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SUICIDE

Suicide in England and Wales 1861–2007: a time-trends analysis

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Background Suicide is one of the leading causes of premature mortality worldwide. Few studies have assessed long-term trends or sex differences in its incidence over time. We have investigated the age-, sex- and method-specific trends in suicide in England and Wales from 1861 to 2007.

Methods Overall age-standardized suicide rates using the European Standard Population and age-, sex- and method-specific rates were calculated for ages $\geqslant$15 years from 1861 to 2007.

Results Rates in males were consistently higher than females throughout the 19th and 20th centuries, although the male-to-female sex ratio fluctuated from 4 : 1 in the 1880s to 1.5 : 1 in the 1960s. Suicide rates increased in all age groups in the 1930s, coinciding with the Great Depression. The highest male rates (30.3 per 100 000) were recorded in 1905 and 1934 and have since been declining. Female rates peaked in the 1960s (11.8 per 100 000), declining afterwards. In both sexes the lowest recorded rates were in the 21st century. There was a rapid rise in the use of domestic gas as a method of suicide in both sexes following its introduction at the end of the 19th century. There was no evidence that this rise was accompanied by a decline in the use of other methods. Self-poisoning also increased in popularity from the 1860s (5% of suicides) to the 1990s (22% of suicides).

Conclusions The epidemiology of suicide in England and Wales has changed markedly over the past 146 years. The rapid rise in gas suicide deaths in the 1920s highlights how quickly a new method of suicide can be established in a population when it is easily available. The increase in suicides during the Great Depression has implications in relation to the current economic crisis. Changes in the acceptability and lethality of various suicide methods may account for the large variations in sex ratios over time.

Keywords Suicide, epidemiology, secular trends

Introduction

Suicide is one of the three leading causes of death amongst 15- to 44 year-olds worldwide, and is the cause of almost one million deaths each year in people of all ages.[1] Between 2004 and 2006, it accounted for 5.2 and 2.3% of potential years of life

lost before 75 years of age in men and women, respectively, in England and Wales.[2] There were marked declines in suicide rates in the past 50 years of the 20th century in England and Wales.[3,4] With a few exceptions,[4,5] previous analyses of secular trends in suicide in England and Wales and other countries have largely focussed on discrete time periods. Earlier analyses have not investigated changes in the relative incidence of suicide in men and women, changes in age patterns or long-term secular trends in commonly used methods of suicide.

Analysis of such trends may shed light on potentially preventable factors such as the impact on overall rates of the changing popularity of certain suicide methods and the risk posed by periods of economic recession.[6,7] Knowledge of such factors contributes to national suicide prevention strategies. We investigated the age-, sex- and method-specific trends in suicide to quantify the changing patterns of risk over the past 146 years in England and Wales.

Methods

Suicide mortality and population data for England and Wales were obtained for the period 1861–2007 from the Office for National Statistics (ONS). The year 1861 was the earliest year for which complete mortality records were available. Data prior to 1911 were transcribed from paper records provided by the ONS. Yearly age-specific overall suicide mortality rates per 100 000 were calculated within 10-year age bands (15–24, 25–34 until $\geqslant$65 years). Three-year moving averages that were centred on the last year of each 3-year period were then calculated to smooth the annual rates. Yearly age-standardized rates using the European Standard Population and 3-year moving averages were calculated for ages $\geqslant$15 years.

The codes used for suicide in the 20th and 21st centuries are shown in Table 1. After 1968, a new category of deaths—deaths from injury undetermined whether accidental or purposely inflicted—was included in the International Classification of Diseases (ICD). There is evidence that ~75% of undetermined deaths are actually suicides.[8] Therefore, age-standardized suicide rates including undetermined deaths for ages $\geqslant$15 years were also calculated after 1968. The ICD codes were also used to ascribe deaths to particular methods (Table 1).

All suicide death rates in the figures were expressed as numbers of deaths per 100 000 men or women. The sex ratio was calculated as the ratio of male suicide rates to female suicide rates.

Results

Overall suicide rates

Figure 1 shows the standardized male and female suicide rates in those aged $\geqslant$15 years from 1861 to 2007. The overall trend was similar when undetermined deaths were included for both sexes from 1968.

Suicide rates in males steadily increased by 67% from 1861 to reach a peak of 30.3 per 100 000 by 1905. Rates then decreased to 21 per 100 000 in 1917 (during World War I), increasing to reach a second peak of 30.3 per 100 000 in 1934, coinciding with the Great Depression. Subsequent declines were interrupted by small increases in the 1950s and 1980s. The lowest male suicide rate (11.6 per 100 000) was recorded in 2007. In contrast, suicide rates in females increased gradually from 6.0 per 100 000 in 1861, peaking at 11.8 deaths per 100 000 in 1964, with slight declines during the two world wars. The rates steadily declined in subsequent years and the lowest female rate (3.2 per 100 000) was seen in 2007.

The male rate was consistently higher than the female rate over the entire time period, although the male-to-female (sex) ratio rose from 3.3 in 1861 to 4.0 in 1886 and 1906 and subsequently declined steadily to its lowest level (1.5) in 1966 before increasing again to around 3.9 in the mid-1990s (Figure 2).

