



The lifetime costs of attention deficit hyperactivity disorder (ADHD)

Summary and commentary by Michael Parsonage

What is ADHD?

ADHD is a childhood behavioural disorder characterised by high levels of inattention, hyperactivity and impulsiveness. For diagnosis, some or all of these features must be observed in a child before the age of seven, in a range of situations and for a substantial period of time, and they must be sufficiently severe to cause impairment to the child's learning or social development.

The estimated prevalence of ADHD depends on the exact criteria used for diagnosis. In particular, there is a difference between the International Classification of Diseases (ICD) of the World Health Organisation, which requires all three characteristics of inattention, hyperactivity and impulsiveness to be present, and the Diagnostic and Statistical Manual (DSM) of the American Psychiatric Association, which includes not only cases covered by the ICD but also those where only inattentiveness, or only hyperactivity and impulsiveness, are present.

International studies suggest that ADHD affects around 1-2% of children when diagnosed according to the stricter ICD criteria and around 6-7% when diagnosed according to the DSM criteria. Using the former approach, a national survey of the mental health of children and young people carried out by the Office for National Statistics (ONS) in 2004 has put the prevalence of ADHD among all children aged 5-16 in Great Britain at 1.5%.

ADHD is much more common among boys than girls, with the ONS survey showing rates of prevalence of 2.6% and 0.5% respectively. The survey also found that children with ADHD are very likely to have another mental health condition at the same time. Indeed, only about a third of those diagnosed with ADHD had this condition on its own, with most of the remaining two-thirds also having some form of conduct disorder. Longitudinal data indicate that around two-thirds of people diagnosed with ADHD in childhood continue to have some symptoms into adulthood.

What are the costs of ADHD?

ADHD is associated with a number of long-lasting adverse outcomes. This is not only because the condition often persists into adult life but also because its impact in childhood can have enduring effects even after symptoms of the condition have resolved. For example, educational attainment may be adversely affected, with likely implications for the future employment and earnings prospects of all children with ADHD, including those whose condition improves.

Such long-term consequences suggest that the most appropriate way to measure the costs of ADHD is on a lifetime basis. This has not previously been attempted in the published literature, but sufficient evidence is available from a range of sources for estimates to be prepared, covering four main areas of potential cost. These relate to the impact of ADHD on: the use of health services; educational provision; crime; and lifetime earnings.

In all these areas there is evidence that the presence of ADHD in childhood is associated with increased long-term costs. However, association is not the same causation and the attribution of costs also needs to take into account influences other than ADHD, particularly the presence of co-morbid mental health conditions.

This turns out to be of critical importance in the case of crime. It has long been thought that ADHD is a contributory cause of offending, but recent evidence from a number of countries suggests that this is not the case, the explanation being that a majority of children with ADHD also suffer from conduct disorder, a condition which has been found in many studies to be a major determinant of criminal activity. In the absence of conduct disorder, there appears to be no significant link between ADHD and offending.

Estimates of long-term costs per case of ADHD in the three remaining areas are as follows (all figures at 2012/13 prices, with future costs discounted back to age five at the public sector discount rate of 3.5% a year in real terms) :

- Extra costs of health care: £22,315
- Extra costs of educational provision: £45,075
- Reduced earnings: £34,745.

The aggregate costs of ADHD are thus estimated at around £102,135 per case. Education is the largest single component, accounting for 44% of the total. This largely reflects the finding in the ONS survey that as many as 71% of children with ADHD have officially recognised special educational needs, compared with only 16% of other children.

The number of children born each year in England is currently around 700,000. Based on the ONS figure of 1.5% for the prevalence of ADHD, about 10,500 of these children will become new cases, which – combined with an average cost of £102,135 per case – implies that the total long-term cost of ADHD for each one-year cohort of children in this country comes to around £1,070 million.

Studies from a number of countries have been used in preparing the cost estimates and there are also differences between studies depending on whether

their underlying data are based on ICD or DSM diagnostic criteria. For example, the estimates of reduced earnings given above are derived from two US studies, both of which use the DSM criteria. To the extent that this leads to the inclusion of less severe cases who would be excluded by the ICD criteria, the costs of earnings losses are likely to be understated relative to the costs of health care and educational provision, which in both cases make more use of studies based on the ICD approach.

Finally, it is important to emphasise that the estimates given above relate only to the measurable economic costs of ADHD and do not include an imputed value for the adverse impact of this condition on the quality of life of the individuals affected and their families. Arguably this is the most important cost of ADHD but not one which can readily be given a monetary value in the present state of knowledge.

