






ash. research report

action on smoking and health

Asthma and smoking

This ASH Research report examines asthma and smoking: the causes and the consequences.

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Definition and summary

In the UK 5.2 million people live with asthma. The UK has one of the highest asthma rates of any country in the world.¹

Asthma is a condition that affects a person's airways. The disease can vary in severity from one person to another and for each individual over time.

The development of asthma is thought to be a combination of genetic disposition and exposure to allergic triggers in early childhood.² People can also develop asthma as an adult, known as adult-onset asthma.

An asthmatic trigger is anything that irritates the airways and causes the symptoms of asthma. Triggers can include animal hair, exercise, food, dust-mites, medicines, pollen, the weather and tobacco smoke.

When someone is exposed to an asthma trigger the airway lining becomes inflamed and begins to swell which makes it difficult to breathe. The person will often feel short of breath, tight-chested and will cough and wheeze.

Exposure to tobacco smoke either through active smoking or by secondhand smoke (SHS) can cause and/or exacerbate an asthma attack or asthma symptoms.³

For people exposed to SHS at their workplace the risk of developing adult onset asthma is double that of those not exposed. For people exposed to SHS at home the risk of developing asthma is five fold.^{4,5}

Mortality

On average in the UK one person dies from asthma every 7 hours. Of the 5.2 million people with asthma in the UK, 2.1 million suffer from severe asthma symptoms.

A survey conducted in 2003 of people with severe asthma symptoms found that 44% said their social life was restricted because they could not go to pubs or restaurants due to the smoky atmosphere. One in five believed their asthma was life-threatening.⁶

Morbidity

There are over 4.1 million GP consultations for asthma each year, costing the National Health Service (NHS) around £889 million.

While the rate of hospital admissions for childhood asthma has fallen over the last 20 years, the rate of admission amongst adults has remained stable over this time. This is despite the advances in managing and treating asthma.

Asthma significantly affects the quality of life for many people. Being exposed to tobacco smoke may worsen their symptoms. Many studies have shown that people with allergies and/or asthma experience more nasal symptoms, headaches, cough, wheezing, sore throat, hoarseness, eye irritation and aggravation of asthma symptoms when exposed to tobacco smoke.⁷

The 2001 Health Survey for England found that being exposed to secondhand smoke for 6 or more hours a week significantly increased the risk of wheezing.⁸

Specific health effects

Asthma in adults

Asthma is often thought of being a childhood disease. However asthma can affect people at any age and can also change in severity and effects over a person's lifetime.

In adults it can be difficult to diagnose the difference between asthma and other conditions such as bronchitis, emphysema and chronic obstructive pulmonary disease (COPD). For some, shortness of breath may be the only symptom of asthma. Consequently a diagnosis of asthma is often difficult to pinpoint in adults. However asthma can develop at any stage in a person's life so it is important that people seek medical treatment if they are having difficulty with their breathing.

There are around 4.1 million adults with asthma in the UK, of which 60% are women and around 700,000 are people aged over 65 years.

Since 2001 there has been an increase in the number of adults with asthma in the UK. The reason for the increase is difficult to pinpoint. It is thought to be partly explained by people who were children in the 1990's, when there was a peak in childhood asthma rates, growing up and becoming adults. However, research has not confirmed this.

Asthma in children

Asthma is the most common chronic disease of childhood.

Research shows that asthma causes more absences from school than any other chronic condition: 30% of children with asthma will miss more than three weeks of school each year.⁹

A study found three potential modifiable causes of asthma have been identified by researchers. These include: exposure to SHS, lack of dietary fruit intake (fruit intake is related to increased lung function) and the proximity of the home to a main road. The study found no association between living close to a main road and asthma, a moderate increased risk for children who consume no fruit and an exposure-response relation between smoking and asthma. Parental smoking was a causal factor of asthma in children and the prevalence of asthma increased with the number of smokers in the home.

The authors found SHS exposure to be the most important of the three risk factors for asthma in children.¹⁰ The authors indicate the association is likely to be causal.

A 2006 study has found that regular cigarette smoking by adolescents increases the risk of asthma in teenagers with no lifetime history of asthma or wheezing. Teenagers who smoked regularly were four times more likely to develop asthma over the next eight years than nonsmokers.¹¹ This shows that the health consequences of smoking emerge quickly and that tobacco smoking can cause asthma.

