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Prevalência de hábitos tabágicos e sua repercussão numa população de asmáticos

The smoking rate and its repercussions on an asthmatic population sample

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Resumo

Introdução – A prevalência de hábitos tabágicos em Portugal e na Europa ronda os 19,2 e 33%, respectivamente. Não existem, porém, dados precisos quanto à prevalência de hábitos tabágicos na popoulação asmática.

Objectivos – Determinar a prevalência de hábitos tabágicos e sua repercussão numa amostra populacional asmática.

Material e métodos – Cento e dez doentes asmáticos observados em consultas consecutivas de asma foram classificados como não fumadores, ex-fumadores ou fumadores, de acordo com os seus hábitos tabágicos. Subsequentemente, baseados numa avaliação clínica e funcional, foram incluídos num de quatro grupos: asma persistente severa (APS), persistente moderada (APM), persistente ligeira (APL) e intermitente (AI).

Abstract

Setting – The smoking rate in Portugal is 19.2% and 33% in Europe. There is no precise data on the smoking rate of the asthmatic population.

Aim – To determine the smoking rate and its repercussions on an asthmatic population sample.

Design – One hundred and ten asthmatic patients observed in asthma consultations were classified as non-smokers, former-smokers or smokers. Subsequently, based on functional and clinical criteria, they were classified as having Severe Persistent (SPA), Moderate Persistent (MoPA), Mild Persistent (MiPA) and Intermittent (IA) Asthma.

Results – 8% of 110 patients (65% female) aged 18 to 78 years were smokers, 9% former-smokers, 83% non-smokers.

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Resultados – Entre os 110 doentes (65% do sexo feminino), com idades compreendidas entre os 18 e 78, 8% eram fumadores, 9% ex-fumadores e 83% não fumadores.
Distribuição entre os asmáticos:

– Fumadores – 0% APS, 56% APM, 33% APL, 11%AI;
– Ex-fumadores – 10% APS, 30% APM, 50% APL, 10%AI;
– Não fumadores – 7%APS, 27%APM, 36%APL, 30%AI;

A avaliação funcional foi globalmente pior em doentes com exposição (actual ou prévia) a tabaco.
Conclusão – A prevalência de hábitos tabágicos nesta amostra populacional foi de 8%, consideravelmente inferior à sua prevalência na população portuguesa (19,2%). A análise e comparação do grau de severidade de asma e da sua avaliação funcional revelou resultados piores na população de fumadores e ex-fumadores. Estes reforçam o papel da exposição ao tabaco como factor de agravamento da asma e, consequentemente, do seu prognóstico. Estudos posteriores podem revelar-se importantes na comprovação dos bem conhecidos riscos dos hábitos tabágicos, contribuindo para alertar a população asmática neste sentido.

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Palavras-chave: Asma, tabaco, GINA, VEMS.

Among the asthmatics:

– smokers: 0% SPA, 56% MoPA, 33% MiPA, 11% IA;
– former smokers: 10% SPA, 30%MoPA, 50% MiPA, 10% IA;
– non-smokers: 7% SPA, 27% MoPA, 36% MiPA, 30% IA.

Patients with exposure to smoking had worse functional evaluation than those without exposure.
Conclusion – In this population sample the rate of current smoking habits (8% of current smokers) was considerably low than in Portugal (19.2%). Analysis and comparison of asthma severity and functional evaluation detected worse results in both current and former smokers. These reinforce the role of tobacco exposure in asthma aggravation and worsening of its prognosis. Further studies may be important to prove and alert the asthmatic population, in particular, to the well-known risks of smoking.

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Key-words: Asthma, smoking, GINA, FEV1.

Introduction

The smoking rate in the European population, comprising 39% of the total male and 27% of the total female population, is 33% according to the most recently published data[1]. According to official national statistics, 19.2% of the Portuguese population (30.5% of the male and 8.9% of the female population) maintain regular smoking habits[2].

Despite awareness of the effects of smoking, particularly on the respiratory tract, the consequences of smoking on particular population subsets are nevertheless severe. Asthmatics are among the most susceptible groups exposed. In addition to the effects on the respiratory tract already mentioned, bronchial hyperreactivity may be triggered or worsened by smoking or passive exposure to environmental tobacco smoke[3]. Despite these facts, little information has been obtained so far on this particular group[4,5].
In the absence of recent trustworthy data on the smoking rate in the Portuguese asthmatic population, the authors obtained a random sample of asthmatic patients, aiming to determine the smoking rate in this sample and subsequently analyse its correlation with several parameters.