Age-specific suicide trends

Figure 3 shows the age-specific suicide rates in men and women for all methods of suicide from 1861 to 2007. The patterns differed markedly in males and females.

Amongst males, the highest suicide rates were seen in those aged 55–64 and $\geqslant$65 years until the late 20th century when they declined steeply and were surpassed by 25- to 34-year-olds and 35- to 44-year-olds. Males aged 15–24 years had the lowest suicide rates over the entire period. Wide (8-fold) differences in age-specific suicide rates were seen from 1861 to the mid-1950s, when rates began to converge. One of the most striking features of male rates is the halving of suicide rates in men aged >45 years during the two world wars (1914–18 and 1939–45), whereas there were small rises in younger men. However, the peaks of suicide rates observed in 1917 in men <35 years are data artefacts due to the disproportionate number of young men who were conscripted and sent to fight in World War I. The population of young men aged 15–24 years dropped by 40% from 1911 to 1917. Rises in all age groups were seen during the Great Depression (1929–35). The highest age-specific rate (56.6 per 100 000) was observed in males aged 55–64 years in 1933.

In females, age-specific suicide rates widened between 1861 and the mid-1960s from 3- to 10-fold differences in rates between older and younger women. Just as in males, suicide rates in all female age groups converged in the 1990s due to a fall in rates in older women. From 1861 to 1966, 55- to 64-year-old females had the highest rates, peaking at 20.1 per 100 000 in 1965. Rates in the 45- to 54-year-old females were very similar to those aged

Table 1 ICD codes used for methods of suicide and undetermined injury

	ILCD-1 1900–1908	**ILCD-2** 1909–1919	**ILCD-3** 1920–1928	**ILCD-4** 1929–1937	**ILCD-5** 1938–1949	**ICD-6** 1950–1957	**ICD-7** 1958–1967	**ICD-8** 1968–1978	**ICD-9** 1979–2000	**ICD-10** 2001–2007
Suicide										
Recorded suicides	190	155–163	165–174	163–171	163–164	E970–E979	E970–E979	E950–E959	E950–E959	X60–X84
Undetermined								E980–E989	E980–E989 excluding E988.8	Y10–Y34 excluding Y33.9 where verdict pending
Method of suicide										
Recorded suicides										
Overdose		155	165–166	163	163aa–163ad	E970–E971	E970–E971	E950	E950	X60–X65, X68–X69
Gases		156	167	164	163ba–163bc	E972–E973	E972–E973	E951–E952	E951–E952	X66–67
Hanging		157	168	165	164a	E974	E974	E953	E953	X70
Drowning		158	169	166	164b	E975	E975	E954	E954	X71
Firearms and explosives		159	170	167	164c	E976	E976	E955	E955	X72–X75
Other and unspecified (including jumping from a high place and cutting and piercing)		160–163	171–174	168–171	164d–164f	E977–E959	E977–E959	E956–E959	E956–E959	X76–X84
Undetermined										
Overdose								E980	E980	Y10–15, Y18–Y19
Gases								E981–E982	E981–E982	Y16–Y17
Hanging								E983	E983	Y20
Drowning								E984	E984	Y21
Firearms and explosives								E985	E985	Y22–Y25
Other and unspecified (including jumping from a high place and cutting and piercing)								E986–E988	E986–E988	Y26–Y34

ILCD: International List of Causes of Death; ICD: International Classification of Diseases.

