Graveyard gleanings: socio-economic, geographical and gender inequalities in health at Tynemouth, UK, 1833–1853

Elspeth M. Gould and David B. Chappel

Abstract

Background Inequalities in the health of different sections of populations are well recognized but were difficult to demonstrate before death registration was introduced in 1837. In the early years of civil registration, geographical and sex differences in mortality were clearly recognized, as were occupational hazards, but socio-economic differences were barely explored in the Annual Reports of the Registrar General. Tynemouth General Cemetery (TGC) was established in 1833 as a private cemetery with unusually detailed records.

Methods A total of 2610 records from 1833 to 1853 were analysed. Variables used included sex, dates of death and burial, age at death, depth of burial, cause of death, place of residence and occupation. As no denominator population is available, median age at death has been used for comparisons.

Results Depth of burial relates well to a hierarchy of specific occupations and so is used as a marker for socio-economic status. The median age for the burials was 12 years. People of higher socio-economic status survived longer. The people of North Shields, and especially the males, died younger than those from surrounding areas. Males outnumbered females in most age groups.

Conclusion Socio-economic, geographical and gender inequalities in mortality are clearly demonstrable in the early nineteenth century, without the use of registration data.

Keywords: inequality, burial, nineteenth century, Tynemouth

Introduction

Sir Donald Acheson’s inquiry into health inequalities is the most recent in a series of investigations in the United Kingdom over the last 20 years. Although the publication of the Black report in 1980 caused considerable embarrassment to the government of the day, the concept of socio-economic inequalities in health and mortality was not new. Evidence of particularly bad health amongst paupers emerged in 1838 in the reports of the Poor Law Commissioners, and in 1842, Edwin Chadwick demonstrated occupational differences in mortality. The early annual reports of the Registrar General, however, made little of occupational differences other than as the reflections of hazards at work, but discussed gender and geographical differences at length. It was only with the introduction of the current, hierarchical system of occupational classification in 1913, superseding one based on spheres of activity, that a gradient of mortality could be established, rather than a threshold related to absolute poverty. Occupation was recognized as a flawed measure of status, even as the classification was established, but had the virtue of ease of collection. Other measures that had been tried included weekly income per head of family, or numbers of rooms, or servants to family members.

Figures such as William Farr, Edwin Chadwick and John Simon are well respected, though each used the data to support his particular viewpoint, but others who were as influential have been found, when their work was re-examined, to have made errors. Thus it is worth looking again at evidence from the past. Living standards in the past, and their effect on mortality, have been hotly debated, with differing indices of wealth or methods of population reconstruction having their own champions and producing conflicting results.

In early nineteenth-century England, bodies were disposed of by burial, the great majority in the graveyards of the Church of England, whatever the denomination of the deceased person. From 1812, these churches were obliged to maintain registers of burial rites performed in their churchyards, recording the name, age and place of abode of the deceased, with the date of the burial. Other interments did not have to be recorded.

From the 1820s, joint stock cemeteries began to be established by dissenters (those people who belonged to religious denominations other than the Church of England), partly because of the discrimination they experienced.

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On 1 July 1837, civil registration was introduced in England and Wales. Burial without a death certificate was allowed only if the sexton or officiating priest informed the appropriate Registrar immediately afterwards, but registration was not compulsory. In his first report, the Registrar-General was optimistic about the completeness of death registration, but some aspects remained open to question for years. \(^{5}\)

Tynemouth is on the north bank of the River Tyne, bounded on its east by the North Sea. In the early nineteenth century, the most populous part of the parish of Tynemouth was North Shields, a shipping, fishing and coalmining community. North Shields in 1827 had ‘numerous’ dissenters. \(^{16}\) The religious census of 1851 found that Protestant dissenters outnumbered Anglicans. \(^{17}\)

North Shields’ dissenters opened Tynemouth General Cemetery (TGC) in June 1833. \(^{18,19}\) The registers of the interments are far more detailed than was required of the parish churches, giving the name, address, age, and often the occupation of the deceased or the head of their household; usually, the cause of death; grave number and depth; dates of death and burial; and names of other family members.

