William Farr’s legacy to the study of inequalities in health

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What could be more fitting for this issue’s special section of the Bulletin devoted to inequalities in health than to select the work of William Farr to be the focus of the Public Health Classics? It is almost impossible to study social inequalities in health nowadays without coming under the influence of Farr’s work, either directly or indirectly. Yet he is not as well known as some of his nineteenth century contemporaries in the British public health movement, such as John Snow, Edwin Chadwick, and John Simon (all of whom, by the way, were great admirers of Farr’s work).

National registration of births and deaths came into force in England in 1837, and some far-sighted individuals (Chadwick among them) had successfully pressed for an amendment to the Registration Act to require cause of death as well as occupation and age at death to be recorded on the death record. These simple additions to the registers, coupled shortly afterwards with the classification of the whole population by age and occupation at the decennial censuses, opened up enormous potential for the study of variation in the risk of death in different population subgroups. William Farr, appointed as the first “Compiler of Abstracts” at the General Register Office (GRO) in July 1839, helped to realize that potential to the full during his forty-year tenure in the post. In the very first annual report issued by the Registrar General, a letter by Farr was appended to the report, in which he explained some of the important uses to which the birth and death registers could be put:

“Diseases are more easily prevented than cured, and the first step to their prevention is the discovery of their exciting causes. The Registry will show the agency of these causes by numerical facts and measure the intensity of their influence and will collect information on the laws of vitality with the variation in these laws in the two sexes at different ages and the influence of civilisation, occupation, locality, seasons and other physical agencies whether in generating disease and inducing death or in improving the public health” (1).

With these series of “Letters to the Registrar General”, which formed part of every subsequent annual report from the GRO, Farr began what John Simon contended was “a new branch of medical literature” (2). He is said to have been the first to make extensive use of the standardized mortality rate to adjust for differences in age distribution in different sub-groups. Also, he developed methods of analysis for studying occupational mortality employing census data, which are still essentially the same as those in use today.

Above all, Farr’s work is distinguished by his use of the available statistical data to test social hypotheses, and most notably, by the way he used the findings to press for sanitary reform. In the third annual report, for example, he tested, and disproved, the theoretical argument put forward by Brouc that increasing levels of education had led to more suicides. His analysis showed that in England educated men had a suicide rate close to the average, while skilled manual workers, or “artisans”, had the highest rate. He left his readers in no doubt about the conclusions:

“...suicide is more frequent among several classes of artisans, than it is among better educated people. If the progress of civilisation is to be charged with the increase of suicide, we must therefore understand by it the increase of tailors, shoemakers, the small trades, the mechanical occupations, and the incidental evils to which they are exposed, rather than the advancement of truth, science, literature, and the fine arts” (3).

Further analyses helped to identify the most dangerous occupations overall and what were the specific causes of death, contributing to the study of occupational disease and adding ammunition to the
pressure for improvement of the atrocious working conditions that were common in Victorian Britain.

From his earliest days at the GRO, Farr set out on a search for a way of classifying causes of death that would take in broader determinants of health, beyond specific diseases. In an analysis of the 1837 death records, he attributed 63 deaths to “starvation” with the comment:

“Hunger destroys a much higher proportion than is indicated by the registers in this and every other country, but its effects, like the effects of excess, are generally manifested indirectly, in the production of diseases of various kinds” (4).

This particular analysis was controversial at the time since the government was facing revolt over its harsh poor law reforms. Surely it was impossible that anyone could die from lack of food in the richest country in the world and when the poor had the benefit of the government-instigated workhouses? Farr maintained that it was possible and, moreover, that “if the quantity of provisions and supply of food to the great mass of the population could be augmented, the mortality would be reduced” (4). Undeterred by critics who wanted him to stick to a narrow medical view, he went on to develop a more sophisticated classification, which still forms the basis of the International Statistical Classification of Diseases and Related Health Problems (ICD) in use today, and which does allow for conditions such as poverty to be classed as a cause of death.

In the face of the rapid urbanization and the resulting squalor that accompanied industrialization in nineteenth-century Britain, Farr used the registration statistics to test and prove the hypothesis that towns were more unhealthy than country districts, and that there was a relationship between the population density in different locations and the mortality rate. He mapped the pattern of death by age and cause, and used these maps as a rapid monitoring system for epidemics, such as the 1847 influenza outbreak and the 1848–49 cholera outbreak in London. The deaths data that he supplied weekly (sometimes daily), were used in a collaborative effort by Farr, Simon and John Snow in 1854 to track down the source of cholera to contaminated water supplies (5).

Farr’s refinement of the “healthy districts” concept has had an enduring impact on the study of inequalities. Using the “healthiest districts” in England as a standard, up to which the rest should, in theory, be able to rise, he estimated the avoidable loss of life in the unhealthy districts. For example, over the period 1851–60, he calculated that each year almost 65,000 children’s lives were lost unnecessarily in the 151 “unhealthy districts” of England. Characteristically, he did not hold back from condemning this “annual sacrifice” in his distinctive Victorian prose:

“the children of the idolatrous tribe who passed through the fire to Moloch scarcely incurred more danger than is incurred by children born in several districts of our large cities... a strict investigation of all the circumstances of the children’s lives might lead to important discoveries, and may suggest remedies for evils of which it is difficult to exaggerate the magnitude” (6).

In addition to the social commentaries in each annual report, two major reviews were presented as “Decennial Supplements” covering the decades 1851–60 and 1861–70. The quote above on children’s mortality is taken from the first Decennial Supplement, but for the Public Health Classic that follows, extracts have been selected from the second. This Supplement is considered by Humphreys, among others, to be the “crowning effort” of Farr’s work (7). Published in 1875, five years before Farr’s retirement, the Supplement ranges far and wide over a multitude of issues, both theoretical and practical (8).

Over the more than a century since then, the tradition has continued and many scholars have drawn on what is now a long series of analyses in successive Decennial Supplements, to explore important public health questions — McKewen, Antonovsky, and the authors of the seminal Black Report included. As we enter the new millennium, social inequalities in health are again being recognized as one of the major challenges for public health. William Farr has left us a rich legacy on which to draw in facing this challenge.

References

2. Simon J. English sanitary institutions, reviewed in their course of development, and in some of their political and social relations. London, Cassel & Co. Ltd, 1890.