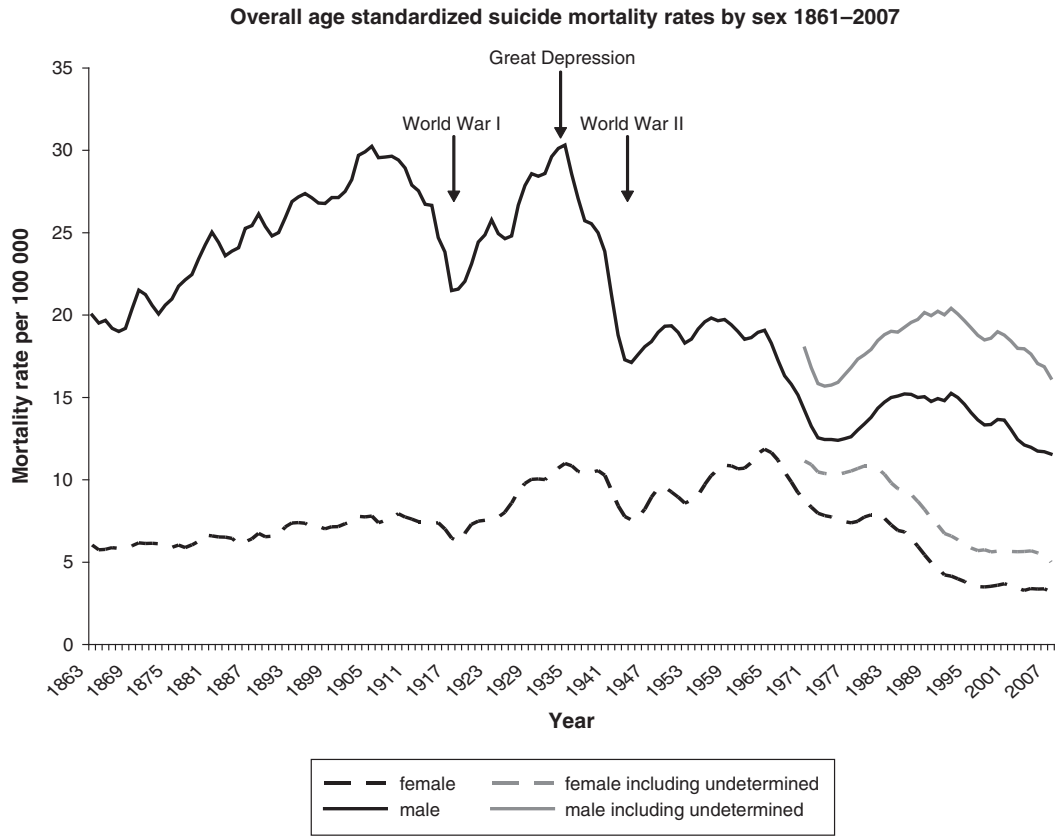

Figure 1 Age standardized suicide rates for ages ⩾15 years in England and Wales (3-year moving averages) 1861–2007

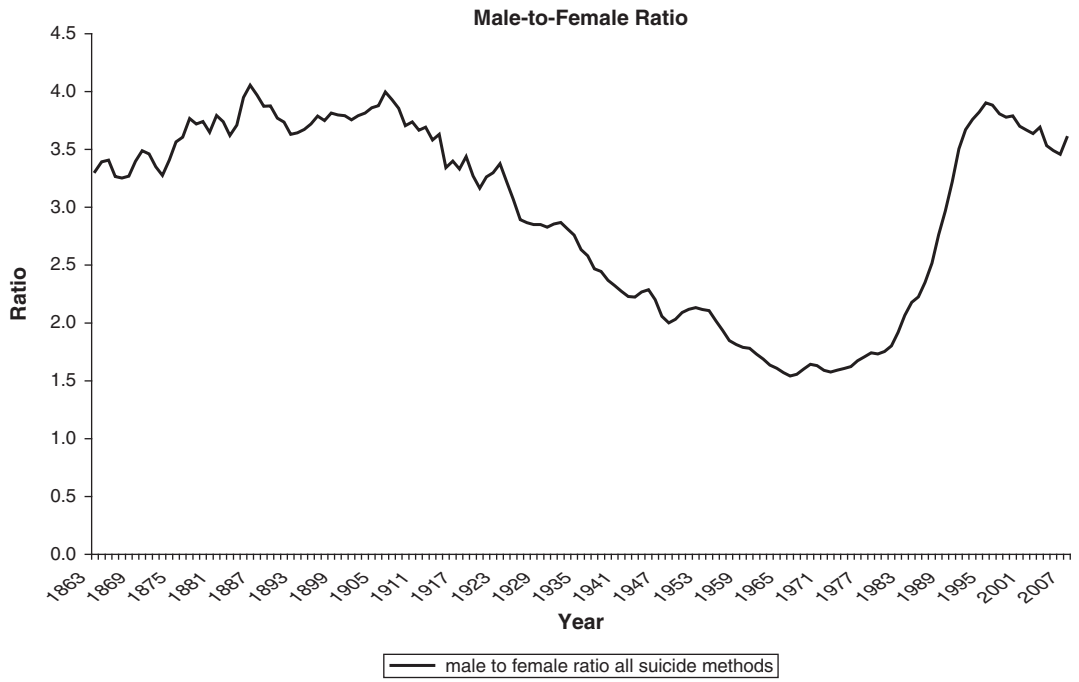

Figure 2 Male-to-female sex ratio in England and Wales (3-year moving averages) 1861–2007