Study population and methods

One hundred and ten asthmatic patients observed in consecutive asthma consultations were questioned on their smoking habits. According to the information gathered, based on World Health Organization (WHO) criteria, patients were placed in one of three groups:

- **non-smokers** [identified on graphs as "0"] – no past or present smoking habits whatsoever;
- **former-smokers** ["1"] – previous smoking habits, ceased for over a year prior; and
- (current) **smokers** ["2"] – regardless of number of pack-years.

Subsequently, taking functional and clinical criteria into account (according to Global Initiative for Asthma – GINA[6] at the time this study was started), each individual was classified as having:

a) Intermittent (IA identified on graphs as "0");
b) Mild persistent (MiPA – "1");
c) Moderate persistent (MoPA – "2"); or
d) Severe persistent asthma (SPA -"3").

The functional evaluation of these patients, paying close attention to forced expiratory volume at the first second (FEV1) and its variability among each of the subgroups, was also analysed in detail.
Data analysis included variable, bivariate correlation, linear regression, Chi-square, crosstabs, mean, median, quartiles and 95% confidence interval comparison.

Note: Patients interviewed consented to their inclusion in the process of data collection and its aim; patient confidentiality and privacy were assured.

Results

General statistics (Figs. 1, 2 and 3)

Among the total population – 110 patients – 72 were female (65%) and 38 male (35%). Ages ranged from 18 and 78 years old (mean: 38.9 years);

- 83% were non-smokers – medium age 36.3 years;
- 9% were former-smokers – medium age 44; and
- 8% were current smokers – medium age 34.8.

When observing this distribution within both genders, the prevalence of non-smokers and former-smokers was similar in both.

However, the prevalence of current smokers was twice as high in female patients (10%) as it was in male patients (5%). However, this difference was not statistically significant.
There was no statistical age distribution difference among these three patient subgroups.

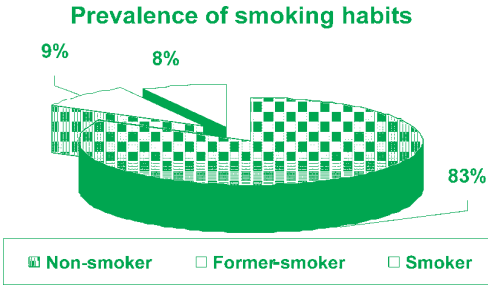
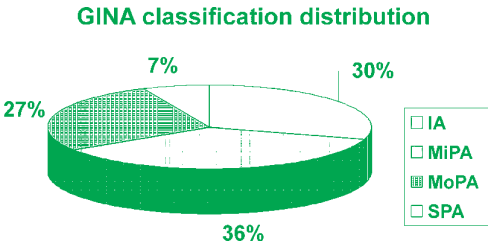


Fig. 1 – Smoking habits among the asthmatic patient sample

GINA classification (Figs. 2, 4, 5)
Exposure to smoking has long been associated with clinical and functional respiratory deterioration. In these particular patients, this may be translated into difficult asthma symptom control and worse functional performance.
Among the total population (Fig. 2):

- 30% had IA
- 36% MiPA
- 27% MoPA
- 7% SPA



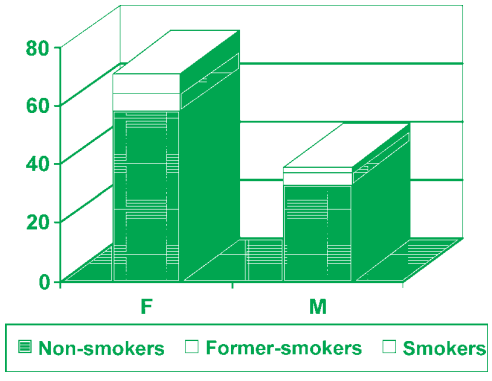
IA – Intermittent, MiPA – Mild persistent, MoPA – Moderate persistent and SPA – Severe persistent

Fig. 2 – GINA classification distribution

When comparing the percentage of current, former and non-smokers within each GINA sub-group the following results were obtained (Fig. 4):

- IA – 93% were non-smokers; both current and former-smokers added up to 3.5%;
- MiPA – 80.5% non-smokers, 12.2% former-smokers, 7.3% smokers;
- MoPA – 75.8% non-smokers, 9% former-smokers, 15.2% smokers;
- SPA – 85.7% non-smokers, 14.3% former-smokers, 0% smokers.

Conversely, GINA classification distribution among the asthmatic subgroups was as follows (Fig. 5):



(F– female, M – male)

Fig. 3 – Differences between genders in smoking habits

– smokers: 0% had SPA, 56% MoPA, 33% MiPA, 11% IA;
– former-smokers: 10% had SPA, 30% MoPA, 50% MiPA, 10% IA;
– non-smokers: 7% had SPA, 27% MoPA, 36% MiPA, 30% IA.