The last body was interred at TGC in 1931. \(^{19}\) Most burials had been unmarked, and those gravestones that survived bombing and vandalism were cleared to another cemetery in 1968.

As late as 1847, the Town Improvement Clauses Act specified a minimum of only 30 inches of soil above the coffin lid, \(^{20}\) but at the TGC the minimum depth for any grave (with the possible exception of stillborn children) was 4 ft. Although prices changed over time, charges for interments always depended on the depth of the grave. For example, from as early as June 1835, until June 1844, stillbirths were charged at sixpence, 4 ft deep graves at 4s and 4s 6d, and for deeper graves there was a further charge of 1s 6d per extra foot. \(^{21}\) A 9 ft grave, therefore, cost 11s 6d. \(^{22}\) We have used the stratification of prices to examine social stratification in the population buried in the TGC.

**Methods**

This is part of a larger study, and the full methods are described elsewhere. \(^{23}\)

**Data collection and handling**

The complete records for the first 20 years of burials, from the opening of the cemetery in 1833 to the Burial Act of 1853, were transcribed by hand from the microfilm of the sextons’ books, \(^{24}\) providing 2699 records. This period includes the introduction of civil registration, and the Censuses of 1841 and 1851.

The following variables were used: burial number, date of burial, cause and date of death, depth of burial, age and sex. People from the parish of Tynemouth were entered as from North Shields if their address fell within the area covered by the Town Improvement Act of 1828, otherwise the entry was ‘Tynemouth’ or ‘other’. Occupation was recorded for the household. Synonyms were grouped: for example, ‘pitman’ and ‘collier’ became ‘coalminer’.

Inscriptions from the few remaining gravestones from TGC were also transcribed.

**Interment registers**

Dates, ages, names and depths that were not found in the sextons’ books were entered onto the database from the interment registers. \(^{25}\)

**Other sources**

Eight entries had no date of death in any of the surviving cemetery records. One of these deaths was found in the local newspaper. \(^{26}\) Dates of death for a further six people were obtained from the Registrars of Death in the districts in which the deaths occurred (North Shields and Jarrow). The death that remained could not be dated.

**Validation of data**

The difference between the dates of death and burial were calculated, and all negative results, or positive values of 10 days or more, were checked in the archives.

We were able to corroborate the details of 11 accidental deaths, one suicide, and the deaths of two out of three centenarians using contemporary accounts by John Latimer. \(^{27}\)

‘Local records; or, Historical Register of Remarkable Events, which have occurred in Northumberland and Durham, Newcastle-upon-Tyne and Berwick-upon-Tweed; with biographical notices of Deceased Persons of Talent, Influence and C., in the District. 1832–1857.’ Accounts of a further death by falling, and inquests into two accidental deaths, were found in the local paper. \(^{28–30}\)

**Data analysis**

Eighty-seven stillborn children and one 5-day-old baby, which had no indication of its sex or cause of death, were excluded from analyses. One other exclusion was of ‘John Black’s foot’.

Median age was used for comparisons, using the Mann–Whitney test to examine differences between groups. The level of significance was set at the 5 per cent level.

Cholera deaths appear to have been treated differently from any others, with 93 per cent of cholera victims being buried at 6 ft or more compared with 24 per cent of the other causes. This would distort the data, so cholera deaths were excluded.

Depths of burial were rounded to the nearest foot, and those of 7 ft and over combined. The distribution of age at death was described for each depth of burial. As 83 per cent of deaths under 1 year were buried at 4 ft, the distribution was reanalysed for 1 year and over, 5 years and over, and 10 years and over (the age at which ‘adult’ prices were paid).
The data were divided into four periods of 5 years each (21/6/1833–20/6/1838, 21/6/1838–20/6/1843, 21/6/1843–20/6/1848 and 21/6/1848–20/6/1853).

