

# Secular trends in antidepressant prescribing in the UK, 1975–1998

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## Abstract

**Background** We have examined secular trends in age- and sex-specific prescribing of antidepressants to determine whether these mirror changes in other population measures of mental health.

**Method** An analysis was carried out of age- and sex-specific rates of antidepressant prescribing by a representative sample or panel of UK general practitioners (GPs) in the period 1975–1998.

**Results** The number of antidepressant prescriptions issued increased more than twofold in the period 1975–1998 and, in 1998, a total of 23.4 million antidepressant prescriptions were issued by GPs in the United Kingdom. Rates of antidepressant prescribing increased markedly in all age and sex groups with as much as a threefold increase in the older age groups. With the exception of 12–19-year-olds, these increases have been more marked in males, although absolute levels of prescribing are still at least two times higher in females.

**Conclusions** Antidepressant prescribing has increased in all age and sex groups. This indicates either that there have been changes in the presentation, recognition and management of depression in general practice or that the prevalence of depression has increased, or a combination of these two phenomena. The higher prescribing rate in females is in keeping with evidence from psychiatric morbidity surveys suggesting that women experience higher levels of psychiatric morbidity than men. Decreases in the ratio of female to male prescribing, however, support other data indicating that, relative to females, the mental health of young males has declined in recent years. Changes in patterns of help-seeking may also contribute to the observed trends.

**Keywords:** antidepressant prescribing, mental health, suicide

## Introduction

Population data concerning secular trends of psychiatric morbidity are limited. Most of the available information comes from cross-sectional studies using recall of past episodes of depression. These data indicate that there have been increases in the prevalence of depression, particularly in young people, but because such data are based on recall, they should be treated with caution.<sup>1</sup>

Recent governmental health strategies have used trends in suicide as a marker for population mental health.<sup>2,3</sup> However, the association between suicide and psychiatric morbidity is complex and trends may be confounded by changes in the availability and lethality of methods used.<sup>4–6</sup> Primary care prescribing data offer an alternative routine means of assessing levels of psychiatric morbidity in the population, although they are clearly influenced by individuals' willingness to seek help and changes in prescribing habits.

To date, analyses of changes in levels of antidepressant prescribing have focused only on overall trends (not age- and sex-specific) in the most recent years.<sup>7,8</sup> These indicate that there have been marked increases in antidepressant prescribing in a number of developed countries in recent years. Here, we examine trends in age- and sex-specific antidepressant prescribing and we investigate whether these mirror changes in other population measures of mental health.

## Methods

### Source of prescribing data

Data on antidepressant prescribing were obtained from IMS HEALTH (Intercontinental Medical Statistics) Medical Data Index. Since 1967, IMS health has collected quarterly data on drug prescribing in general practice in the United Kingdom – and from 1975, age- and sex-specific data were collected. A prescription is defined as every drug item on a prescription form given as a result of a consultation. Therefore, as treatment of depression requires several months of therapy,<sup>9</sup> prescribing rates will greatly overestimate population rates of treated depression.

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Until 1986, prescribing data were collected every quarter from 500 general practitioners (GPs) selected from an address register, representative of UK GPs in terms of their geographic region (13 regions) and years of experience (four groups based on years since qualification). Prescribing was recorded in a diary for a week in each quarter, giving a total of 2000 doctor weeks per year. In 1987, the sampling changed to a part panel-part sample basis. Prescribing was recorded by a regular panel of 250 GPs and a stratified sample of 250 non-panel GPs, both representative of the GP population by region and experience. Since 1994, anonymized data have been collected electronically every day from a stratified sample of 500 GPs selected each quarter from a fixed panel who use the AAH Meditel System 5 software in their daily practice, giving a total of 26000 doctor weeks per year. Patient confidentiality is maintained.

The effect of changes in data collection techniques over time is not easy to assess. There was a higher representation of people aged over 55 years in the sample when the electronic data collection started, suggesting under-reporting of repeat prescriptions in the period before 1994. Also, there may be some under-representation of smaller practices in the electronic panel, but in general, sample representativeness appears not to be compromised.

