Indoor climate in nursing homes can be dangerous for the residents

The indoor climate in nursing homes can play a significant role in residents' health.

Even small concentrations of toxic substances in the air seem to damage the lungs of elderly people.

A new study has looked into the concentration of various airborne substances at nursing homes and it turns out that even low levels of air-polluting substances were related to lung problems among nursing home residents.

"The elderly are more vulnerable to air-polluting substances than the rest of us. Partly because they don't have the same defence mechanisms as when they were young and partly because many nursing home residents remain indoors all day," says Professor Torben Sigsgaard from the Department of Public Health at Aarhus University.

He is one of the researchers behind the new study which has been published in the European Respiratory Journal.

Bad air may be an overlooked problem

According to Sigsgaard, nursing home residents can be particularly sensitive to poor air quality in the home.

The concentrations of air polluting substances measured by the scientists in the nursing homes did not exceed limits set by current legislation, but all the same the scientists were able to see a clear correlation between the amount of substances in the nursing homes' indoor climate and the residents' lung function.

"Most nursing homes focus on ensuring that the residents are kept warm and get enough to eat and drink. But we believe it may be a oversight that nursing homes don’t also focus on providing good air quality for the elderly.

The study shows that air-polluting substances interfere with lung function and give the elderly trouble breathing.

Poor air can also threaten the cardiovascular system

Professor Steffen Loft from the Department of Public Health at the University of Copenhagen, says that Danish nursing homes ought to be aware of the consequences of a poor indoor climate.

"Elderly people are more sensitive to poor air quality than others, and at the same time it’s often the elderly who are exposed to it. It isn't just their airways that are threatened -- we know from earlier research that indoor particle pollution can affect the cardiovascular system," says Loft who was not involved in the new
study, but does research in the same field.

Residents were short of breath and were coughing

In the new study, the scientists measured concentrations of indoor air pollutants at six nursing homes in mid-Jutland, Denmark.

The same measurements were also made in 44 other nursing homes in other countries. In total, 600 residents over age 65 (average age 82) were involved in the study.

All the nursing home residents responded to a health questionnaire and had health checks that included testing their lung function.

The results showed, among other things, that exposure to air pollutants was clearly related to shortness of breath and coughing, wheezing, and chronic obstructive lung disease (COLD).

The effect on their health was most pronounced in homes with poor ventilation and among residents over 18 years of age.

"We don't know precisely where the particles come from. But we do know, for instance that PM01, which are the very small particles, typically come from candles, smoking, cooking or from the traffic outside,” says Sigsgaard.

Nursing homes did not break the law

Sigsgaard emphasises that none of the nursing homes involved in the survey had breached current guidelines for the level of air pollutants permitted indoors.

"They were way below the limit value, and as such there was nothing about the indoor climate of nursing homes that might give rise to speculation," says Sigsgaard. “But there was a connection between the substances we measured in the air and the health of the elderly people.”

He does emphasise, however, that there is a need for more research in the field.

"We’ve shown the connection but not necessarily a causal relationship. That is to say that we’ve not shown that the elderly have poorer lungs because of these air pollutants. We can say, however, that there is a connection between the substances and the health of the elderly people,” says Sigsgaard.

Loft agrees.

"Their results square well up with previous studies," he says. "It all points to the fact that air quality is important for the good health of the elderly."

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600 nursing home residents in seven different countries have taken part in a study of how the indoor climate can affect the health. (Photo: Colourbox) [9]
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'Indoor air quality, ventilation and respiratory health in elderly residents living in nursing homes in Europe', European Respiratory Journal 2015, DOI: 10.1183/09031936.00082414 [18]

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