We chose seven common occupational groups with modern equivalents and a clear gradient of socio-economic position to test the hypothesis that depth of burial would be a marker of wealth. For all causes of death, for the commonest five of these occupational groups, the places of abode were counted as ‘North Shields’, ‘Tynemouth’ or ‘Other’.

Results

Between 21 June 1833 and 20 June 1853, there were 2610 interments included in analysis. The 1369 males ranged in age from 1 hour to 96 years, and the 1241 females from 12 hours to 106 years. No age was found for 11 people. The distribution of the 2599 ages was skewed (Table 1), particularly for males, with a median age less than half that of females.

The gravestones record the burials of 65 males and 65 females. The age is missing from two, and the median for the remainder is 28.5 years, which is higher than for the whole group, and the age distribution is less skewed to the right. The ages range from 3 weeks to 94 years.

The sextons’ books and gravestones gave an occupation for only 710 (27 per cent) burials. The most frequently given occupations are shown in Table 2.

The seven specific occupations, ranked in order of probable socio-economic status, are given in Table 3. The differences in median depth of burial are significant between the mariners and master mariners, master mariners and ship owners, and ministers and ship owners. For median age at death (Table 3) the coalminers and medical men change positions. The differences between labourers and coalminers, master mariners and ship owners, mariners and coalminers, and mariners and ship owners are significant.

For all deaths (excluding cholera) the mean age rises steadily with increasing depth (Table 4). The difference in medians for the 4 ft graves and each of the other depths was statistically significant, but this was not so when comparing 5 ft and 6 ft, 5 ft and 7 ft, or 6 ft and 7 ft. The difference between median ages in 4 ft and 5 ft graves remains significant after exclusion of children under 1 year or under 5 years. For those of 10 years and over, the significant difference is between 4 ft and 6 ft graves.

The greatest number of people (1732/2610) came from North Shields, with 380 from the rest of the parish of Tynemouth. One hundred and eighty-nine had lived in the neighbouring parish of Wallsend, with 208 crossing the river from South Shields, Jarrow and Westoe. Fifteen came from outside of mainland Britain. There was no entry for 48 people. Age at death was significantly lower for people who had lived in North Shields rather than Tynemouth. In Tynemouth,

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mariner</td>
<td>90</td>
<td>12.7</td>
</tr>
<tr>
<td>Master mariner</td>
<td>51</td>
<td>7.2</td>
</tr>
<tr>
<td>Widow</td>
<td>44</td>
<td>6.2</td>
</tr>
<tr>
<td>Labourer</td>
<td>31</td>
<td>4.4</td>
</tr>
<tr>
<td>Shipwright</td>
<td>26</td>
<td>3.7</td>
</tr>
<tr>
<td>Coalminer</td>
<td>25</td>
<td>3.5</td>
</tr>
<tr>
<td>Shoemaker</td>
<td>24</td>
<td>3.4</td>
</tr>
<tr>
<td>Tailor</td>
<td>22</td>
<td>3.1</td>
</tr>
<tr>
<td>Ship owner</td>
<td>21</td>
<td>3.0</td>
</tr>
<tr>
<td>Blacksmith</td>
<td>19</td>
<td>2.7</td>
</tr>
<tr>
<td>Baker</td>
<td>17</td>
<td>2.4</td>
</tr>
<tr>
<td>Soldier</td>
<td>17</td>
<td>2.4</td>
</tr>
<tr>
<td>Butcher</td>
<td>12</td>
<td>1.7</td>
</tr>
<tr>
<td>Cabinet maker</td>
<td>12</td>
<td>1.7</td>
</tr>
<tr>
<td>Grocer</td>
<td>12</td>
<td>1.7</td>
</tr>
<tr>
<td>Trimmer</td>
<td>11</td>
<td>1.6</td>
</tr>
<tr>
<td>Gardener</td>
<td>10</td>
<td>1.4</td>
</tr>
<tr>
<td>Minister</td>
<td>10</td>
<td>1.4</td>
</tr>
<tr>
<td>Others</td>
<td>256</td>
<td>36.1</td>
</tr>
<tr>
<td>Total</td>
<td>710</td>
<td>100</td>
</tr>
</tbody>
</table>
there was no significant difference between males and females, but males died at a significantly younger age in North Shields than did females in North Shields or males in Tynemouth (Table 1).