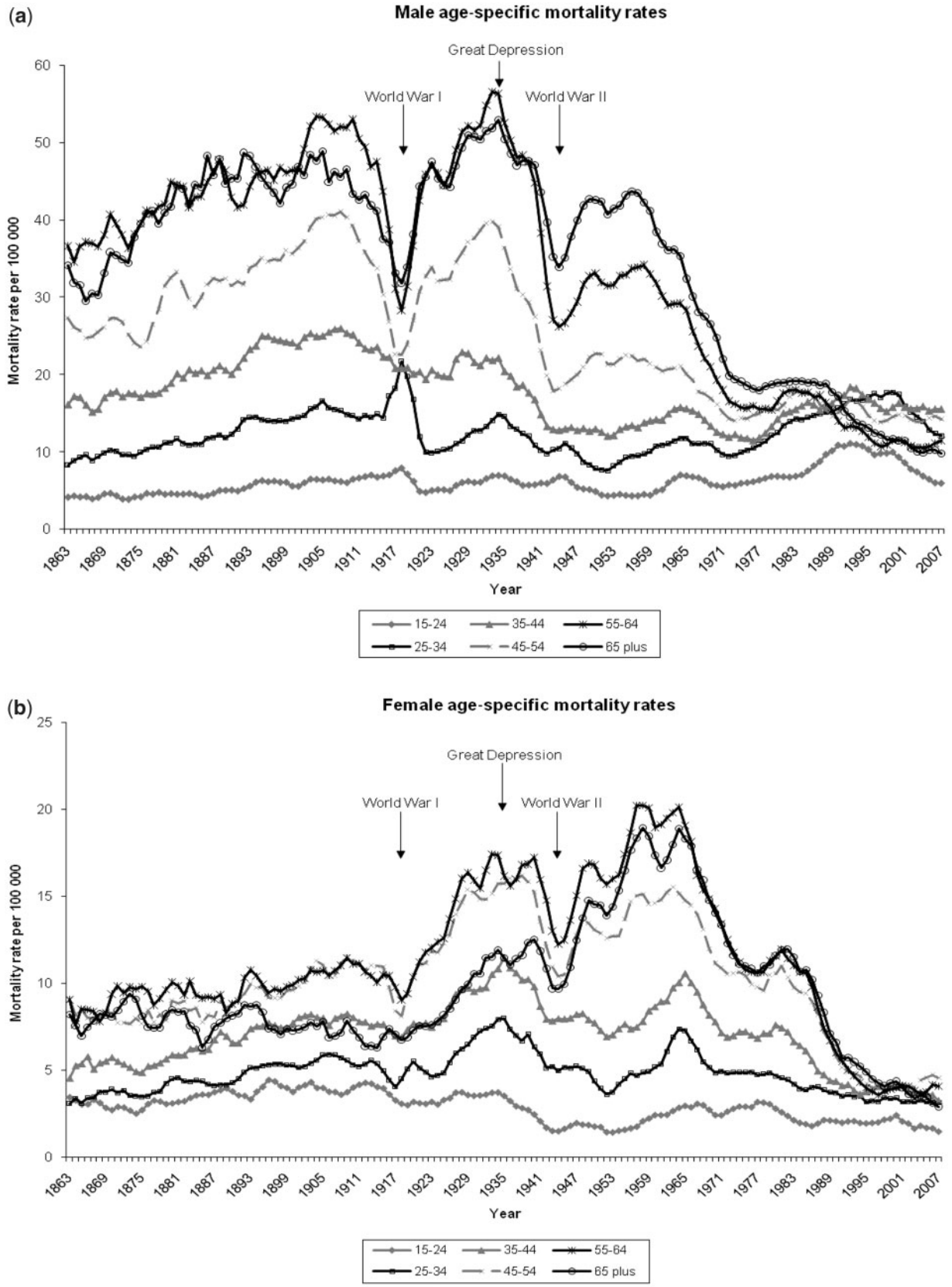

Figure 3 (a) Age-specific mortality rates (males) in England and Wales (3-year moving averages) 1861–2007. (b) Age-specific mortality rates (females) in England and Wales (3-year moving averages) 1861–2007

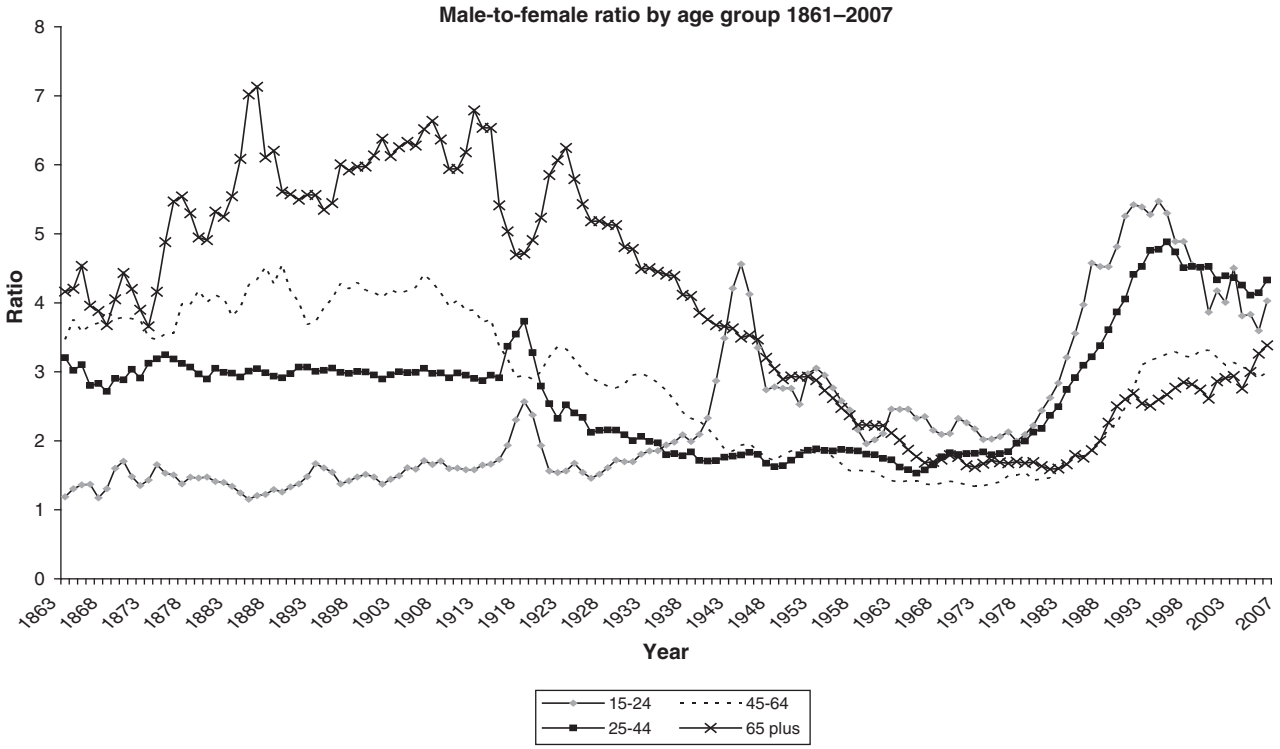

Figure 4 Age-specific sex ratios in England and Wales (3-year moving averages) 1861–2007