Sample data are projected to the whole of the United Kingdom weighted by a regional factor, calculated by dividing the total number of doctors in a region by the number sampled in that region. The figures are then adjusted to reflect the total number of prescriptions dispensed in the United Kingdom for that quarter as indicated by data published by the Prescription Pricing Authority (PPA). The average projection factor was around 1000 (range 820–1236) for most of the study period (1975–1993). However, it fell to an average of 70 when the electronic data collection started in 1994 (see above). Thus, in 1975–1993 projected national estimates were based on fewer prescriptions in each age or sex stratum. For example, in 1976, the actual number of antidepressant prescriptions issued to 12–19-year-olds in the sampled practices was around 100 in males and around 200 in females. In those aged 55+ years, these figures were around 1000 in males and 2700 in females. In 1997, however, national estimates were based on around 1100 and 2700 prescriptions in 12–19-year-olds in males and females, respectively, and on around 40000 and 99000 prescriptions in those aged 55+ years in males and females, respectively.

### Data analysis

Our analysis is based on the years 1975–1998, as age- and sex-specific data are not available before this. The numbers of antidepressant prescriptions issued to men and women within the age groups 12–19, 20–29, 30–39, 40–54, 55–64 and 65+ were obtained from IMS HEALTH records. Data were also extracted at product level and summed to give estimates for each of the following categories: tricyclics, monoamine oxidase inhibitors (MAOIs), selective serotonin re-uptake inhibitors (SSRIs), other related antidepressants and lithium products.

The sum of these categories is described as total antidepressants. Age- and sex-specific rates were calculated using ONS (Office for National Statistics) population figures for the United Kingdom for the period 1975–1998. To assess gender differences in the rate of change in antidepressant prescribing, we also calculated the ratio of female:male antidepressant prescribing in each age band. Ordinary least-squares regression was used to assess the significance of trends in the rate ratios. To adjust for possible effects of changes in the data collection techniques over time, a dummy variable was included in the equations to identify the three time periods 1975–1986, 1987–1993 and 1994–1998 (see above and figures).

## Results

Figure 1 shows total and class-specific number of antidepressant prescriptions issued in the United Kingdom between 1975 and 1998. Up to the mid-1980s there was a slight decline in tricyclic antidepressant prescribing, which was mirrored by an increase in the prescribing of other antidepressants, mainly Mianserin (data not shown). After 1984, tricyclic prescribing started to rise again. Total antidepressant prescribing has increased exponentially since the late 1980s, following the launch of SSRIs. Tricyclic prescribing has also increased but to a lesser extent. In 1998, 23.4 million prescriptions were issued by GPs in the United Kingdom. This is nearly three times the figure for 1988.

Age-specific antidepressant prescribing rates are shown for both males and females in Figure 2. Antidepressant prescribing has increased in all age and sex groups since 1975. With the exception of 12–19-year-olds, there have been more than twofold increases in these groups. Female rates are at least twice as high as those in men in all age groups.

The ratios of female:male prescribing rates are shown in Figure 3. The rate ratios decreased over the period 1975–1998 in all age groups, except 12–19-year-olds, indicating that antidepressant prescribing has increased to a greater extent in men than women. The ratios for the older age groups, 55–64 and 65+, have decreased slightly but not to the extent seen in 20–55-year-olds. Tests for linear trend in the ratios in the younger age groups, 20–29, 30–39 and 40–54, were statistically significant ( $p < 0.01$ ) but the trends in the older age groups, 55–64 and 65+, were weaker or absent ( $p = 0.05$  and  $p = 0.63$ , respectively). In 12–19-year olds, the ratio of female–male prescribing rates has increased from around 1.5 in the early 1980s to around 2.5 in the late 1990s, but this trend, which is not statistically significant ( $p = 0.13$ ), should be interpreted with caution, as the number of antidepressant prescriptions in this age group is small (see Figure 2).

