Título: GERIA- Geriatric study in Portugal on Health Effects of Air Quality in Elderly Care Centers.

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Início e Conclusão: 2011-2014

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Abstract:

It is estimated that population spend over 90% of their life-time indoors and several studies have shown that concentrations levels for many pollutants can often be 10-20 times higher indoors than outdoors. Current ventilation standards are not based on the prevention of health problems, but instead on the prevention of discomfort problems. Based on this and in the fact that the existent studies on the relationship between indoor air quality (IAQ) and older person's health and quality of life in elderly care centers (ECCs) are very scarce, the authors of this Project Team consider that is time to move towards investigating this apparent gap in knowledge.

This project addresses a set of common clinical problems in the context of older persons living in care centers. The age of European population is rising and the percentage of adults older than 65 years is projected to increase from 16% in 2000 to 20% in 2020. Older people spend about 19 to 20 hr/day indoors. For elderly residents in care centers IAQ is a special concern and a critical contributor to their health and quality of life. Aging adults, particularly the elderly, can have weakened immune systems and age-related health problems which make them more vulnerable to health complications associated with indoor air pollution. This is particularly true for some groups at risk with chronic diseases as respiratory infections, cardiovascular illness and chronic obstructive pulmonary disease (COPD).

Concerning this, some questions remain unclear:

1. The role of indoor air quality - what is the health impact of indoor air environment (including indoor pollutants, PM10 and PM2.5, temperature and humidity) in COPD (risk group) and without risk of cardiorespiratory disease (control group)?

2. The role of virus infections - First we don't know the real role of virus infections in respiratory conditions at ECCs level. Secondly there is a lack of information concerning how indoor air environment influence virus infections.
3. The role of building ventilation - what is the impact of building ventilation in the health and quality of life of older persons particularly those with COPD? How is ventilation affecting indoor air quality? How is ventilation of ECCs affected by the structure of the buildings?
4. Social impact of this study - what should be the recommendations to improve indoor air environment and promote public awareness of elderly quality of life?

To accomplish successfully the desired objectives, the team members of this Project intend to study the physical characteristics and IAQ of 20 public ECCs and the respiratory health and quality of life of elderly residents in these centers. The 20 ECCs will be chosen among 23 public ECCs in Porto and 41 in Lisbon based on a preliminary study. The objective of the preliminary study, carried out on a basis of health and quality of life questionnaires and environmental characterization of buildings, is to obtain a first characterization of existing conditions for later identification of the 20 ECCs where further detailed study will be conducted, including virus identification in older persons with virus respiratory infections.

Emphasis will be given to the survey of the building characteristics and household behaviors. With this information the research team will be able to carry out computer simulations of the ventilation. After the validation of the computational tools a sensitivity analysis will be done, in order to support the final recommendations.

What is new in this project is the collaboration of a health team (medical doctors and other health professionals) with environment specialists, epidemiologists, mechanical and civil engineers all concerning about older persons health and quality of life. The project team is composed by national and international researchers. This team has been conducted several studies to evaluate the relationship between IAQ and health in susceptible populations.

Indoor air pollution is a major global public health problem requiring increasing efforts in research and policymaking. Anticipation of greater demand on resources with the aging population suggests the need for proactive planning, service delivery, education and research in geriatric, studying the effects of indoor air pollution on elderly overall health.