Eighty per cent of the ship owners, 78.8 per cent of the mariners and 73.1 per cent of the master mariners had lived in North Shields, compared with just 14.8 per cent of the coalminers.

Table 5 shows the changes over time. The median for 1833–1838 was 7.3 years, rising to 20 years by 1848–1853. The differences between median ages of successive five-year periods were not significant, but between the first and last, and second and last, they were \( p = 0.04, p = 0.02 \), respectively.

**Discussion**

Were proper bills [of mortality] to be instituted, and competent persons only appointed to report, the nomenclature and classification of diseases; we should then derive from them...
the elucidation of many important and dubious medical points, as . . . IV. The comparative healthiness of different countries and places, climates and seasons. V. The influence of particular trades and manufactures on the human constitution. Such are some of the medical advantages which would arise from correct and enlarged bills of mortality’ (Ref. 14, p. 35).

We have shown that the mean age at death rose steadily with increasing depth of grave (Table 4). This shows a socio-economic gradient. The great increase in median age between 4 ft and deeper graves is striking. It would be possible that people who chose a basic 4 ft grave lived under, or only just above, the poverty line. The contrast between their lives and all those who could afford money for deeper graves could be such as to swamp the small effect demonstrated by 1s 6d per foot extra. No account is taken of the trade-off between having a deeper grave, erecting a headstone and purchasing the grave outright.

With no denominator population, mortality rates cannot be calculated from TGC data. Instead, this study has used median age at death. This is not reliable in comparing populations over time if new diseases are introduced that predominantly affect one age group.31 The effect of introducing a ‘new’ disease is illustrated by cholera: the extra deaths in the first and last 5-year periods raised the median age by 0.8 and 4 years (Table 5). In their study of people buried between 1805 and 1920, Davey Smith et al.32 used the median age but acknowledged the possible bias introduced by differences in age structure between the comparison groups. There may have been marked changes in the effective denominator for the TGC.

By 1842, Edwin Chadwick had noted differences in mortality based on occupation.4 His classes were derived from the occupation of the head of the household, in the same way that occupation is used in this study, thus it does not reflect purely occupational hazards. Occupation is used because it is convenient to collect, and indicates the degree of power, status and wealth of an individual, or his socio-economic status. However, contemporaries recognized some of its problems. For example, in compiling a local directory including high-status occupations such as shipowner, Richard Ward laments: ‘Ship Owners. This is unavoidably an unsatisfactory list . . . But how are we to draw the line between the individual who owns the one-fiftieth of a share of a ship, and one who is exclusive owner of twenty? Yet the former is often the more jealous of his right to appear here’ (Ref. 33, p. 123).

The Registrar General also pointed out that people may have more than one occupation over a lifetime, only one of which is likely to be recorded. Particular age groups predominate in some occupations. Dressmakers, for instance, tended to be between 16 and 26, so dressmakers would appear to die young. On the other hand, old age could pauperize, and the dead pauper would be classified as such, not by his previous trade, thus reducing the average age of death for the trade and making pauperism appear healthy.6

Occupations can be difficult to classify and some are now obsolete. After the 1851 Census, the Registrar General grouped occupations into 17 classes and 91 subclasses, most of which were further subdivided, based on spheres of activity.34 This classification does not indicate relative standing, and it is not easy to assess where occupations such as keelman or tide-waiter fit.