Occupational asthma

Every year up to 3,000 people develop asthma by being exposed to dangerous substances at their work. Another 750,000 people find that their workplace makes their pre-existing asthma worse.¹²

Every year 18 million work days are lost each year due to asthma symptoms.

It is estimated that over 5% of cases of adult asthma have an occupational origin. Occupational asthma is recognised as an industrial disease and subject to compensation. It is defined as asthma that develops after a period of symptom-less exposure to a sensitising agent at work.

Asthma UK has found that around 40% of people with asthma say that triggers at work make their asthma worse and 38% of those people blame secondhand smoke exposure as the trigger.

Asthma at Work – Your Charter by Asthma UK states that no one should have to work in an environment that makes them ill. Reducing people's exposure to tobacco smoke in the workplace has been found as a key way to reduce workplace asthma.

Asthma UK's workplace charter: www.asthma.org.uk/document.rm?id=17

Health effects of tobacco smoke and asthma

Exposure to tobacco smoke in people with asthma

More than 75% of adults with asthma in the UK are nonsmokers.¹³ However, they can be exposed to tobacco smoke through smoking themselves or by SHS exposure at home, their workplace or recreationally when attending restaurants, pubs and places that allow smoking.

The airways of a person with asthma are very sensitive to triggers. Tobacco smoke has been found to be a major asthma trigger and it can also affect the severity of an attack.^{14,15} Exposure to tobacco smoke is therefore best avoided.

Exposure to tobacco smoke in people with asthma who smoke

It is usually expected that people with asthma will avoid smoking. However, in 2006 Asthma UK found that 24% of adults with asthma smoke¹⁶. A Californian study in 2001 also found no difference in the prevalence of smokers with asthma (20.2%) and those without (18.8%).¹⁷

In the youngest age group (18 to 35 years) current smoking was more common among those with asthma (27.6%) than among those without (20.4%). The study also found no difference in the age of initiation to smoking, nor the duration of smoking years (length of time) or intensity of smoking (the number of cigarettes smoked) by people with asthma compared to those without.¹⁴

A UK study of 1,391 people with asthma, found that 75% were nonsmokers, 3% smoked more than 20 cigarettes a day and 22% were light and moderate smokers.

Tobacco smoke damages the cilia in the lungs, the tiny hairs that help to sweep irritants like dust, smoke and pollen from the airways.¹⁸ Tobacco smoke can permanently damage the airways. In people with asthma who smoke, there is a combination of both a heightened and also a suppressed inflammatory response when compared to those who do not smoke.¹⁹

People with asthma who smoke and continue to smoke have worse symptoms and experience more rapid decline in pulmonary function than those who have asthma but do not smoke. Those people with asthma and who smoke are more prone to chest infections because the body is unable to clean the lungs properly.¹⁵ A 2006 study found that compared those with asthma but nonsmokers, smokers had more respiratory symptoms and had features similar to those found in the early stages of chronic obstructive pulmonary disease (COPD).²⁰

People with asthma who smoke are also likely to experience higher rates of hospitalisation than those with asthma who do not smoke.^{13,19}

Coupled with reduced lung function, tobacco smoke has been found to block the effectiveness of asthma medication.¹⁶

Inhaled corticosteroids are the most effective treatment currently available for chronic asthma. However, smoking impairs the response to inhaled corticosteroids, although the reason behind this is not completely known. It is thought that smoking prevents the anti-inflammatory action of the steroids. This is due to increased mucus secretion and airway restriction in the smokers. Alternatively cigarette smoking may also alter the molecular mode of action of the steroids. Further investigation is needed in this area.²¹

A study in 2003 compared the effectiveness of inhaled corticosteroids among those people with asthma who smoke, were ex-smokers and those who had never smoked. Smoking was found to interfere with the effectiveness of the steroids resulting in worse measures of wheezing, night symptoms, shortness of breath, and to affect the physical activity ability of the smokers. The steroids were found to be no more effective than the placebo for the smokers.²²

Quitting smoking has been shown to improve the lung function of people with asthma. A 2006 study showed improved lung function and a fall in sputum neutrophil (phlegm) levels when people quit smoking for 6 weeks compared to those people who continued to smoke.²³

Stopping smoking can improve the health of people with asthma and therefore every effort should be made to encourage those with asthma who smoke to stop.^{20,16}

Secondhand smoke exposure in people with asthma (adults)

Research published at the end of 2003 concluded that secondhand smoke can cause asthma in adults.²⁴ This was supported in 2005 by the Royal College of Physicians.²⁵ Research by the IARC shows the strongest causal effect of SHS exposure is chronic respiratory symptoms in adults.