55–64 years until the 1930s, when the gap increased. After 1944, the rates in >65-year-olds increased to become almost identical to the rates in the 55- to 64-year-olds. By 2007, the 45- to 54 year-olds had the highest female suicide rates. For the entire time period 15- to 24 year-old females experienced the lowest suicide rates. Between 1861 and 1917 their rates were close to those of 25- to 34 year-olds, although the gap widened subsequently. There was a dip in suicide mortality in all female age groups (most marked in those >45 years) in the two world wars. Peaks in suicide rates were seen during the Great Depression and in the 1950s and 1960s.

Figure 4 shows secular trends in the sex ratio for suicide in four age groups. There were 6-fold differences in the age-specific sex ratios prior to the 1930s, ranging from 1.1 in 15- to 24 year-olds to 6–7 in those aged $\geqslant$65 years. With the exception of 15- to 24 year-olds, there was a decline in the sex ratios of the majority of age groups between the 1900s and 1960s. This was followed by an increase until the 1990s. The male-to-female ratio was highest in those aged $\geqslant$65 years until 1944, when they were surpassed by the ratio in 15- to 24-year-olds. The ranking of the age-specific sex ratios for suicide almost completely reversed between the 1860s and the 1980s—this reversal largely occurred in the 1960s and 1970s. There was a rapid increase in the sex ratios in all age groups from 1975 to 1991 such that by the 1990s the sex ratios for the two youngest age groups were almost double those of the >65-year-olds. However by 2007, the male-to-female ratio was highest in those aged 25–44 years.

Suicide methods

Figure 5 shows the secular trends in method-specific suicide rates for males and females. 'Other' methods accounted for >50% of overall suicide deaths in the late 19th and early 20th century. In 1910, drowning, cutting and stabbing and firearms contributed to 35, 31 and 14%, respectively, of other methods of male suicide. However, in females, drowning and cutting/stabbing were most important, accounting for 58 and 21% of other suicides in 1910. Firearms were used in <3% of female suicides.

The incidence of suicide by gassing rapidly increased in the 1910s and 1920s due to the increasing popularity of domestic gas poisoning. It became the most common cause of male suicide in the 1950s and 1960s and of female suicide two decades earlier in the 1930s and 1940s. Prior to the 1900s, gassing was not used as a method. The rapid increase in the use of this method was seen in all age groups for both sexes (data not shown). Dips in gassing rates were also noted around World War II in both men and women. Suicides by gassing decreased from the early 1960s to reach their lowest levels by the mid-1970s; subsequently there were increases as a result of the increasing use of car exhaust gases,

Figure 5 (a) Rates of suicide by different methods in males ages ⩾15 years in England and Wales (3-year moving averages) 1861–2007. (b) Rates of suicide by different methods in females ages ⩾15 years in England and Wales (3-year moving averages) 1861–2007

