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Regional differences in the mid-Victorian diet and their impact on health

Peter Greaves
Leicester Cancer Research Centre, University of Leicester, Leicester LE2 7LX, UK
Corresponding author: Peter Greaves. Email: pg29@le.ac.uk

Summary

The aim of this study was to examine the impact of regional diets on the health of the poor in mid-Victorian Britain. Contemporary surveys of regional diets and living condition were reviewed. This information was compared with mortality data from Britain over the same period. Although there was an overall improvement in life expectancy during the latter part of the 19th century, there were large regional differences in lifestyle, diet and mortality rates. Dietary surveys showed that the poor labouring population in isolated rural areas of England, in the mainland and islands of Scotland and in the west of Ireland enjoyed the most nutritious diets. These regions also showed the lowest mortality rates in Britain. This was not simply the result of better sanitation and less mortality from food and waterborne infections but also fewer deaths from pulmonary tuberculosis, which is typically associated with better nutrition. These more isolated regions where a peasant-style culture provided abundant locally produced cheap foodstuffs such as potatoes, vegetables, whole grains, and milk and fish, were in the process of disappearing in the face of increasing urbanisation. This was to the detriment of many rural poor during the latter half of the century. Conversely, increasing urbanisation, with its improved transport links, brought greater availability and diversity of foods to many others. It was this that that led to an improved nutrition and life expectancy for the majority in urbanising Britain, despite the detrimental effects of increasing food refinement.

Keywords

Mortality rates, dietary shift, infectious disease, tuberculosis, Victorian

Introduction

It has been argued in this journal that the mid-Victorian urban diet provided the basis for a significant protection against major degenerative diseases and a life expectancy not dramatically different from today.[1] It was suggested that many of the benefits of this diet were lost as a result of its deterioration during the latter part of the century because of the increasing use of first generation, mass produced refined foods. Nevertheless, life expectancy continued to improve during the latter half of the 19th century. McKeown and Record[2] argued that improved nutrition in England and Wales was the most important factor in the reduction of the death rate during this period. Although better sanitation led to a reduction in deaths from gastrointestinal infections, it was maintained that improved nutrition had a major impact by lowering the death rate from tuberculosis. Both these arguments are complicated by the huge regional differences in lifestyle, living conditions, diet and mortality in Britain in the mid-Victorian period. This study reviews the diverse dietary differences and living conditions across Britain. It attempts to understand how these differences may have influenced patterns of disease and life expectancy during the mid-Victorian period.

Methods

Contemporary Victorian surveys of diet and living condition, notably those of Smith,[3] as well as more recent studies, were reviewed. The information was compared with mortality data from mid-Victorian Britain. The mortality data were taken from the decennial summaries in the 25th and 45th Reports of the Registrar General of Births, Deaths and Marriages in England, the 17th Report of the Registrar General of Births, Deaths and Marriages in Ireland and the 10th Detailed Annual Report of the Registrar General of Births Deaths and Marriages in Scotland.[4–7] Death rates were adjusted using the mean population in England and Wales between 1851 and 1860 as reference.

Regional characteristics

Mid-19th century Britain was the major manufacturing powerhouse of the world, but it was still predominately a rural society with less than half of the 18 or 19 million people in England and Wales living in large urban centres.[8] Among the population of about three million in Scotland, only just over one million resided in town districts. The census of 1871 in Ireland showed that of the population of around

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5.5 million less than 30% was urban, mainly in the eastern provinces around Belfast and Dublin, with the western provinces of Ireland being almost entirely rural.

One of the important characteristics of British society both in the growing urban centres and rural areas was that the vast majority of the population were by today's standards poor. In urban areas, there were vast armies of labouring people in industry, construction and in mining as well as over a million domestic servants.[8] Large urban or industrial regions of dense population were found in parts of London such as Whitechapel, around the coalfields of east Lancashire, West Yorkshire, parts of Birmingham, the Black Country, the Potteries and Tyneside.[9] The spectacular expansion of Liverpool was a result of a large proportion of the world's commodities passing through its port on the river Mersey. More than half of the population in these areas had migrated from rural districts. Glasgow and west central Scotland was also one of the most industrialised regions in the British Isles. The most industrialised areas in Ireland centred on Belfast.

The largest category among the poor labouring people still worked in the agricultural sector. By mid-century, most common fields had been enclosed and farming was predominantly capitalist in type in England, Wales and the Lowlands of Scotland. Whilst this had increased the efficiency of agriculture, it had resulted in agricultural workers being made into paid labourers, often in a seasonal or intermittent manner reliant on a cash economy for housing, food and clothing. The poverty of many in this situation increased the migration to urban areas where jobs were more plentiful and often better paid.