UK research shows that although 75% of people with asthma are non-smokers, one in six is exposed to smoke at their workplace and another one in six live with a smoker.

For people exposed to SHS at their workplace the risk of developing adult onset asthma is double that of those not exposed. For people exposed to SHS at home the risk of developing asthma is five fold.^{4,5}

The University of Aberdeen states that the Health and Safety Executive in 1999 estimated the cost of sickness absence relating to exposure to SHS for those with asthma and chronic bronchitis at around £83 million to £166 million per year in Great Britain.²⁶

There are 2.1 million people with severe asthma symptoms in the UK. A survey found that one in five of those with severe asthma symptoms viewed their asthma as life-threatening. Nearly half (44%) of those surveyed say they cannot go to places where smoking is allowed, such as pubs and restaurants and that this severely restricts their social life.

This highlights that there is still considerable work to be done to reduce exposure to secondhand smoke among people with asthma.

Secondhand smoke exposure in people with asthma (children)

In 1997 the Canadian Institute of Child Health found that children are especially vulnerable to SHS as they breathe more rapidly and they inhale more pollutants per pound of body weight (a higher relative ventilation rate) than adults.²⁷

The Californian Environmental Protection Agency has recently stated that exposure to SHS can cause asthma in children who have not previously exhibited symptoms.²⁸

A child's exposure to tobacco smoke generally takes place in their home with the main source of exposure being from their parents. In the UK around 5

million children are exposed regularly to SHS.^{29,30} The California EPA has recently found that parents are responsible for 90% of children's exposure to SHS.

Children with asthma, whose parents smoke, are at least twice as likely to suffer asthma symptoms all year round compared to children of non-smokers. Wheeze and physician-diagnosed asthma are more common in children who live with a smoker and the prevalence of asthma increases with the number of smokers living in the home.³¹ Children with asthma are also likely to have an impaired recovery after hospitalisation for acute asthma if returning to a home where there is a smoker.³²

An effective means of preventing asthma overall is to reduce the person's exposure to SHS.^{31,10}

Prenatal exposure to secondhand smoke and asthma

The adverse health effects of paternal smoking have been seen consistently in several countries and for several health outcomes. The Royal College of Physicians stated in 2000 that maternal smoking during pregnancy is the largest preventable cause of foetal and infant ill health and death.³³

Health outcomes of smoking or being exposed to SHS whilst pregnant include asthma, wheeze, bronchitis and nocturnal cough. Smoking during pregnancy also affects the lung size formation.

Results from a large study of over 50,000 children confirm the long-lasting harmful effects of smoking during pregnancy, independent of smoking later in the child's life.³⁴

Maternal smoking during pregnancy, known as in-utero exposure, has been associated with significant deficits in lung function and early onset asthma in offspring. The study showed that the deficits in lung function persisted into adolescence and were essentially unchanged after adjustments for lifetime SHS exposure and personal smoking.³¹

Research suggests that the effects of in utero exposure appear to be independent from the effects of post-natal exposure to SHS. Early onset asthma contributes to significant deficits in lung function. The additional effect of in-utero exposure may produce a group of people who are at high risk for chronic respiratory diseases throughout their lives.³⁵

Conclusion

The health of people with asthma is significantly affected by tobacco smoke.

Tobacco smoke, both through active smoking and through SHS exposure, has been found to be a cause of asthma.

Many people with asthma also smoke, making their asthma symptoms worse and their medication less effective.

Parental smoking is associated with an increased prevalence of asthma and respiratory symptoms in children. For those children with asthma, exposure to SHS, primarily by their parents, is associated with more severe disease experiences and symptoms.

Scientific research overwhelmingly shows that tobacco smoke increases asthma attacks and asthma symptoms both for people with asthma who are smokers and those people with asthma who are nonsmokers. Tobacco should, therefore, be avoided.

The impact of asthma on health services is borne largely by primary care. Though as well as established costs like medication and visits to medical practitioners, there are hidden costs, such as time off work, and restrictions on people's lives which actually represents the true impact of asthma.³⁶ The passing of smokefree legislation in the United Kingdom will help to greatly improve the quality of life for people with asthma by reducing their exposure to tobacco smoke.

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