Mortality in people with attention deficit hyperactivity disorder

A Danish population cohort study reported that children, young people and adults with attention deficit hyperactivity disorder had a mortality rate double that of the general population, with accidents the most common cause of death.

Overview: Attention deficit hyperactivity disorder (ADHD) is a group of behavioural symptoms that includes inattentiveness, hyperactivity and impulsiveness (NHS Choices 2014). Many people with ADHD will have coexisting conditions, such as disorders of mood, conduct and motor control (NICE 2008). People whose ADHD continues into adulthood often experience emotional and social difficulties, substance misuse, unemployment or involvement in crime. Many severe mental and behavioural disorders appear to be associated with reduced life expectancy, both in terms of mortality from diseases and medical conditions and mortality from external causes (Nordentoft et al. 2013). Several of the factors associated with ADHD – such as substance misuse and comorbid mental disorders – may increase mortality in people with the condition.

Current advice: The NICE guideline on attention deficit hyperactivity disorder (currently being updated) recommends that children and young people with ADHD should be treated with individual or group behavioural or psychological treatment (cognitive behavioural therapy, social skills training or both). Children and young people may also be treated with medicines, or both medicines and behavioural or psychological treatments, depending on the severity of ADHD and impairment. Medicines are the first-line treatment for adults with ADHD.

Before starting pharmacological treatment for ADHD, children, young people and adults should undergo a full assessment. This assessment should include a full mental health and social assessment and a risk assessment for substance misuse and drug diversion (where a medicine is passed on to others for non-prescription use). Treatment plans should be developed for any coexisting conditions.

The NICE pathway on attention deficit hyperactivity disorder brings together all related NICE guidance and associated products on the condition in a set of interactive topic-based diagrams.
New evidence: Dalsgaard et al. (2015) used a national Danish cohort to assess the risk of mortality in people with ADHD compared with people in the general population. People born between 1981 and 2011 were identified from the Danish Civil Registration System and followed up from 1995 or their first birthday (whichever came last) to 2013. Linked data on diagnosis of ADHD and other comorbid mental disorders, and on date and cause of death, were obtained from other national registers.

The study cohort comprised 1,922,248 people followed up for up to 32 years (24,907,560 person–years). A total of 32,061 people in the cohort had a diagnosis of ADHD (183,049 person–years of observation), 107 of whom died during follow-up. All-cause mortality was 5.85 per 10,000 person–years among people with ADHD, compared with 2.21 per 10,000 person–years in people without ADHD. The risk of death among people with ADHD was more than double that in the general population (adjusted mortality rate ratio [MRR]=2.07, 95% confidence interval [CI] 1.70 to 2.50, \(p<0.0001\)).

Age at diagnosis of ADHD was associated with mortality, with the risk of death highest among people diagnosed in adulthood (adjusted MRR=4.25, 95% CI 3.03 to 5.78). Mortality among people with ADHD was also affected by comorbid oppositional defiant disorder or conduct disorder (adjusted MRR=2.17, 95% CI 1.33 to 3.31) and by coexisting substance misuse (adjusted MRR=5.63, 95% CI 3.69 to 8.16). Among people without these comorbid conditions, mortality was higher in girls and women with ADHD (adjusted MRR=2.85, 95% CI 1.56 to 4.71) than in boys and men (MRR=1.27, 95% CI 0.89 to 1.76).

Data on cause of death were available for 79 of the 107 people with ADHD who died: 54 (68.4%) died from unnatural causes (42 [77.8%] of these deaths were accidents) and 25 (31.6%) died from natural causes. Deaths from unnatural causes were more than 2 times higher in people with ADHD than in the general population (adjusted MRR=2.40, 95% CI 1.81 to 3.13, \(p\) value not reported), and deaths from natural causes were 70% higher (adjusted MRR=1.70, 95% CI 1.11 to 2.47, \(p=0.016\)).

Limitations of this analysis include that the national registers did not encompass people diagnosed in private practice, so the results may not apply to all people with ADHD. In addition, the authors could not control for all comorbid psychiatric disorders that may affect people with ADHD, and those that the analysis did account for may be underdiagnosed.

Commentary by Professor Eric Taylor, Emeritus Professor of Child and Adolescent Psychiatry, King's College London:

“Before this paper was published, we knew that ADHD is often impairing in adult life; now, we see that it can be lethal. The existing NICE guidance makes it plain that health services should be able and willing to manage continuing impairment in people who continue to have ADHD in adulthood. This study adds force to the argument.

“The key finding, that mortality is increased in adults with ADHD, is very likely to be robust. It is based on a large population sample, using the excellent documentation of health status available in Denmark. The researchers were able to account for a good selection of potentially confounding influences that might have led to misleading results.

“The study was also able to ask about the factors that made death more likely. Oppositional and conduct disorders, and the associated problem of substance misuse, increased the risk considerably. Indeed, their influence could even be greater than suggested by this study. All these factors could still be risky even if they are present at a lower level than would lead to an actual clinical diagnosis. These factors are all possible complications of ADHD, so the implication is that clinics treating people with ADHD should recognise their importance – preferably before they become dangerous. Systematic screening in clinics would be advisable, and preventive education is also feasible.

“Even if these complications did not develop, ADHD was still a risk factor for mortality. This could well be because the core problem of impulsiveness is a cause of accidents, and accidents were the major cause of death. The implication is that a reduction in impulsiveness (if necessary, with medication)
should be a target for long-term management. This is implicit in existing guidance, but is now spelled out forcefully by this study.

“Two other influences linked to death in ADHD emerged from the study: a late diagnosis and female gender. Girls and women with ADHD are less likely to be diagnosed. These two factors could both be testimony to the hazards of failing to make a timely diagnosis and provide prompt intervention. The study should be significant in emphasising the important effects of ADHD in adulthood and the need for treatment.”

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