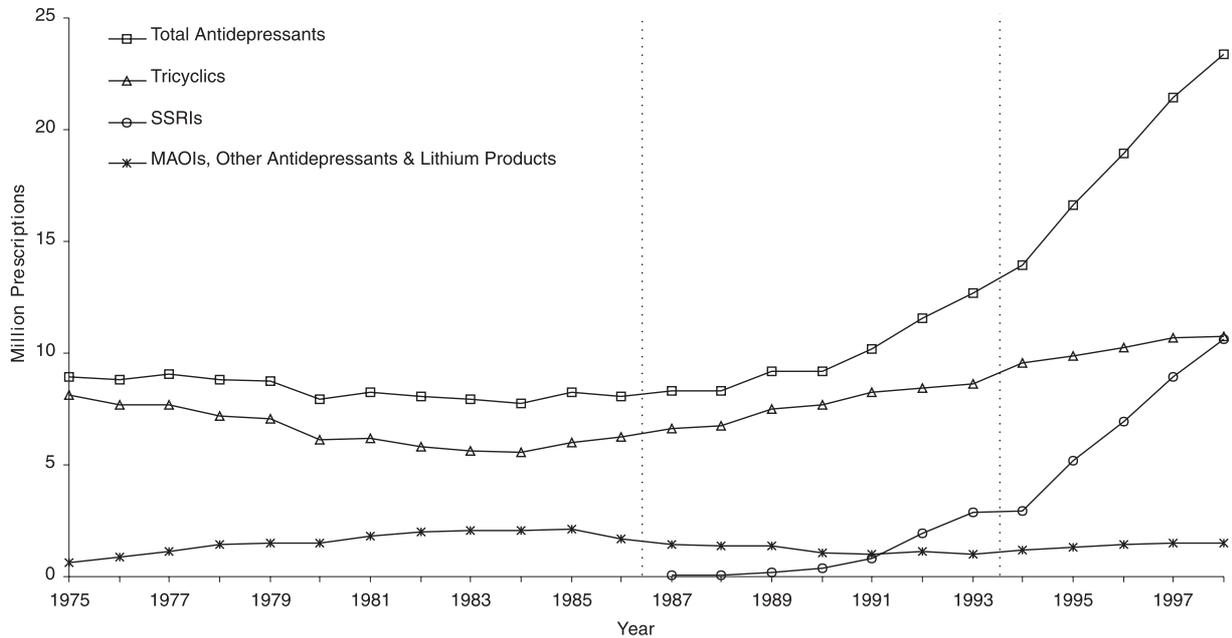
## Discussion

### Main findings

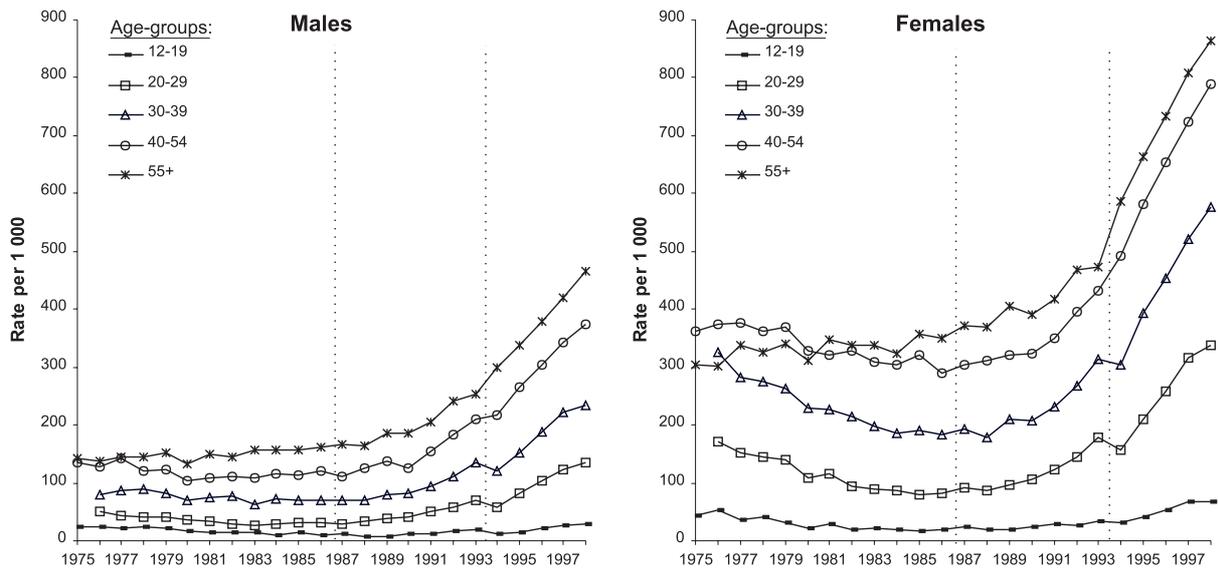
These data demonstrate that there have been marked increases in antidepressant prescribing over the last 20 years. In keeping

with a previous analysis, we found that increases in the last 10 years are mainly due to the introduction and rapid increase in the use of SSRIs.<sup>8</sup> Although these changes have occurred in all age and sex groups, increases have generally been more marked