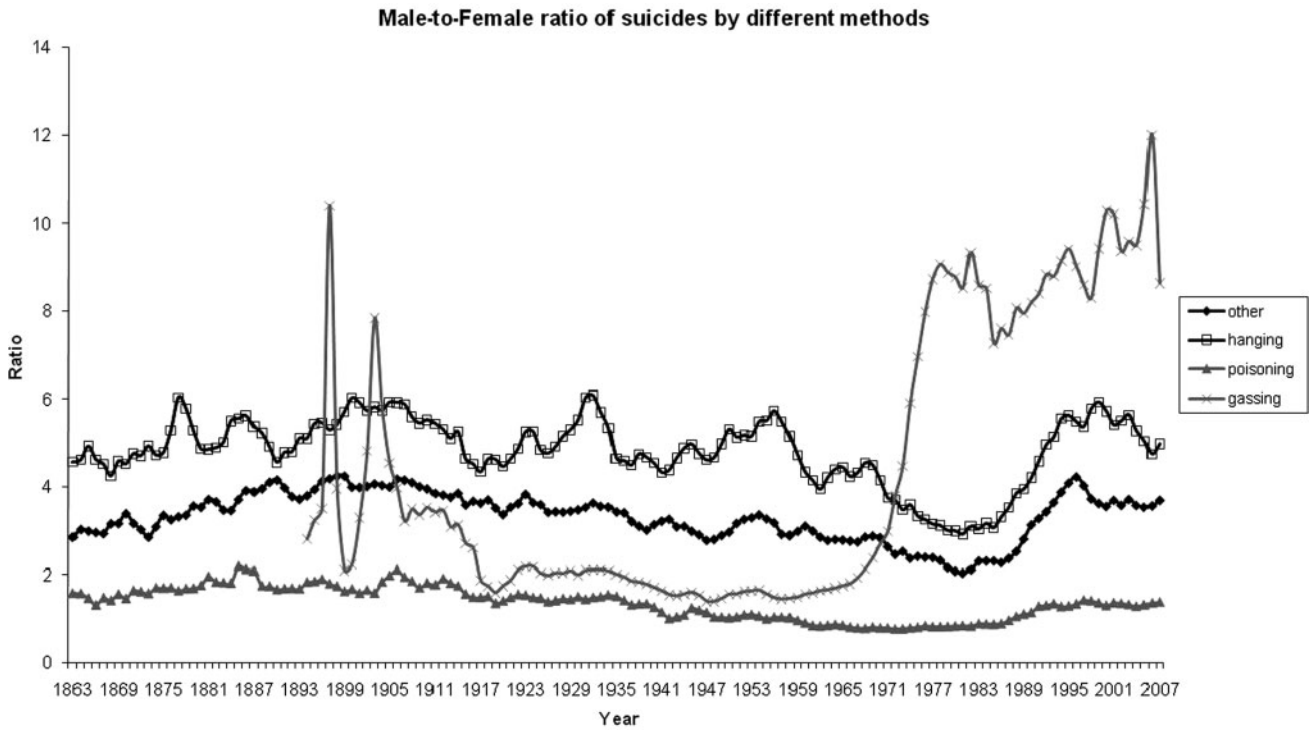

Figure 6 Male-to-female ratio of different methods of suicide ages ⩾15 years in England and Wales (3-year moving averages) 1861–2007

particularly by males. In neither males nor females did the rapid increase in suicides from gassing between 1920 and 1939 correspond with reciprocal declines in the use of other methods of suicide. The exclusion of suicides by gassing from our assessment of overall trends in suicide changed the patterns seen in both sexes (see figure available as supplementary data at *IJE* online). The peaks in males and females in the 1920–1930s and 1950s diminished. Female suicides excluding gassing showed a general decline until the 1950s, peaked in the 1960s and 1970s and decreased again afterwards to relatively steady levels by the end of the 20th and early 21st centuries.

Suicide by poisoning increased in popularity from the 1860s to the 1960s in both men and women, although troughs were seen during the two world wars (Figure 5). In the 1860s, self-poisoning accounted for 5% of suicides (mainly ingestion of hydrochloric, oxalic and carbolic acid). By the 1990s, it accounted for almost 22% of suicides, mainly from analgesics and antidepressants. There was a particularly steep rise in poisoning amongst females in the 1950s. Poisoning became the most common method of suicide in men from 1971 to 1979 and in women from 1965 to 2004.

The steep drop in the sex ratio observed for all suicides from the 1910s to the 1960s was greatly diminished when poisoning and gassing suicides were excluded (data not shown). For all suicides there was a 59% decrease in the sex ratio from 3.7 in 1910 to 1.5 in 1966, whereas the exclusion of gassing and poisoning suicides resulted in only a 27% decrease in the sex ratio from 4.4 to 3.2. However, their exclusion did not have any impact on the rapid increase in sex ratio seen after the 1960s.

Hanging was the most frequently used method of suicide amongst males in the 1860s and the second most common method amongst women throughout the 19th century. Suicide rates by hanging decreased in males and females in all age groups over the century from the 1860s to the 1960s. In men, suicide by hanging steadily increased from the 1960s to 2000, remaining relatively constant thereafter. Hanging increased in women from the 1960s to the 1980s, followed by a decline from 1985 to 1996 and a subsequent increase to the present day. It is now the most common method used by females.

Figure 6 shows secular trends in the sex ratio for suicide by method. Two main patterns were observed. First, the sex ratio was consistently highest for hanging and it was lowest for poisoning throughout most of the period. Secondly, there was a striking change in the sex ratio for gassing from the 1960s, which was most marked between the 1960s and 1970s. Gassing retained the highest sex ratio from 1972 to 2007. Of note most gas-related suicides in this latter period were car exhaust suicides; prior to this domestic gas poisoning predominated.

Discussion

Main findings

This time-trends analysis revealed five main findings. First, male suicide rates were consistently higher than female suicide rates throughout the 19th, 20th and 21st centuries, although the ratio of male-to-female suicide rates changed over time. The sex ratio in the middle of the 20th century was almost one-half of its level in the early 1900s and 1990s. Secondly, the age patterns of suicide differed markedly in males and females. In males, 25- to 34-year-olds had amongst the lowest suicide rates until the 1990s when, together with the 35- to 44-year-olds and 45- to 54-year-olds they became the highest risk group. In both males and females 15- to 24-year-olds had the lowest suicide rates. Intriguingly, the age-specific rankings of the male-to-female suicide rate ratios reversed between the 19th/early 20th centuries and the period from the 1990s to 2007. The sex ratio was highest in 45- to 64-year-olds and over 65-year-olds at the beginning of the time period although by the 1990s and 2000s the ratio was highest in 15- to 24-year-olds and 25- to 44-year olds. Thirdly, there was a rapid rise in the use of gassing as a method of suicide in both sexes from its introduction at the end of the 19th century until the 1930s, 1940s and 1950s. This trend was not associated with a compensatory fall in the use of other common methods of suicides. Fourthly, there was a striking increase in the sex ratio of suicides by gassing from the 1960s to the 1970s (from 1.6 in 1960 to 9.1 in 1978), with a less significant increase afterwards. Lastly, the sex ratio was consistently lowest for suicides by poisoning and highest for suicides by hanging for the majority of the time period. Other findings that have been previously described include the dips in male and female suicide rates seen during both world wars and the large increases in suicide rates observed during the Great Depression. Of note, the declines in suicide in the two world wars were largely due to reduction in suicide in the >45 years and reductions in poisoning and gassing.