Implications

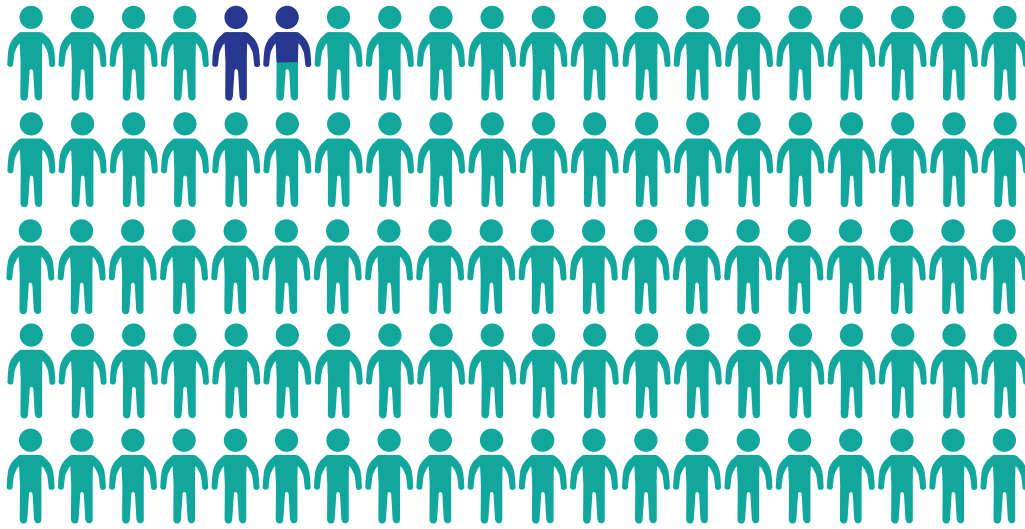
The findings summarised above demonstrate that ADHD is a common childhood disorder which imposes a very substantial long-term cost on society, estimated at around £100,000 per case. About two-thirds of the cost takes the form of additional public expenditure on education and health care, with the remainder being reflected in reduced earnings.

The high costs of ADHD support an economic case for early intervention, as they imply that even relatively modest improvements in outcomes would yield significant financial returns. This case is further strengthened by a growing body of evidence which demonstrates the effectiveness of a range of interventions for the treatment of ADHD in childhood, including parenting programmes, social skills training and cognitive behavioural therapy, combined with medication for severe cases.

Nearly all parents of children with ADHD seek some form of help because of concerns about their child's mental health, but only a minority of children receive evidence-based treatment. The analysis summarised above implies that this treatment gap comes at a heavy price, not just for the individuals and families directly concerned but for society as a whole.

Overall prevalence of 1.5%

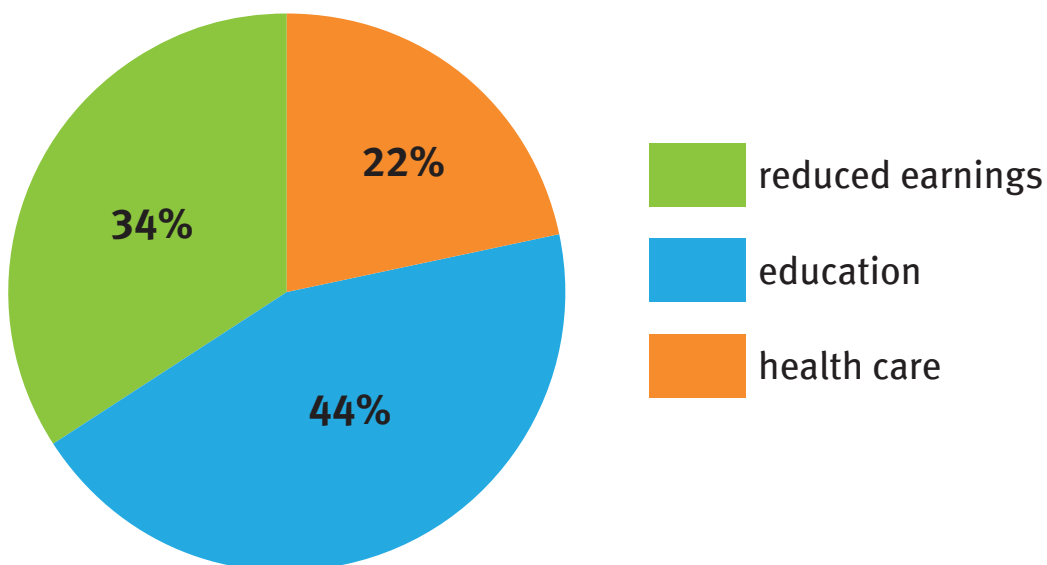
2.6% of boys and 0.5% of girls are diagnosed with ADHD



10,500 new cases a year

Costs of ADHD

Total **£102,135** per case, consisting of:



**Total long-term cost of ADHD
for each year's children:
£1,070 million**

This paper is a summary of, and commentary on, **The Economics of Attention Deficit Hyperactivity Disorder (ADHD): A Cost of Illness Study** by Branden Khong.

Branden carried out this work during a summer placement with Centre for Mental Health in 2014. This dissertation forms part of his MSC in Health Economics at the London School of Economics and Political Science. His full report is also available from our website: www.centreformentalhealth.org.uk

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