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ORIGINAL ARTICLE

Risk factors for chronic obstructive pulmonary disease: Results of the FARIECE study



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KEYWORDS

Chronic obstructive
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Tobacco smoke
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Abstract

Introduction: Although smoking is the main risk factor, it is not the only one. Current medical evidence shows that airflow limitation also develops for other reasons.

Objective: Our main objective was to determine risk factors which are associated with chronic pulmonary disease, among patients of 40–85 years old at Internal Medicine and Pneumology Departments at the Jose Carrasco Arteaga and Vicente Corral Moscoso Hospitals.

Materials and methods: This is a case–control study. Our sample was calculated with a 95% confidence interval, an 80% ratio of statistical power, an odds ratio of 3 and a 10% exposure factor with its lowest frequency; a pairing procedure was applied according to gender and age and subjects entered the study sequentially.

Results: In all, 318 patients were evaluated, 106 of whom were cases and 212 controls. Both groups were similar in age and the same gender ($P > .05$). Males constituted 72.3%, with an average age of 62.4 years (± 13.1 D.E.). An index of over 20 pack years was a risk factor for COPD (OR: 9.03, 95% CI: 3.76–21.72; $P = .000$). In the case of biomass fumes, this was an exposure index of over 100 h/year (OR: 9.65, 95% CI: 4.87–19.32, $P = .000$). Dust exposure, air pollution and a family history of COPD in patients' parents were not risk factors for COPD.

Conclusions: Risk factors for COPD were attributable to smoking and biomass smoke exposure.

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PALABRAS CLAVE

Enfermedad pulmonar obstructiva crónica; Tabaquismo; Humo de leña

Factores de riesgo para enfermedad pulmonar obstructiva crónica. Resultados del estudio FARIECE**Resumen**

Introducción: El tabaquismo es el principal factor de riesgo para enfermedad pulmonar obstructiva crónica (EPOC), pero no es el único. La evidencia médica actual demuestra que la limitación al flujo aéreo también se desarrolla por otras causas.

Objetivos: Describir el perfil demográfico de los pacientes con EPOC e identificar posibles factores de riesgo para su desarrollo en sujetos entre 40 y 85 años en los servicios de neumología y medicina interna de los Hospitales José Carrasco Arteaga y Vicente Corral Moscoso en la ciudad de Cuenca, Ecuador.

Métodos: Estudio multicéntrico de casos y controles. Se reclutó como casos a personas entre 40 y 85 años con diagnóstico de EPOC y como controles a personas de la misma edad sin diagnóstico previo de EPOC y que no presentaban síntomas de EPOC en el momento de realizar el estudio. La muestra se calculó sobre la base del 95% de nivel de confianza, 80% de poder estadístico, OR de 3 y 10% del factor de exposición con más baja frecuencia; se pareó por edad y sexo e ingresaron al estudio de manera secuencial.

Resultados: Se evaluaron 318 sujetos, 106 casos y 212 controles. Los grupos fueron similares en promedio de edad y sexo ($p > 0.05$). El 72.3% fueron hombres; el promedio de edad fue 62.4 años (± 13.1 D.E.). El índice paquetes/años superior a 20 resultó ser factor de riesgo para EPOC (OR de 9.03, IC95%, 3.76 – 21.72; $\text{valour de } p = 0.000$), al igual que la exposición al humo de leña en horas/años mayor a 100 (OR de 9.65, IC 95% 4.87 – 19.32; $\text{valour de } p = 0.000$).

Conclusiones: Los factores de riesgo para EPOC son exposición al tabaco y humo de leña.

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Introduction

Chronic obstructive pulmonary disease (COPD) is a worldwide public health problem.¹ The Global Initiative for Chronic Obstructive Lung Disease (GOLD) defines COPD as a common, preventable and treatable disease characterised by progressive airflow limitation.² The prevalence of COPD in those aged between 40 and 80 years in Spain varies between 9.1%, according to the IBERPOC³ study, and 10.2% according to the EPI-SCAN study (95% CI: 9.2–11.1).⁴

Worldwide, this disease is the fourth cause of mortality and its prognosis is linked to multiple factors related to the severity of the disease.⁵ The PREPOCOL study shows that the prevalence of COPD is 8.9% in over-40-year-olds.⁶ In the WHO 2014 records, there are 65 million COPD patients globally and it is estimated that by 2030 the disease will have become the third leading cause of death and the fourth for disability worldwide.⁷

The PLATINUM study concludes that in Latin America the lowest prevalence of COPD is 7.8%, in Mexico, and 19.8%, the highest, in Uruguay. The rate is higher in men than in women, passive smokers, and those exposed to woodsmoke and dust.⁸ Smoking is the main risk factor and the most studied.⁹ It is of great concern that more and more non-smokers are developing the disease, and this has been the starting point for new research on other associated factors.¹⁰ There is overwhelming statistical evidence to suggest that this is not the only one.¹⁰ When considering the possibility of extending these categories in order to catalogue associated factors, this condition will affect more those over 40, thus becoming a major public health problem.¹¹ The

American Lung Association cites exposure to dust, environmental pollution and inherited genetic disorders such as homozygous deficit of alpha-1-antitrypsin, as risk factors for COPD.¹²

Hu et al. mention that over the past decade, COPD has become a worldwide public health problem, and also noted as a risk factor exposure to smoke from burning biomass (firewood), especially in unventilated, confined interiors.¹³ The Bolivian Institute of Altitude Biology in the Faculty of Medicine at the Universidad Mayor de San Andres in Bolivia concluded that in la Paz, the prevalence of COPD is 12.9%, and noted that there are other factors apart from smoking that cause disease, such as the use of firewood, environmental pollution and workplace exposure: data that should be considered when further research is undertaken.¹⁴ The use of firewood for cooking and heating homes is common in developing countries.¹⁵

The association between COPD and woodsmoke has been demonstrated in several epidemiological studies, some of which were conducted in Latin America by Dennis et al.,¹⁶ and Pérez-Padilla et al.¹⁷ in Mexico; Luna in Guatemala,¹⁸ and Albalak in Bolivia.¹⁹ Most studies associate this with chronic respiratory symptoms. Dennis and Pérez Padilla link exposure time with spirometry studies and describe a direct relation between frequency of COPD, respiratory symptoms and increased exposure to woodsmoke.^{16,17} A big question remains as to whether woodsmoke, the working environment, hereditary genetic factors and pollutants in our environment could be risk factors. The aim of this paper is to describe the demographic profile of patients with COPD and identify possible risk factors for the development of the

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