Traffic pollution affecting unborn children, says asthma expert

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Dr Mohammad Shamssain.
Credit: Image courtesy of University of Sunderland

A UK academic is calling for a nationwide study into the effects traffic pollution has on asthma sufferers after his own research in Cairo highlighted health problems in children who may even be affected while still in the womb.

Dr Mohammad Shamssain and his research team recently completed a study into the impact that high levels of air traffic pollution has on schoolchildren's respiratory systems, allergies and conditions such as asthma.

Testing the lung functions of 1,397 children, aged 7-10, and measuring air pollution levels in Cairo, one of the world's most traffic congested cities, assessed through the ISAAC questionnaire (The International Study of Asthma and Allergies in Childhood) Dr Shamssain discovered a high prevalence of asthma, wheezing, eczema and hay fever symptoms.

As part of his study -- TRAP (Traffic Related Air Pollution) Dr Shamssain has been researching findings in other countries and discovered that air pollution causes two million premature deaths worldwide per year.

His research, which has been welcomed by Asthma UK, was recently presented at the biggest international chest conference: The American Thoracic Society International Conference in Colorado.

However, he says this kind of research needs more attention in the UK, and is now calling on the Department of Health and Research Funding Council to conduct more serious surveys in major cities such as London, Manchester, Birmingham Glasgow and Newcastle to assess the impact vehicle emissions are having on the local populations, especially children and the elderly.

"Our aim is to improve the respiratory health of children, as well as adults and the aging population, by studying lung function, respiratory symptoms and risk factors that might cause diseases like asthma and Chronic Obstructive Pulmonary Disease (COPD)," explained Dr Shamssain, a senior lecturer in human physiology -- respiratory pathophysiology and epidemiology at the University of Sunderland.

"We have identified that pollutants such as nitrogen and sulphur dioxide as well as particle matter from vehicle exhausts and road dust is linked to the onset of asthma. The risk can start from the time a child is in the womb, as the placenta does not offer protection to mothers exposed to pollutants. Pollutants entering the fetal circulation have a significant impact on growth and development; there have also been cases of babies born with retardation, morbidity and low birth weight.

"Children in homes near roads with heavy traffic also have increased risk of new onset-asthma, incidence of wheeze, risk of recurrent dry coughs, hospitalisation and school absenteeism."

He added: "We must encourage more research in this area on a large scale and launch an intervention strategy and awareness programme to reduce morbidity and mortality caused by ambient air pollutants.

"Reducing traffic exposure to children is expected to reduce the symptoms and prevalence of asthma. There could also be a long term cost saving to health agencies."

To help improve the situation Dr Shamssain is proposing policy changes on pollution levels in towns and cities. Studies in Southern California showed that if ambient air pollution is reduced, annual asthma related emergency visits and hospitalisation decreased from 22 per cent to six per cent and bronchitis would decrease from 40 per cent to 20 per cent.

He also believes through awareness programmes relayed to parents, schools and children, personal exposure can be reduced by avoiding high level exposure and outdoor activities during periods of high pollution.

Finally, taking simple steps ourselves such as eating fruit, vegetables and taking vitamins A and C, can provide an antioxidant for the respiratory system.

He explained: "Antioxidants may strengthen defence mechanisms and reduce the harmful effects of air pollution. Studies suggest that dietary supplementation with sulforaphene, a potent inducer of antioxidant enzymes, reduces inflammatory responses, especially in those exposed to diesel exhaust particles.

"Sulforaphene is produced naturally by vegetables including Brussel sprouts, turnips, cabbage, broccoli and cauliflower, carrots, tomatoes, apples and oranges. Finally taking simple steps such as eating fresh fruit, vegetables and taking vitamins A & C, can provide an anti-oxidant for the respiratory system."

Leanne Metcalf, Assistant Director of Research at Asthma UK, says: "We know that air pollution has a severe impact on the health and the quality of life of people with asthma; two thirds of people with asthma tell us that traffic fumes make their asthma worse and we are seeing increasing research evidence which suggests pollution may actually have a role to play in causing asthma in the first place.

"At Asthma UK we welcome any research that will help us to gain more insight into this area which could ultimately improve the lives of people with asthma in the future."

http://www.sciencedaily.com/releases/2011/07/110706094329.htm