Strengths and limitations

As far as we know, this is the first study to examine long-term age-, sex- and method-specific trends in suicide mortality in England and Wales up to the present day. Age-standardized and age-specific rates were used so that the results were directly comparable. The use of a single age category for those aged >65 years was appropriate as the trends among those aged 65–74 years were similar to those observed for the >75-year-olds. However, there are several limitations of this analysis. Although the data used in this analysis were obtained from one source (ONS), completeness of suicide death recording may have changed over time as stigma associated with suicide has changed (see below). There have also been changes in the ICD classification over the time period studied. From 1901 there were 10 different revisions of the ICD. However, visual inspection of the figures revealed no obvious discontinuities in the overall, age- and sex-specific suicide rates in the years when successive revisions of the ICD were implemented in England and Wales (data not shown). The introduction of a new category 'injuries undetermined whether accidentally or purposely inflicted' occurred with the eighth ICD revision in 1968. The fact that the overall trends (including undetermined deaths) mirror the suicide-only trends is, however, reassuring. Undetermined deaths were excluded from the method-specific analyses. This may have resulted in underestimation of certain methods of suicides since deaths from overdose and drowning are more likely to be coded as undetermined deaths instead of suicides.[9] The classification of deaths as suicide or open verdict (i.e. undetermined death) is subject to the interpretation of the coroner. In some countries, for example, Ireland and Portugal, there is widespread under-reporting of suicides as undetermined or accidental deaths.[10–12] This can affect the reliability of official suicide statistics. Furthermore, changes in the social acceptability of suicide may lead to biased trend estimates if there is an impact on coroners' verdicts.[12]

Comparison with previous studies

The highest rates of male suicide were in the early 1900s and 1930s. This latter period includes the Great Depression, a time of high unemployment levels. The rises in suicide around the time of the Great Depression has been reported in many other developed countries including the USA,[13] Australia[14] and New Zealand,[15] as well as previously in the UK.[16] Peak female suicide rates occurred in the 1930s, coinciding with the male peak during the Great Depression. A second peak in female rates in the 1960s has been hypothesized as being due to post-war changes in the role of women in society.[17] However, a recent systematic review found very little evidence that increasing female labour force participation rates were associated with increasing female suicide rates.[18] It is more likely that the female peak in the 1960s is due to the ease of accessibility of specific methods, in particular barbiturate poisoning.[19]

There were marked differences in age-specific trends in suicide rates consistent with findings from Australia and Switzerland.[17,20] Also, the dips in suicide mortality rates in 1917 and 1944 seen for >45-year-olds in both sexes coincide with the two world wars and are in keeping with those seen in other countries. The most widely held explanation for this phenomenon is the greater cohesion within society that may occur during wartime.[21] However it has been suggested that competing outcomes are also important, i.e. individuals who may have otherwise died by suicide are more likely to die of other

causes.[22] Other hypotheses include changes in cultural attitudes towards suicide during wartime and the less apparent impact of media coverage of suicide on suicide rates in wartime than in peacetime.[23,24] In our study, the young male peaks observed during World War I are likely to be data artefacts as there were marked decreases in the populations of younger men recorded during wartime. During both world wars, the populations recorded by the ONS referred to civilian populations only and younger men would have been disproportionately sent off to war. However, a Scottish study has also recorded large increases in suicide in younger men together with an increase in firearm deaths during World War II.[22] The authors proposed that younger men would be more likely to be called to arms and have access to guns and suggested that access to lethal suicide methods, and the stresses of being a potential combatant contributed significantly to the increased rates in young men. Increases in young male suicides in wartime have also been described in Croatia and Serbia.[25]

In our analysis there was a fall in the ratio of male-to-female suicide rates from the 19th century to the mid-20th century, followed by an increase from the 1970s to 1990s. Similar findings have been described for Australia[26] and Switzerland.[20] This increase in sex ratio in the 1990s was seen in all age groups but was most prominent amongst people aged <45 years. In young men, increasing levels of divorce, declines in marriage and inequality in income were most consistently associated with rises in suicides at this time.[27] The highest gender ratios were seen in the 1890s; it is unclear which factors in this period were likely to have affected men so disproportionately compared with women. It is possible that socio-economic factors such as high unemployment would be likely to affect men more than women in this era since men would have been the main breadwinners in most family units in the late 19th century. It has also been argued that increasing modernization may lead to a decline in a country's male-to-female ratio.[26] Stack and Danieglis (1985)[26] theorized that modernization increased women's participation in the labour force, which increased the work-related pressure faced by women and made them more susceptible to suicide. However, this theory has not been supported by the findings of the most recent systematic review.[18]