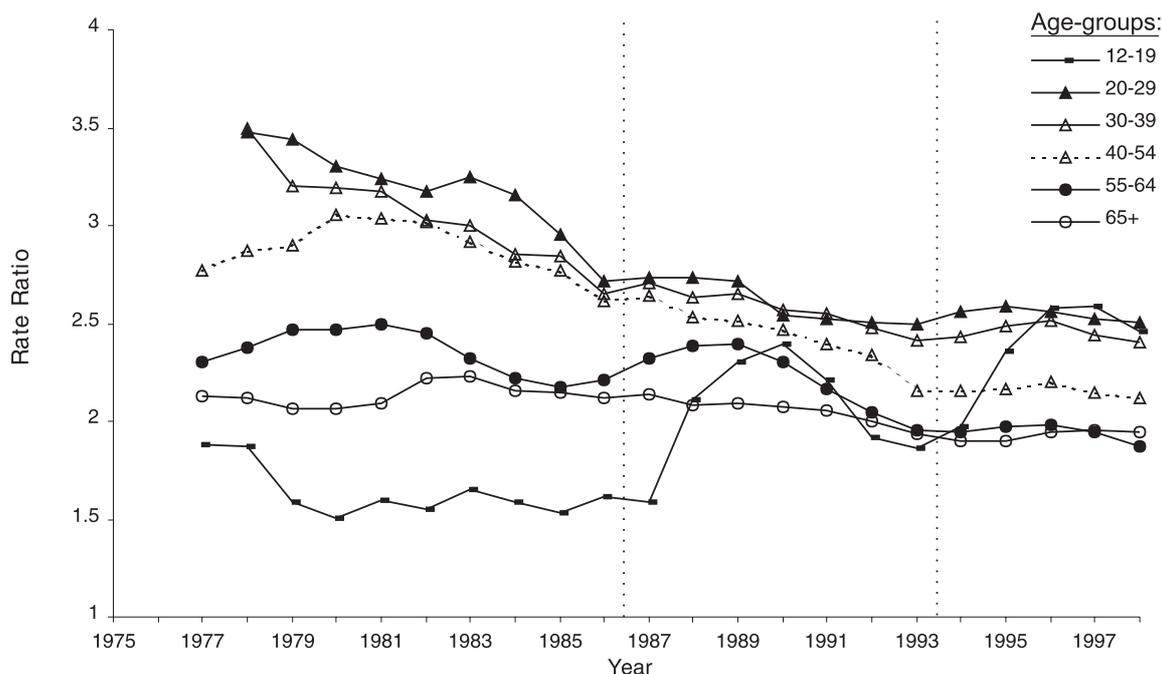
in men than in women. However, female prescribing rates still remain 2–2.5 times higher than male rates at all ages. This is in line with the higher prevalence of depression in women found in recent population surveys of mental health.<sup>10–12</sup>



**Figure 1** Antidepressant prescribing in the United Kingdom, 1975–1998. Dotted vertical lines mark changes in the data collection method.



**Figure 2** Age- and sex-specific antidepressant prescription rates in the United Kingdom, 1975–1998. Dotted vertical lines mark changes in the data collection method. The 55+ series is the average of the 55–64 and 65+ series. The 20–29 and 30–39 series start in 1976 as in 1975 these were grouped in a single age group (20–39).



**Figure 3** Female:male ratio of age-specific antidepressant prescribing rates. Dotted vertical lines mark changes in the data collection method. The graph shows 3-year moving averages centred on the last year.

### Data limitations

There are two main limitations to these analyses and our interpretation of them. The first relates to data collection methods and changes in these over the years studied. The data are estimates of prescribing in general practice and do not include hospital prescribing or drugs issued by psychiatrists. Although they may underestimate the total volume of antidepressant prescribing, data on sales of antidepressants from retail pharmacies and hospital pharmacies (also monitored by IMS HEALTH) show that hospital sales accounted for only a small proportion (around 6 per cent) of total sales. This proportion changed little over the years studied (7 per cent in 1981; 5 per cent in 1996). Changes in data collection methods are unlikely to influence our assessment of the overall time trends, as total prescribing estimates are based on extrapolations of the sample data to the Prescriptions Pricing Authority's comprehensive data on all prescriptions dispensed in the United Kingdom. Furthermore, although sampling changes may have influenced age- and sex-specific trends, there are no marked discontinuities between 1986 and 1987 and between 1993 and 1994, the years these changes occurred. Any changes are unlikely to differentially influence data integrity for men or women and so the sex ratios shown in Figure 3 provide a reasonable assessment of changes in gender differences in prescribing patterns.