Functional assessment

In addition to clinical evaluation, functional parameters also play a large part in the assessment of the repercussion of asthma on the patients' quality of life.

In a comparison of results of functional assessment between non-smokers and the remaining population, the number of abnormal results were greater among the latter group (p=0.048).

Concomitantly, Pearson correlation analysis as well as linear regression reinforces the association of increasing smoking habits and functional assessment deterioration (p=0.03) – Tables I, II and III.

FEV1

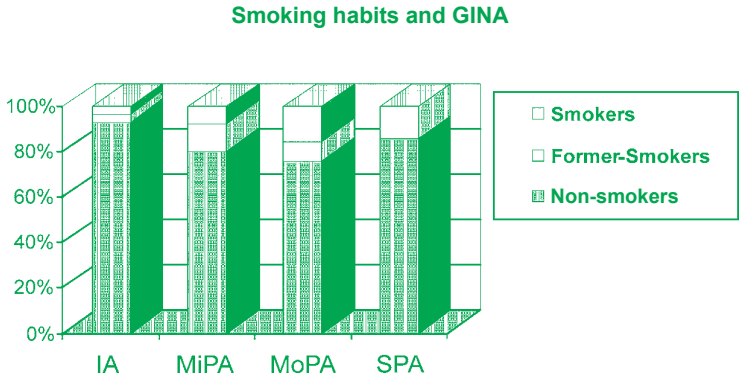
Comparing the FEV1 between the three mentioned groups, functional deterioration is obvious.

Among:

✓ Non-smokers the mean FEV1 was normal (86.8%) varying, however, between 36 and 127%;
✓ Former-smokers the mean FEV1 was 76.4%, varying between 29.20 and 103%;
✓ Current smokers the mean FEV1 was 76.5%, varying between 56 and 105.6%.

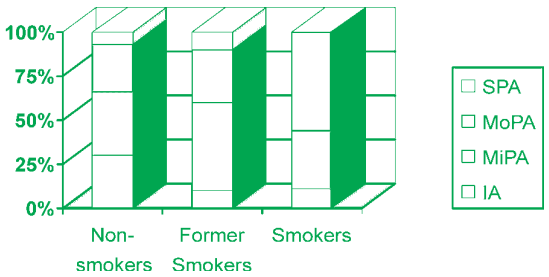
This is shown in Fig. 6 (mean plus 95% confidence interval) and Fig. 7 (median plus quartiles) allowing a more accurate observation of the predominance of a lower FEV1 among patients exposed to tobacco.

Patient splitting and differential analysis of FEV1 according to age groups showed no statistically significant difference between patients exposed and non-exposed to smoking in all but one group – patients aged 31 to 40 where smokers and former-smokers had a significantly lower FEV1 than non-smokers. Confronted with the small sample size the absence of statistical significance in other subgroups may be justified.



IA – Intermittent, MiPA – Mild persistent, MoPA – Moderate persistent and SPA – Severe persistent asthma

Fig. 4 – Relative distribution of smoking habits in different GINA asthma subclasses



IA – Intermittent, MiPA – Mild persistent, MoPA – Moderate persistent and SPA – Severe persistent asthma

Fig. 5 – Relative distribution of GINA asthma subclasses in different patient groups according to smoking habits

Tables I and II – Linear regression analysis, correlating smoking habits and functional assessment results

ANOVA(b)

Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	1.180	1	1.180	4.849	.030(a)
	Residual	25.320	104	.243		
	Total	26.500	105			

a – predictors: (constant), smoking habits
b – dependent variable: functional assessment

Coefficients(a)

Model		Unstandardised coefficients		Standardised coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.452	.053		8.599	.000
	Smoking habits	.169	.077	.211	2.202	.030

a – dependent variable: functional assessment
Std. error – Standard error
Sig – significance

Table III – Bivariate correlation between smoking habits and functional assessment

Correlations

		Smoking habits	Functional assessment
Smoking habits	Pearson correlation	1	.211(*)
	Sig. (2-tailed)	.	.030
	N	108	106
Functional assessment	Pearson correlation	.211(*)	1
	Sig. (2-tailed)	.030	.
	N	106	106

* Correlation is significant at the 0.05 level (2-tailed)

Discussion

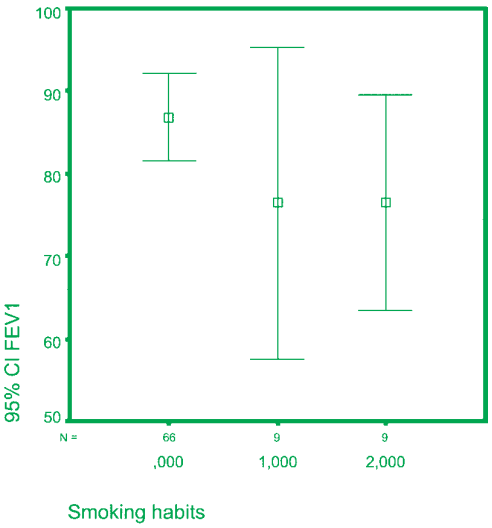
The smoking rate in this population sample is low (8%) in comparison to the general Portuguese population (19.2%). Several factors, including an underlying respiratory disease, regular follow-up pulmonology consultations, information on the harm associated with tobacco exposure, and frequent stimulus to avoid or abandon smoking habits may have led to a selection bias.