The availability of specific methods of suicide affects secular trends. This is of particular importance with respect to gassing. Prior to 1905, gassing accounted for a negligible percentage of all suicides. However, there was a rapid increase in suicides by gassing in the early 20th century and it became the most commonly used method of suicide in the 1930s in women and 1950s in men, before declining after the 1960s with the changes in domestic gas supply from coal gas (high carbon monoxide content) to natural gas (low carbon monoxide content).[7] Our present analysis provides some evidence of method substitution of gassing with poisoning in the 1960s, which has been previously reported.[19]

Trends in suicides by gassing highlight how a new method of suicide can quickly become established within a population. A more recent example of this is shown by the rapid increase in suicides by charcoal burning in Hong Kong and urban Taiwan.[28] This method has rapidly increased in popularity following the high profile reporting of a case which occurred in Hong Kong in 1998. In only 6 years, charcoal-burning suicides became the second most common method of suicide in Hong Kong.[29] Our analysis shows that in the 1920s and 1930s the rapid rise in domestic gas poisoning was not offset by declines in the use of other methods.

The sex ratio for gassing remained relatively stable until it increased substantially from approximately two male deaths for each female death in the 1960s, to eight or nine male deaths for each female death in the late 1970s and 1980s. This rise corresponds to the rise in use of car exhaust gases as a method of suicide. Gassing appears to be an acceptable suicide method for men and women.[30] Before the introduction of catalytic converters, motor vehicle exhaust gas accounted for most of the gassing deaths from the 1970s onwards.[31] It can be speculated that the increased technicality required to use this method (i.e. access to car, attachment of hose to car exhaust) may have acted as a barrier to females.

The age- and sex-specific trends of deaths by poisoning are also noteworthy. With the exception of the 1940s, poisoning suicides increased year on year until the 1960s. Poisoning became the most common method of suicide in women >15 years of age in the 1960s, almost tripling in incidence between the 1950s and 1960s, and subsequently remaining the most frequent method of suicide in females until the end of the 20th century. This finding supports previous evidence that women favour methods such as poisoning as they are generally believed to be relatively painless and less disfiguring.[30,32] Suicide mortality from poisoning decreased in all age groups in both sexes after the 1970s. This is likely to be a result of the restrictions in barbiturate prescribing and the replacement of tricyclic antidepressants (TCAs) with less toxic selective serotonin reuptake inhibitors (SSRIs).[19] Further decreases have occurred since the ban on co-proxamol prescribing.[33]

The sex ratio was highest for hanging (approximately five male deaths for every female death) for the majority of the time period. This ratio decreased from the 1950s to the 1970s as the ratio increased for gassing, indicating some degree of method substitution in men.

Dips in suicide rates were seen in both sexes for poisoning (in both world wars) and gassing (World War II). It is unclear why these dips occurred

in the 'softer' or less disfiguring methods that are usually favoured by women. However, it may suggest that particular methods of suicide are influenced by factors that exert a more global influence on population mental health.

Public health implications

The epidemiology of suicide is complex. It involves the interplay of social, economic, psychological and cultural factors with other factors such as mental illness and the availability of commonly used methods. Analyses of age- and sex-specific trends, such as those presented here, help in the identification of high-risk groups and in generating hypotheses concerning changing patterns of risk to inform public health policy and suicide prevention strategies.

Reductions in suicide following the detoxification of the domestic gas supply in the 1950s and 1960s and the increased numbers of cars fitted with catalytic converters in the 1990s highlight the benefits of prevention strategies focussed on reducing access to commonly used suicide methods. Although method restriction is a useful public health tool, it is also important to focus on strategies that limit method substitution and the introduction of novel suicide methods. The rise in coal gas suicides in the 1920s and subsequent decades illustrates how rapidly new methods may be adopted and impact on overall rates of suicide. Changing patterns of method popularity may also impact on the sex ratio of suicides. Therefore, trends in the relative incidence of male and female suicide may reflect changes in method popularity as much as changes in factors influencing the mental health and suicide risk of men and women. Lastly, the rise in suicides during the Great Depression has implications in relation to the current and future economic crises—it is important that prompt preventative action is taken to offset the impact of the current economic recession on suicide.[34]

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Conflict of interest: None declared.

KEY MESSAGES

- The ratio of male-to-female suicide rates varied between 4 : 1 and 1.5 : 1 over the course of the 19th and 20th centuries.
- The temporal variations in the gender ratio appear to be largely due to variations in the availability and lethality of suicide methods more favoured by women than men.
- New methods of suicide can become quickly established within a population without impacting on the use of other methods, leading to increases in overall suicide rates.
- Reductions in suicide rates in the two world wars were largely restricted to men and women aged >45 years.

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Commentary: Thomas & Gunnell's paper

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This paper[1] is an interesting and unusual data set that raises a number of questions, only some of which are answerable. Life expectancy has steadily increased from 1900 to 2000, while infant mortality has also steadily improved. Suicide rates have not kept pace with this general improvement in health by showing similar linear decreases. If we disregard the major reductions in suicide rates in both world wars, more pronounced for males than females, we can say that male rates rose steadily from 1863 to 1905, but had returned to 1905 levels by 1937 during the Great Depression. Since then, however, the reduction in the male rates has been steady and sustained. Female rates rose gradually from 1863 to 1967, with smaller decreases during the world wars, and have fallen fairly steadily since then. The progressive