Agricultural regions were diverse, each possessing their own distinctive cultural, economic structures and living conditions. In the southern and southeast parts of England, there was a greater density of farm workers and nucleated villages were the norm. The isolation of farms in regions distant from urban centres required a system based on individual farms or hamlets.[10] This isolation often dictated payment in kind, in grain, potatoes and coal or land where workers were encouraged to produce their own food and keep their own livestock.[10] In the Lowlands of Scotland, the agricultural revolution was well advanced, but the peasant-style farming culture remained vibrant because of the relative immaturity of capitalist farm production.[11]

In contrast to England, Wales and the Lowlands of Scotland, the Highlands and islands of Scotland, like much of Ireland, remained very poor and traditional. During the 100 years between 1750 and 1850, the rural community in the western Highlands had moved from a feudal clan relationship into an impoverished and overcrowded peasantry so with much migration to the enlarging industrial towns and abroad.[12]

Whilst appalling sanitary conditions were well documented in the large urban centres, living conditions were not idyllic in many rural communities.[13] Housing was often poor, crowded, squalid or otherwise insalubrious. Well water could be limited and other water supplies often contaminated by refuse.[13] Polluted water was prevalent in low-lying country, marshlands or along the Thames estuary.[14]

Dietary patterns in Britain

Although a number of dietary surveys were conducted in Victorian Britain, the largest and most informative were those performed by Dr Edward Smith in mid-century.[3,15] He studied representative families involved in specific, poorly paid urban occupations such as weaving and shoemaking in the north of England, the Midlands and London and poorly paid agricultural labourers who represented the different rural regions of the United Kingdom. Whilst he acknowledged it was selective, he argued that it did provide a broad understanding of the typical diets of the working poor across urban and rural districts in Britain.

Although the overall caloric intake among the poor has been disputed, it was not high by the standards today, particularly at a time when significant physical activity was usual.[16] Throughout Britain, with the exception of some areas of the north of England, the uplands of Scotland, and in Ireland, white bread made from bolted wheat flour was the staple component of the diet.[15] This basic diet was typically supplemented, when affordable, by vegetables, fruit and animal-derived foods such as meat, fish, milk, cheese and eggs, in many ways similar to a Mediterranean-style diet.[1] Although the price of bread had fallen following the repeal of the Corn Laws in 1846, the poorest urban families still had limited resources to purchase an adequate caloric intake as well as more expensive meat, fish, milk products, vegetables and fruit compared with better off families.[16] Smith and others documented many poorer urban families eating bread and potatoes with little or no meat or milk. In some poor families, the main beverage was tea with sugar without milk, even for children.[13,17]

This pattern also existed in many rural areas of England among poor agricultural workers who were largely dependent on a cash economy for the purchase of food. Many rural families existed largely on bread with little milk or meat. Fish was not generally consumed in rural areas unless close to the sea.

It was notable that milk was not easily obtainable by many of the rural poor as recorded by Smith and other observers.[18]

However, the rural diet was often better for the poor in more isolated areas of England because of payment made in kind, notably in fuel, grain, potatoes, meat, milk or small patches of land to grow potatoes and vegetables or keep an animal or two. Similarly, in the Lowlands of Scotland elements of peasant culture persisted where workers were also commonly paid in kind and able to retain their own plots of land and grow food and keep animals. Smith concluded that the farm labourers in Scotland were well fed by English standards because of the large quantity of milk and oatmeal obtained.[3] That the rural labouring population in Scotland was generally well fed compared with those in England was a consistent observation even later in the century.[19]

Although the people of the uplands and islands of Scotland were extremely poor and had experienced the pressure of increasing population and changes to the system of land tenure, the economy remained essentially peasant in type with each family farming a plot of land. The diet was based on oats and increasingly the potato along with abundant milk and some meat from household livestock as well as fish, notably herring in the western Highlands. Thus, milk or whey was the normal accompaniment to oats and potatoes with meat or fish when available.[20] The diet of island communities was also based on oats and vegetables, less milk but large quantities of fish and shellfish, a situation that was retained into the 1930s in isolated communities with little access to processed foods.[21]

In Ireland, the rural population, especially in the western provinces such as Connaught, was mostly exceptionally poor. Here, food was unvaried, consisting largely of milk with potatoes when in season and increasingly maize or oats mixed with milk, a meal termed 'stirabout'. Meat was very limited, and tea or beer was hardly drunk at all by the poor in the country areas. Despite the monotony of this diet, Smith, through the eyes of a physician, described a particularly robust and healthy-looking population compared with their English counterparts, indicating that this diet was particularly nutritious.

