

GERIA Project – Indoor Air and Quality of Life in Elderly Care Centers



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INTRODUCTION

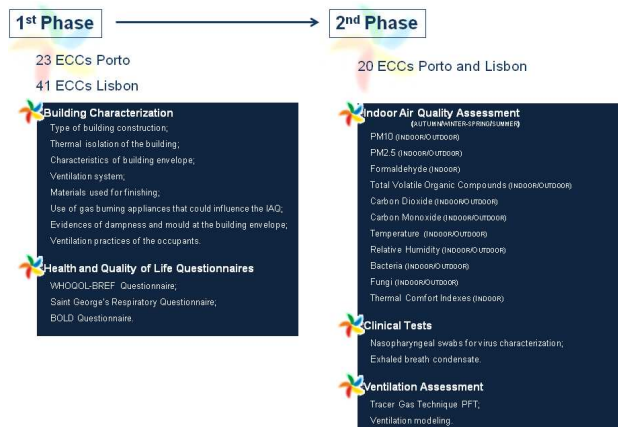
The age of European population is rising and the percentage of adults older than 65 years is projected to increase from 16% in 2000 to 20% in 2020. Older people spend about 19 to 20 hr/day indoors. For elderly residents in care centers indoor air quality (IAQ) is a special concern and a critical contributor 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.

RESEARCH AIMS

- (1) measure IAQ and thermal conditions (TC) in ECCs;
- (2) assess effects of IAQ and TC on cardiorespiratory health of ECCs residents; and
- (3) evaluate IAQ associations on health-related quality of life (HRQL) of older persons, thus setting the basis for preventive interventions.

Produce guidelines on remedial measures and recommendations in ECCs

STUDY DESIGN



PRELIMINARY RESULTS



INDOOR AIR AND THERMAL COMFORT ASSESSMENT

n = 6

Summer – Winter
&
Indoor - Outdoor

Dining rooms
Drawing rooms
Medical offices
Bedrooms

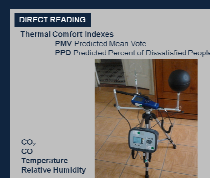


Table 2 IAQ chemical parameters mean results and references comparison

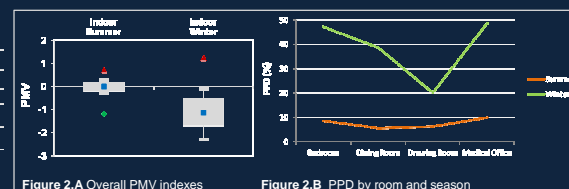
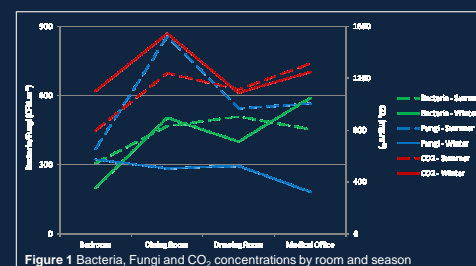
Parameter	Mean values		Indoor reference levels			
	Summer	Winter	Indoor	Outdoor	Portuguese	International
Formaldehyde (mg.m ⁻³)	<0,0002	-	<0,0002	-	↓	↓
TVOC (mg.m ⁻³)	0.07	0.04	0.1	0.1	↓	↓
PM ₁₀ (mg.m ⁻³)	0.07	0.08	0.07	0.08	↓	↓
CO (mg.m ⁻³)	1.3	1.2	0.5	0.8	↓	↓
CO ₂ (mg.m ⁻³)	996	998	1196	712	↓	↓

S = Summer; W = Winter; ↓ below reference levels; ↑ higher than reference levels;
PM10 = particles with an aerodynamic diameter smaller than 10 microns;
* when compared to the 24 hour average WHO guideline for ambient air.

Table 3 IAQ biological parameters and references comparison

Parameter	Mean values		Indoor reference levels			
	Summer	Winter	Indoor	Outdoor	Portuguese	International
Bacteria (CFU.m ⁻³)	397	199	329	82	↓	↓
Fungi (CFU.m ⁻³)	525	424	296	226	↑	↓

Cladosporium species (41%)
Penicillium species (24%)
Aspergillus fumigatus (8%)



FURTHER DEVELOPMENTS

- Assess a 24 hour average CO₂ concentration in bedridden rooms;
- Apply the HRQL Questionnaires to elderly residents in ECCs;
- Ventilation assessment and modeling;
- Continue to analyze and explore the TC variables in ECCs;
- Elderly Clinical Tests;
- Study the influence of environmental parameters and ventilation variables on elderly Health & Quality of Life.

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