The present study looks at a broad cross-section of the community, excluding only aristocrats and extreme paupers, but for most people no occupation was recorded. Some occupations were well represented and their relative status is fairly easy to interpret. These demonstrated a relationship between occupation, depth of burial and age at death. Depth of the grave was therefore used as a more accessible indicator of socio-economic position, depth greater than the minimum depending on willingness and ability to pay extra, and representing the resources available to the deceases’ families and friends. This is similar to the use by Davey Smith et al.32 of height of obelisk, but applied to all the burials, those with surviving gravestones being an unrepresentative sample with a median age higher than the whole group.

The sex ratio for the parish of Tynemouth as a whole was fairly stable through the three Censuses of 1831, 1841, and 1851 (66 per cent, 71 per cent, and 76 per cent). By contrast, the township of North Shields had male/female populations of 2722/4022 (68 per cent), 3348/4161 (81 per cent), 4630/4252 (109 per cent), respectively.34 Mariners (males) who were away on Census night were not enumerated. Also, the deaths of males who were normally resident in North Shields would be under-represented because of those mariners who died at sea or in other ports. Within TGC, there were 110 males to 100 females. Assuming that the specific population that buried its dead at TGC was typical in male/female proportion then this would seem to reflect a greater mortality amongst the males. This is supported by the lower median age of the males, notably those from North Shields.

Most coalmining families lived outside of North Shields, which could explain their higher than expected median age at death. The median age of the people from North Shields who were buried at TGC was half that of the people from the rest of the parish of Tynemouth (Table 1), who would have suffered less crowded conditions, possibly free access to water, and some may have been able to supplement their diets from vegetable plots. The annual mortality in Tynemouth for 1843 was said to be 22.6 per 1000, but in the same year, ‘the mean average of six years in the lowest part of the borough was 2.98 per cent [29.8 per 1000] . . . It seems . . . that out of 1,344 deaths, 691 were those of children under 10 years of age’ (Ref. 35, p. 18).

Such anomalies were evident at the time. People lived within walking distance of work so occupation would confound place of residence, a phenomenon recognized by Engels: ‘But in the great cities the proportion is wholly different . . . the death-rate of several large towns is as follows: In Manchester . . . 1 in 32.72 . . . In Liverpool 31.90 . . . How unfavourably the workers are placed in the great cities, the mortality for Prescott in Lancashire shows; a district inhabited by miners, and showing a lower sanitary condition than of the agricultural districts,
mining being by no means a healthful occupation. But these miners live in the country, and the death-rate among them is but 1 in 47.54, or nearly 2½ per cent, better than that for all England . . . based upon the mortality tables for 1843’ (Ref. 36, p. 64).

The debate as to the exact mechanism by which such inequalities operate still continues. William Farr wrote at length about the high mortality in towns, referring to other authors. Dr Price had apparently blamed ‘luxury’, and others ‘vitiated air’, but Farr looked to poverty, poor housing, and filth. His view was that: ‘A reduction from abundance to a rude subsistence would probably be attended by a reduction in the mean duration of life – but to a comparatively small extent. A low standard might, however, be fixed upon, any fall below which would be accompanied by a certain reduction of the mean life of the people’ (Ref. 6, p. 410).

The striking difference in median age between 4 ft and deeper graves would support Farr’s view. William Ranger, Superintending Inspector to the General Board of Health, held an enquiry in September 1850, at North Shields. His report details the overcrowding and lack of effective drainage and refuse disposal. He found only 130 privies for nearly 8000 people. Depth of burial can be a useful socio-economic indicator, and is a measure that has not, to our knowledge, previously been employed. This yardstick showed that socio-economic status influenced health and longevity in the population buried in TGC. The median age was only 8 years for males, 17 years for females. However, for those in the cheapest graves the median age was 4 years, compared with 30.5 years in graves of 7 ft or more. North Shields residents had a particularly limited lifespan, with a median age at death half that for the rest of the parish of Tynemouth. These inequalities began to be recognized at the time, but the causes were debated, as they have been to this day.

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