The recent change in GINA classification criteria should be stressed. An attempt was

made to adapt this study to the newly implemented criteria but it was not possible with the data which had been initially collected.
In the analysis of results obtained with the collected data, we highlight:

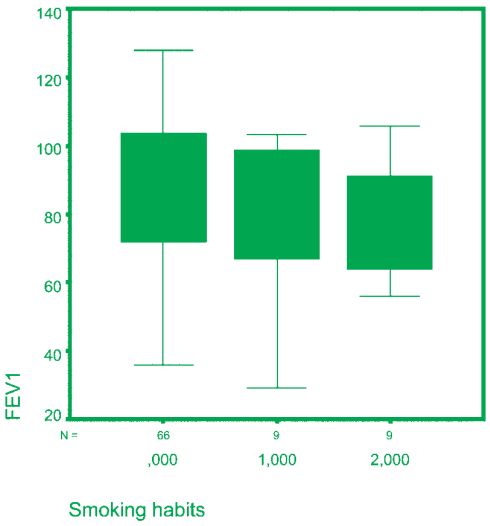
– GINA classification was generally less favourable among current and former-smokers than among those not exposed to smoking. This is seen in:
  • a gradual decrease of the intermittent and mild persistent asthma prevalence (see graph 5) in former-smokers and smokers;
  • the complementary percentual increase of more severe forms of asthma (the absence of severe persistent asthma among smokers is discussed below);
  • Patients with intermittent asthma have the lowest prevalence of (former and/or current) smoking habits.
  • However, there are no active smokers among patients with Severe Persistent Asthma. This may well be interpreted as a consequence of the severity of their disease and the eventual intolerance associated to an add-on effect smoking would trigger. Further, smoking patients with severe persistent asthma may well be under follow-up at specific COPD consultations as a result of the difficulty of distinguishing end-stage asthma and COPD, particularly in smokers, potentially decreasing their presence at asthma consultations.

– Functional assessment (namely FEV1) results were worse in (former or current)



Smoking habits: 0 – non-smokers; 1 – Former-smokers; 2 – Smokers

Fig. 6 – Distribution (mean and 95% confidence interval) of FEV1 in patients with different smoking habits



Smoking habits: 0 – non-smokers; 1 – Former-smokers; 2 – Smokers

Fig. 7 – FEV1 median and quartiles according to patients' smoking habits

smokers (p=0.03). No statistically significant difference was obtained between current smokers and former-smokers possibly due to the small sample size.

Although the patient sample is relatively small, making it hard to attribute statistical significance to some of the conclusions drawn, further studies may validate these results. We discuss below several points which could prove useful in future studies:

- There was no evaluation of treatment compliance: the possible existence of better compliance among non-smokers may favour symptom control and better functional performance in this population.
- Other functional parameters such as response to beta-agonists and bronchial hyperreactivity were not assessed; in the future these may also aid in evaluating differences between smokers and non-smokers.
- The existence of exposure to environmental tobacco smoke was not determined; its presence or absence may also interfere with some of the results obtained[3].
- The tobacco exposure load (number of pack-years) was not determined in this study. However, it is bound to allow new conclusions to be drawn in this matter.
- While this analysis allows an association between smoking and worse asthma severity or functional performance to be recognised, it is not the ideal way to establish a direct causal relation between the two. A long term (possibly prospective) study of the evolution of these parameters would be more suitable to attain conclusive results.

Conclusions

Smoking habits are frequently (almost inevitably) associated with COPD. However, the consequences of exposure to tobacco on asthmatics should not be neglected. The absolute knowledge that smoking is prejudicial to health, in the asthmatic population, susceptible as it already is, its consequences may be exponential.

The results obtained in this population sample, despite its limited statistical significance, reinforce what is logically expected and suspected: tobacco exposure is associated with worse asthma – symptomatic and functional – performance and prognosis. Further large-scale studies may be important to confirm and alert the asthmatic population, in particular, to the risks they incur by exposing themselves to tobacco.

The recent change of GINA criteria allows for new possibilities in future study structure and questions to be posed and answered.

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