Whilst Clayton and Rowbotham suggested that the urban working class in mid-Victorian Britain ate a superior version of the Mediterranean diet which protected against degenerative diseases, there was clearly much regional variability in quality across the United Kingdom. Many of the poor working population in urban areas as well as in some rural areas in England and Wales had difficulty in obtaining a high-quality diet with additional animal-derived foods to supplement a diet of bread, tea and sugar, whereas this was far less of a problem in isolated rural areas in England and in parts of Scotland. Even among the poorest peasant population of Ireland, the monotonous diet of potatoes, grain and milk was more nutritious than among many poor in England. Following the publication of the study by Smith, *The Times* noted that England seemed to be the worst-fed region of the United Kingdom with Scotland and Ireland being the best fed.[22]

Height and nutrition

Studies of the heights of military recruits during the Victorian era support the conclusions of the dietary surveys that suggest the rural Scots and Irish were generally better nourished than their English counterparts. A considerable number of longitudinal analyses of the heights of young male military recruits from poor backgrounds, adjusted for minimal height requirements, have been conducted as a measure of a 'biological standard of living'. Whilst recruits to Sandhurst from better off families were taller than their poorer counterparts, these studies have consistently shown that over first half of the 19th century, the heights of male recruits from areas distant from London, notably the northern parts of England and rural Scotland and Ireland, were taller than their southern counterparts, suggesting better nutrition during the growth period of life.[23]

Patterns of disease

Whilst causes of death were not as clearly defined during the Victorian era as in modern times, and a significant number were unknown, reported causes of death were similar across the entire Kingdom. Most deaths were related to infectious disease. Infant and childhood mortality were high as a result of common childhood infections. About 10% of deaths under the age of 5 were a result of diarrhoeal diseases. Diarrhoea, dysentery and typhoid also caused significant deaths among adults, indicating that poor sanitary conditions were prevalent in many parts of Britain. Deaths from typhus also occurred in small numbers, although it was not widely distinguished from typhoid fever till after mid-century. However, tuberculosis caused a relatively high death rate particularly among young adults. Most cardiac disease was mainly a consequence of infectious diseases such as rheumatic fever. Although ischaemic heart disease was well recognised, it was uncommon, seen as a disease of wealthier, stout men who did little exercise.[24]

Although this pattern of causes of death was common to all parts of the United Kingdom, major

regional differences existed. Some typical differences are illustrated in Table 1, where death rates have been standardised to the age of the population in England and Wales given in the 1851–1860 decennial report. The first Irish decennial report was for the years 1871–1880 so that comparable figures for England and Wales for 1871–1880 are also provided for comparison.

Table 1. Adjusted death rates using mean population in England and Wales 1851–1860 as reference.

Place	Population (average over 10 years)	Average annual birth rate per 1000 population	Average annual death rate per 1000 population	Death rate children under 5 per 1000 births	Death rate from gastrointestinal disease per 1000 population	Average annual death rate from tuberculosis per 1000 population
England and Wales 1851–1860						
All country	1,899,6916	34.1	22.2	26.4	2.0	2.7
London	2,583,112	33.4	25.2	29.6	2.5	2.7
Whitechapel	79,364	35.0	29.8	37.6	3.5	3.5
Liverpool	263,989	34.1	38.0	48.2	4.9	4.0
Cambridgeshire	186,139	33.3	20.0	33.3	2.0	2.7
Herefordshire	102,952	28.8	18.7	20.1	0.8	2.0
Anglesey	38,945	28.4	19.7	20.3	0.7	3.7
England and Wales 1871–1880						
All country	24,343,348	35.3	21.2	24.2	0.9	2.2
London	3,535,372	35.2	23.5	26.9	1.0	2.4
Liverpool	224,288	35.1	37.5	40.7	2.5	3.5
Cambridgeshire	191,574	32.4	17.3	19.7	0.7	2.1
Herefordshire	119,257	29.1	17.1	16.7	0.4	1.6
Anglesey	35,184	27.6	20.5	18.2	0.2	3.3
Scotland 1855–1865						
All country	3,062,294	36.7	20.7	22.3	1.5	2.7
Urban[a]	1,138,184	37.9	28.3	29.1	2.2	3.4
Mainland rural	1,763,377	33.0	17.0	17.4	1.2	2.2
Islands	160,733	27.3	14.5	15.7	0.6	1.9
Ireland 1871–1880						
All Ireland	5,293,607	26.5	17.3	17.5	0.4	2.0
Dublin	412,086	26.3	24.6	29.8	0.8	2.7
Connaught	824,014	26.6	14.0	13.5	0.2	1.3

[a]Aberdeen, Dundee, Edinburgh, Glasgow, Greenock, Leith, Paisley, Perth.