Second, although secular trends in antidepressant prescribing may reflect changes in the mental health of the population, they are also influenced by changes in (1) consultation patterns, (2) recognition of depression and (3) management of depression

in primary care. As prescribing is obviously dependent on the individual's willingness to seek help, gender differences in prescribing may reflect gender differences in consultation patterns. GP consulting rates are higher in women than men at all ages<sup>13</sup> but it is possible that gender-specific changes in help-seeking behaviour may have occurred in recent years. Also, considerable attention has been paid to improving GPs' awareness of depression.<sup>14</sup> This may have resulted in greater detection and treatment of cases, thus prescribing data may reflect changes in the incidence of detected depression, rather than changes in its underlying incidence. Rises in antidepressant prescribing may also reflect changing indications and increased confidence in their use, particularly with the advent of SSRIs and their perceived more favourable side-effect profile.<sup>15</sup> Furthermore, GPs have been urged to prescribe longer courses of antidepressants<sup>9,16</sup> and these changes in the duration of treatment may also influence total prescribing without there being any change in the underlying incidence of depression.

### Assessment of trends in population's mental health

There is uncertainty regarding the best means of assessing and monitoring changes in the mental health of the population. Recently, there has been greater use of general population surveys using simple questionnaires, such as the General Health Questionnaire (GHQ)<sup>17</sup> to assess levels of mental health.<sup>18</sup> To date, no studies have directly measured trends over long time periods using such questionnaire-based assessments.

In the absence of such data, suicide is often used as an indi-

cator of population mental health. However, the epidemiology of suicide is complex and trends are influenced by an array of different factors.<sup>4-6,19</sup> On the basis of trends in suicide rates, it would seem that men suffer greater levels of psychiatric morbidity than women and that the mental health of women has improved in recent years. However, trends in suicide may in part reflect changes in the lethality of popular methods of suicide rather than the mental health of the population.<sup>4,5</sup> Changes in prescribing patterns, especially the reduction in the use of barbiturates,<sup>20</sup> mean that overdose poisoning, women's favoured method, has become less lethal, and this rather than an improvement in mental health may in part underlie recent suicide trends in females. Trends in rates of deliberate self-harm (DSH) or trends in psychiatric admissions may also be used as indicators of trends in population mental health. Each of these has limitations. The extent to which trends in DSH represent changes in population mental health is uncertain, as fewer than half of those who deliberately self-harm are assessed as having depression and up to 40 per cent receive no formal psychiatric diagnosis.<sup>21-23</sup> Trends in psychiatric admissions are clearly influenced by changes in the management of severe mental illnesses.<sup>24</sup>

Increases in antidepressant prescribing have been more pronounced in men although absolute levels of prescribing remain higher in females. Similarly, female DSH rates are higher than male rates but data from Oxford indicate that the gap narrowed between 1985 and 1996 with the highest increase in 15-24-year-old males.<sup>25</sup> Data from Scotland suggest that although psychiatric admission rates were higher in women, between 1980 and 1995 they rose for men but fell for women.<sup>26</sup> Therefore, the pattern seen in antidepressant prescribing would fit in with the patterns seen in both DSH and psychiatric admissions.

In contrast, a recent study that looked at trends in days of incapacity benefit for mental disorders in Great Britain found marked increases in the period 1984-1985 to 1994-1995 in both men and women but with a more pronounced increase in women.<sup>27</sup> Recent increases in female participation in the workforce may underlie this trend. Furthermore, an analysis in Canada that compared rates of depression in three cross-sectional surveys carried out between 1970 and 1992 suggested that whereas the overall prevalence of depression remained relatively stable, there was a modest increase in its prevalence in young people (<45 years) and in particular amongst women.<sup>28</sup>

## Conclusions

Prescribing of antidepressants has increased markedly in all age and sex groups over the last 20 years. Whether these trends reflect a change in the population's mental health or changes in the presentation, recognition and management of depression is uncertain. More research is required to identify the most appropriate means of monitoring the mental health of populations. In the absence of robust indicators to assess changes in population's mental health, an array of measures may be used but each

of these has limitations. Taken together, the indicators point to a relative deterioration in young males' mental health or a relative improvement in young females' mental health against a background of considerably higher levels of psychiatric morbidity in females. The antidepressant prescribing data support this general picture, with a differentially greater increase of antidepressant prescribing to men but with prescribing rates still being two times higher in females than in males in all age groups.

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