inequalities still present diseases from being fully eradicated.

Cholera and TB are examples of diseases with different determinants or, to be precise, of diseases in which the relative weight of social factors and biological factors are at variance.

References


Schoenbach, V. J. 2004. The Broad Street Pump’s handle was removed. John Snow was acknowledged as the father of Modern Epidemiology.

The spread of cholera in the 19th century London epidemics was largely driven by the lack of infrastructure (Hamlin, 2009) and terminated by separating contaminated from non-contaminated water. There was a will to change their water-borne and air-borne nature. The problem with cholera was very much solved once it was discovered how it was transmitted and building the proper infrastructure to shun the contamination of water was a city-scale effort. Meanwhile, tuberculosis is still present within the UK, showing how despite the great advances in medicine and biology, social inequalities still present diseases from being fully eradicated.

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