As noted by contemporaries, urban areas such as Liverpool showed the highest death rates, not surprisingly as a result of high infant mortality and gastrointestinal infections but also tuberculosis. Poor suburbs of London, such as Whitechapel, also showed similar high rates.

Regions with much lower death rates were scattered across rural areas in the extreme south, southwest and north of England. This is exemplified in England in the rural county of Herefordshire. Here, infant and childhood mortality and deaths from gastrointestinal diseases and pulmonary tuberculosis were all significantly lower than in urban areas. Surprisingly, the wealthy agricultural county of Cambridgeshire showed death rates only comparable to those of England as a whole. It is notable that although the Welsh island of Anglesey had a low death rate from gastrointestinal disease, it had a very high death rate from tuberculosis.

In Scotland, the first decennial period with complete returns (1855–1865), although less detailed, showed that the death rate was generally lower than in England and Wales although there was a similar difference between urban and rural areas.[6] Whilst rural and island regions of Scotland showed low death rates from gastrointestinal infectious, death rates from tuberculosis were also lower in these regions than comparable regions in England during the period 1851–1860.

The first decennial review (1871–1880) in Ireland also showed generally lower mortality rates than comparable years in England and Wales (Table 1). However, urbanised regions in the east around Dublin had higher mortality than the more rural western provinces. The regions around Belfast also had similar high death rates. It is striking, however, that the western rural area exemplified by the poor province of Connaught showed the very lowest childhood and infant mortality, as well as low death rates from both gastrointestinal infections and tuberculosis.[7]

Discussion

Although the reliability of Victorian surveys may be questioned, the regional differences in dietary quality reported by Smith are reflected by the data on the heights of young military recruits, where taller young men were found in the better fed regions. Moreover, these better fed regions of Britain also showed lower mortality rates. This is entirely consistent with recent studies that have shown a decreased risk of death following improvement towards a higher Mediterranean dietary standard.[25]

However, most of the best fed regions were rural and distant from urban centres. It is therefore not surprising that these less crowded regions generally showed fewer deaths from food and waterborne gastrointestinal infections than urban centres. Nevertheless, the fact that water- and food-borne diseases were also prevalent in rural communities implies that sanitary conditions were far from ideal. It has been postulated that much poor health in low-lying regions within Cambridgeshire, the Fens and along the Thames Estuary were the result of a polluted water supply.[14] This was undoubtedly partly responsible for the high infant and childhood mortality in these areas.

Nevertheless, the best fed regions identified by Smith also showed significantly lower death rates from pulmonary tuberculosis. This was one of the most important infectious diseases that caused high mortality, notably among young adults. Although the accuracy of death certification in Victorian Britain was imperfect, the clinical features of pulmonary tuberculosis (phthisis) were well recognised, even if tuberculosis undoubtedly accounted for more deaths from less well-defined respiratory disease. It was endemic throughout the United Kingdom. Whilst transmission rates from infected sputum were probably higher in crowded urban areas, this does not provide an explanation for the low death rates in some regions. Autopsy records show that most people had been infected, although most did not develop active disease and die from it.[26,27] A study by Grimshaw in Ireland showed that although rural areas had lower mortality rates from tuberculosis than urban regions, the actual prevalence of the disease was similar in both areas.[28] Moreover, some more sparsely populated rural areas such as the island of Anglesey in Wales, whilst having a low death rate from water and foodborne infections, had particularly high death rates from tuberculosis indicating that a rural environment alone was not protective.

It has long been recognised that a high death rate from tuberculosis is typically associated with poor and inadequate nourishment. Dietary deficiency has a profound effect on cellular immune function and a wide range of human and experimental studies have confirmed that multifaceted malnutrition, protein deficiency and deficiencies of vitamin A and C increase susceptibility to tuberculosis.[29] Following the logic of McKeown and Record, it can be clearly argued that the lower death rates from tuberculosis in these rural regions were the result of a more nutritious diet.

It can be concluded that poor rural societies enjoying the best diet and health in mid-century were those retaining a more traditional lifestyle where high-quality foods were obtained locally. Unfortunately, these societies were in the process of disappearing under the pressure of urbanisation, commercial farming and migration. Such changes in Victorian society were forerunners of the dietary delocalisation that has

occurred across the world which has often led to a deterioration of diversity of locally produced food and reduced the quality of diet for the poor rural populations.[30] Conversely, in much of rapidly urbanising Britain improvements in living conditions, better transport links and access to a greater variety of imported foods led to improved life expectancy for many of the urban poor.

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