

Occupational exposure symptoms in healthcare workers

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Indoor air quality (IAQ) in health care facilities may influence health and wellbeing of healthcare workers, having a significant impact on their overall quality of life. Therefore, we aimed to assess the IAQ parameters in a major clinical setting, as well as to observe occupational health symptomatology in workers at that healthcare institution.

Data on 43 healthcare workers from a major Hospital Centre in Porto, Portugal, were analyzed. Self-reported work-related symptoms were assessed by questionnaire, and lung function and airway reversibility were assessed by spirometry. Indoor air measurements were taken in 5 different locations to assess the concentrations of total volatile organic compounds (TVOC), PM2.5, PM10, endotoxins, bacteria and fungi.

Assessed IAQ parameters are presented in Table 1. As expected, the surgery unit showed significantly lower concentrations in regard to microbiological parameters. Overall, the location with the poorest IAQ was the Hospitalization unit, which is a significant environment of exposure not only to healthcare workers, but also to hospitalized patients. Workers stationed at the outpatient clinic presented the highest complains, having reported the highest severity in dry and sore throat symptoms. Individuals working at the surgery unit showed more symptoms associated with exhaustion, such as conjunctivitis and macular edema.

These promising observations support the construction of generalized linear models to fully understand the impact of a major clinical setting IAQ on the workers occupational health.

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Table 1 – Measured IAQ parameters in the 5 different locations at the Hospital Centre. <L.D.: Value under the limit of detection.

IAQ	Emergency unit	Surgery	Day care centre	Outpatient clinic	Hospitalization unit
Bacteria in air (UFC/m ³)	312	<L.D.	127	299.60	478
Fungi in air (UFC/m ³)	22	<L.D.	166	630.40	550
TVOCs (µg/m ³)	86.8	80	71	94.40	4.50
PM10 (µg/m ³)	<L.D.	<L.D.	<L.D.	<L.D.	34
PM2.5 (µg/m ³)	<L.D.	<L.D.	<L.D.	<L.D.	22.50
CO (mg/m ³)	0.4	0.9	0.15	0.4	0.3
CO2 (mg/m ³)	1056	1142	1797	1446.80	1980
Temperature (°C)	23	19	22.50	21.00	22
Humidity (%)	44	56	40.50	55.80	54.50
Endotoxins (EU/m ³)	3.09	0.04	3.29	0.38	4.78