Med Clin (Barc). 2015;**145(12)**:520–525

MEDICINA CLINICA

www.elsevier.es/medicinaclinica

Original article

Smoking impact on mortality in Spain in 2012☆

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ARTICLE INFO

Article history:
Received 9 December 2014
Accepted 12 March 2015
Available online 30 April 2016

Keywords:
Smoking
Mortality
Attributable risk
Potential years of life lost

ABSTRACT

Background and objective: Smoking is an important public health problem, and is one of the main avoidable causes of morbidity and early mortality. The aim was to estimate the mortality attributable to smoking and its impact on premature mortality in Spain in the year 2012.
Patients and methods: Descriptive, cross-sectional study, carried out on the Spanish population aged ≥18 years in 2012. The prevalence of smoking by age and sex was obtained from the National Health Survey 2011–2012, and the number of deaths by age, sex and cause was obtained from the vital statistics of the National Institute of Statistics. The proportion of deaths attributable to smoking was calculated according to sex and age group, from the etiological fraction of the population. Likewise, loss of potential years of life lost (PYLL) and the mean potential years of life lost (MPYLL) were also calculated.
Results: In 2012, smoking caused 60,456 deaths which accounted for 15.23% of all deaths. Trachea–bronchial–lung cancer in men and other cardiopathies in women mostly contributed to this mortality. The PYLL were 184,426, and the MPYLL were 3.25 years in men and 2.42 years in women.
Conclusions: In 2012, every day, 125 men and 40 women die from smoking-related conditions. The smoking prevalence has diminished in comparison with previous years and the number and percentage of deaths attributable to the smoking have increased in the last 20 years.

Impacto del consumo de tabaco sobre la mortalidad en España en el año 2012

Palabras clave:
Tabaco
Mortalidad
Riesgo atribuible
Años potenciales de vida perdidos

RESUMEN

Antecedentes y objetivo: El tabaquismo constituye un importante problema de salud pública, siendo una de las principales causas de morbimortalidad evitable y prematura. El objetivo del estudio es describir la mortalidad atribuible al consumo de tabaco en España en 2012, y compararla con resultados de años anteriores.
Pacientes y métodos: Estudio descriptivo, transversal, realizado en población española de más de 18 años. Las fuentes de los datos fueron la encuesta nacional de salud 2011-2012 y las estadísticas vitales del Instituto Nacional de Estadística. Se calculó la proporción de muertes atribuibles al tabaco por sexo y grupo de edad a partir de la fracción etiológica poblacional. Asimismo, se calcularon los años potenciales de vida perdidos (APVP) y la media de años potenciales de vida perdidos (MAPVP).
Resultados: La prevalencia global del tabaquismo en 2012 ha sido del 23,62%, y ha provocado 60.456 muertes. El 15,23% de las muertes ocurridas en España en 2012 son atribuibles al consumo de tabaco. El cáncer de tráquea-bronquios-pulmón en varones y otras cardiopatías en mujeres fueron las que más contribuyeron a dicha mortalidad. Los APVP fueron 184.426, y la MAPVP fue de 3,25 años en varones y de 2,42 en mujeres.

☆ Please cite this article as: Gutiérrez-Abejón E, Rejas-Gutiérrez J, Criado-Espegel P, Campo-Ortega EP, Breñas-Villalón MT, Martín-Sobrino N. Impacto del consumo de tabaco sobre la mortalidad en España en el año 2012. Med Clin (Barc). 2015;145:520–525.

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Conclusiones: En el año 2012 han muerto al día 125 varones y 40 mujeres por causas atribuibles al consumo de tabaco. La prevalencia global del tabaquismo ha disminuido con respecto a años anteriores, mientras que el número y el porcentaje de muertes atribuibles al tabaquismo han aumentado en los últimos 20 años.

Introduction

Smoking is a major public health problem worldwide, being responsible for the death of about 6 million people each year. More than a third of them will die of some type of cancer.[1] It is estimated that 40% of smokers will die prematurely from tobacco use if they do not stop smoking.[2] Half of those deaths occur in people aged 35–70, being therefore premature, causing a lot of years of potential life lost.[3]

It is estimated that in 2020 smoking will cause 18% deaths in developed countries and 11% in developing countries.[4] Smoking is associated with more than 25 diseases and is mainly responsible for 85% cases of lung cancer, 75% chronic bronchitis and 25% of ischemic heart disease.[5] Spain is in phase 3 and 4 of the smoking epidemic model developed by Lopez et al.,[6] but the maximum level of negative health effects has not been reached yet.

