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Por la presente, desde la Sociedad Española de Medicina Preventiva, Salud Pública y Gestión Sanitaria (SEMPSPGS) certificamos que el póster titulado

“Effect of an automated heterogeneous multi-layer air filtering system on quality of sleep. A crossover pilot study”,

elaborado por Guillen-Grima F, Urrestarazu-Bolumburu E , Garate-Coro F, Orrillo-Ibiricu V ; fue presentado en el XXI Congreso Nacional y X Internacional de la SEMPSPGH celebrado del 22 al 24 de septiembre en Santander.

Y para que así conste a los efectos oportunos, se firma la presente.

Dr. Jesús Molina Cabrilla
Presidente del Comité Científico
XXI Congreso Nacional y X Internacional
SEMPSPGS

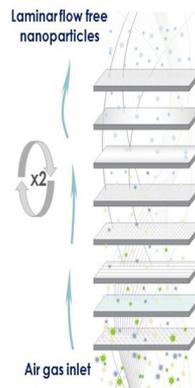
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Effect of an automated heterogeneous multi-layer air filtering system on quality of sleep. A crossover pilot study

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There is a relationship between air pollution and sleep quality. There are anecdotic reports that an automated heterogeneous multi-layer air filtering system (CRU), "BIOW®", used for hospital air disinfection, improves sleep. Hypothesis: The use of a CRU will improve the sleep quality of patients. Objective. To evaluate in patients with insomnia if sleeping with a CRU in the room affects sleep quality.

MATERIAL AND METHODS: 30 Outpatients with mild or moderate insomnia participated. The study was a crossover design. First, patients slept two weeks without a multi-layer air filtering system (CRU) and later with a CRU in their bedroom. Sleep quality was measured by actigraphy and sleep diaries. The study variables were bedtime hours, hours of sleep, sleep entry latency, the number of awakenings, intra-sleep wakefulness and sleep efficiency, and perceived sleep quality (Pittsburgh sleep quality scale). Comparisons between previous and posterior measures were computed with the Wilcoxon Signed Ranks Test for paired data.



Automated Heterogeneous Multi-Layer Filtering System

- Thermic Sterilization System (200°)
- Ion Plasma. It changes the electrical charge of nanoparticles generating filtrable corpuscles
- Ultraviolet Light. It breaks the chain of nucleotides (DNA, RNA) of bacteria and virus
- Long Life Inox. Stainless Steel with maximum strength designed for high airflows and as a UV baffle for platinum catalysis
- Activated Carbon. Catalytic platinum. Removes VOCs and absorbs volatile substances (gases, fumes and odors)
- HEPA 13 filter. High Efficiency Particle Arresting, retains 99.99% pollutant particles (PM_{0.1}; 0.3; 0.5; 1; 2.5; 10 and nanoparticles)
- Blue antibacteria filter. Bactericidal lamina as first filtering of bacteria
- Prefilter. Removes large impurities (PM>10). Easy cleaning.

RESULTS. The number of awakenings reduced by an average of 0.74 (P < 0.003). The latency time also decreased by 20.53% (5.44 minutes). (p =0.009) The time of sleep and the quality of sleep increased 4.04% and 4.57%. Latency Time improved in 74.07% of patients (95% CI 55.2-66.83%).

		PRE	POST	Difference	Difference	
	N	Mean (SD) % (CI 95%)	Mean (SD)	Mean (SD)	(%)	P
Pittsburgh	23	8,74 (2.53)	7,74 (2.85)	-1 (2.35)	-11,44%	0.056
Latency Time (minutes)	27	26.5 (19.30)	21.06 (12.06)	-5.44 (10,85)	-20,53%	0.009
Times of sleep (hours, minutes)	26	6h 36' (1h 11')	6 h 52m (1h 2m)	16 m 27"	4.04%	0.011
Sleep Efficiency (%)	27	83.25 (11.27)	87.51 (9.23)	4.26 (8.14)	5.12%	0.009
Number of awakenings	27	3.14 (5.53)	2.4 (3.70)	-0.74 (1.94)	-23,57%	0.003
Quality of Sleep	21	6.34 (0.69)	6.63 (0.96)	0.28 (0.60)	4.57%	0.001

CONCLUSION

Multi-layer air filtering system may improve subjective sleep quality even in people with mild to moderate insomnia. Further studies are needed to confirm this finding and to study the long-term effect.