The main national benchmark on smoking data in Spain is the Encuesta Nacional de Salud de España or ENSE (National Health Survey of Spain). ENSE is a research on health status and its determinant factors from the perspective of citizens and provides information including perceived morbidity, lifestyle, behaviors related to risk factors, the use of health care services and preventive practices. In the last decade, the prevalence of smoking in Spain has been decreasing. In ENSE in 2003,[7] the overall prevalence of smoking in the Spanish population aged 16 or older was 28.1% for daily smokers. In 2006, ENSE[8] prevalence decreased to 26.4% for daily smokers. The most recent data, belonging to the ENSE of 2011–2012,[9] shows an overall smoking prevalence of 24% in the Spanish population aged 15 and over.

Tobacco addiction is a chronic medical condition, amenable to treatment. The expected results from interventions to promote smoking cessation are as follows: (a) increase the number of years lived; (b) improve the health status and quality of the years lived; (c) prevent premature deaths and reduce healthcare costs of treating conditions associated with smoking.[10] The aim of this study was to describe the prevalence of smoking and estimate the smoking-attributable mortality in Spain and its impact on premature mortality of the population.

Patients and methodology

This is an observational study, based on the analysis of the ENSE in 2011–2012. The scope of the study is population residing in Spain, 18 years old or over in 2012, obtained from the review of the local census conducted by the National Statistics Institute (INE)[11] to date of 1 January each year.

To calculate the smoking-prevalence, anonymized microdata file of the ENSE 2011–2012 provided by the Ministry of Health, Social Services and Equity[12] (MSSSI) was used. For this purpose, we have taken into account the sampling design of the ENSE 2011–2012, which is based on a three-stage stratified sampling.

Due to the characteristics of this study we have required:

- To gather the data into groups by age and sex, with a lower age limit of 18 and an upper age limit of 100 and older.
- To quantify the status as smoker, former smoker and never smoker. Occasional smoker status has been omitted, since according to the methodology followed by the ENSE 2011–2012, the answer "Yes, I smoke, but not daily" is the same as the answer "No, I do not smoke or have never smoked on a regular basis," i.e. it does not quantify either type or amount of cigarettes smoked.

For the operation of this file we have used SPSS® syntax files provided by the MSSSI, which were obtained from the website developed by the Consejo Superior de Investigaciones Científicas (Spanish Council for Scientific Research) and Instituto de Mayores y Servicios Sociales (Institute for the Elderly and Social Services).[13] For all-cause mortality rates we have used the files supplied by the INE[14] for the year 2012. For calculating smoking-attributable mortality, smoking prevalence and mortality have been estimated in the population aged 35 and older, as well as the relative risks (RR) of death for each related disease, according to sex, obtained by Thun et al.[15] based on the Cancer Prevention study II (Table 1).

Since the diseases included in the study by Thun et al. were encoded according to the Ninth Revision of the International Classification of Diseases (ICD-9), and the statistics provided by the INE were on the tenth revision of this classification, these statistics were converted into ICD-9 following the methodology indicated by the Statistical Institute of the Community of Madrid.[16] With this, we have calculated the population attributable fraction (PAF) of mortality from smoking for each cause, sex and age group, taking into account the relative risk of death and prevalences for each category of smoking, using the following formula[17]:

$$\mathrm{PAF} = \frac{p_1(RR_1 - 1) + p_2(RR_2 - 1)}{p_1(RR_1 - 1) + p_2(RR_2 - 1) + 1}$$

where $p1$ is the prevalence of smokers, $p2$ is the prevalence of former smokers, RR_1 is the relative risk of smokers compared to non-smokers and RR_2 is the relative risk of former smokers compared to non-smokers.

Multiplying PAF by the number of deaths from each cause allows us to obtain the number of smoking-attributable deaths.

Years of potential life lost (YPLL) were calculated using the following formula:

$$\mathrm{YPLL} = D_i * A_i = D_i * (\mathrm{LE} - i)$$

where Di is the number of deaths from smoking in age group i and Ai is the number of years of life lost (life expectancy [LE] – age of death [i]).

We have considered a life expectancy of 70 years for both sexes, as proposed by Romeder and McWhinnie,[18] since it is the limit used by the INE for calculating YPLL. The mean years of potential life lost (MYPLL) was obtained from YPLL divided by the overall number of smoking-attributable deaths for the disease.

Results

The ENSE 2011–2012 was performed on a sample of 21,007 adults, 9649 men and 11,358 women, aged 15–100 and older. For this study the sample selected included men and women