

Perception of health amongst ever-smokers and never-smokers: a comparison using the SF-36 Health Survey Questionnaire

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Abstract

Objective - To assess the health status of ever-smokers and never-smokers.

Design - Person-to-person interview using structured questionnaire which contained the SF-36 and a variety of questions on lifestyle.

Setting - Participants' homes, in West Glamorgan, South Wales, UK.

Subjects - Twelve hundred adults, aged 20-89 years, were randomly selected from the register of the Family Health Services Authority.

Main outcome measures - The eight scales within the SF-36 health profile.

Results - The response rate was 82%. Only 53.2% had ever smoked. Ever-smokers reported a significantly worse health experience in four of the eight parameters measured by the SF-36; in other words, they perceived themselves to be less physically active, experienced more bodily pain, had less vitality, and in general, considered themselves to be less healthy. There was no difference in role limitations due to physical problems, social functioning, role limitations due to emotional problems, or mental health between the two groups.

Conclusions - Studies which measure the general health effects, rather than disease effects, of smoking may be more meaningful to the general public and might be expected to have a greater impact on those who smoke or who are considering whether to smoke.

(Tobacco Control 1994; 3: 213-215)

Introduction

Cigarette smoking is an important cause of mortality and morbidity in modern times; the Royal College of Physicians has estimated that tobacco smoking accounts for 15-20% of all deaths in Britain, a total of at least 100000 deaths a year.¹ Numerous studies have shown that smokers exhibit a higher mortality and morbidity than nonsmokers from certain cancers, ischaemic heart disease, and chronic obstructive pulmonary disease.²⁻⁴ However, there has been no publication in the literature comparing the overall health status of smokers and nonsmokers. Studies carried out in the US show that disability, as measured by annual

days of restricted activity or annual bed disability days, is more prevalent in ever-smokers than never-smokers, to the extent of 19% and 8%, respectively, but these measures are likely to be only crude proxies for health related quality of life.⁵ This paper compares the health-related quality of life in ever- and never-smokers using a modern health status measure.

The SF-36 is a condition non-specific health status measure, which measures eight parameters of health-related quality of life and has been used for health status comparisons, both among people with the same condition and between people with different conditions.^{6,7} The SF-36 questionnaire was first developed for use in the US,⁸ but has been validated for use in the UK in two recent population-based postal surveys.^{9,10}

In 1993, we undertook an interview-administered health status survey using the SF-36 in the County of West Glamorgan, in South Wales, UK. We report here the comparative health experiences of ever- and never-smokers.

Methods

The SF-36 contains 36 questions which measure eight parameters of health status: physical functioning (10 questions), role limitations due to emotional problems (three questions), role limitations due to physical problems (four questions), social functioning (two questions), mental health (five questions), bodily pain (two questions), vitality (four questions), and general health perceptions (five questions). The final question asks about expectations of health in the future. For each parameter scores are coded, summed, and transformed to a scale from 0 to 100, with higher scores indicating better health.⁸

A questionnaire which contained the SF-36 and a variety of questions on lifestyle, including smoking behaviour, alcohol intake, and occupation, was administered by trained health visitors to a sample of adults, aged 20-89 years, from West Glamorgan in their own homes. The study population was selected by taking a systematic sample of 1200 persons (every 310th patient) from the Family Health Services Authority. The sample size required was calculated with a power of 80% to detect a five percentage point change in physical functioning in serial surveys at a significance

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level of 1%. The sample size calculation indicated that a sample size of 842 completed interviews would be required, and the final sample of 1200 was selected on the basis of allowing for a degree of inaccuracy in the register and an estimated response rate of 85%.

Persons who had died or moved away were identified by the interviewers questioning the new inhabitants, relatives, or neighbours during household interviews after a minimum of three unsuccessful attempts at the original address.

For the purpose of this report, respondents are classified into two groups: those who had ever smoked cigarettes for 6 months or more and those who had never smoked. Mean scores for ever-smokers and never-smokers were determined for each of the eight parameter scores and the differences compared. Because ever-smokers were more likely to be male than never-smokers, and because age, social class and alcohol consumption were also found to be related to the health status parameters, multiple linear regression was used to compare differences in the eight health status parameters between ever- and never-smokers whilst controlling for these potential confounders. The analysis was carried out with each of the eight parameters of the SF-36 being separately included in models as the dependent variable; age, sex, social class, alcohol consumption and smoking status were included as the independent variables. Age and alcohol consumption were included as continuous variables, and sex, social class (manual or non-manual), and smoking status (ever, never) as binary categorical variables. The partial regression coefficients relating to the smoking status variable, and their standard errors, were used to calculate 95% confidence intervals for differences between ever-smokers and never-smokers.

Results

From the 1201 individuals selected for interview, 192 (16%) were found to have moved or died, 116 (9.7%) refused to participate, 64 (5.3%) were not home on at least three separate occasions, two were not approached for interview, and 827 (69%) completed interviews were obtained. Excluding those who had moved or died yielded a corrected response rate of 82% (827/1009). The demographic profile of the study respondents was very

similar to that of the general population of West Glamorgan in the 1991 census, apart from having a slightly smaller proportion of persons aged 20–29 and slightly greater proportions of female respondents (table 1).¹¹

Of the 827 respondents, 440 (53.2%) had smoked, 385 (46.6%) had never smoked and data were missing for the remaining two (0.2%). There was no significant difference in the mean age of the ever-smokers and never-smokers, which were 50.9 and 50.5 years, respectively. With the exception of mental health, all the parameters measured by the SF-36 decreased with age ($p < 0.001$). The manual social group reported worse health than the non-manual group on all eight parameters ($p < 0.003$). Increasing alcohol intake was associated with significantly better physical functioning, role functioning due to physical problems, social functioning, vitality, general health perceptions, and a reduction in bodily pain ($p < 0.03$). There was, however, a significantly greater proportion of smokers among men (61%) than women (47%; $p < 0.001$).

As there was considerable inter-correlation between smoking, alcohol intake, social group, age, and sex, regression models were fitted which included these as independent variables and each of the eight parameters of the SF-36, in turn, as the dependent variable. The results of this analysis comparing the health profiles of ever- and never-smokers are summarised in table 2. Compared to the latter, the former reported a significantly worse health experience in four of the eight parameters measured, ie, physical functioning, bodily pain, general health perceptions and vitality. There was no difference in role limitations due to physical problems, social functioning, role limitations due to emotional problems, or mental health between the two groups.

Discussion

King James I wrote in 1604 in "A Counterblaste to Tobacco" that tobacco was "hateful to the nose, harmful to the brain and dangerous to the lungs".¹² The message that cigarette smoking is injurious to health is reinforced by our findings; ever-smokers perceive themselves to be less physically active, experience more bodily pain, have less vitality, and in general, consider themselves to be less healthy. The difference in physical functioning between ever- and never-smokers is interesting. In this study physical functioning decreased by 0.90 points with each year of age. Physical functioning in ever-smokers equated with that of never-smokers some 6.6 years older. This finding is consistent with reports that smokers die, on average, seven years earlier than non-smokers.¹³ Furthermore, with each yearly increase in age, vitality decreased by 0.32 points, general health perceptions by 0.53 points, and bodily pain increased by 0.37 points. When these figures are compared with the average difference between ever- and never-smokers, the average vitality of a smoker is equivalent to that of a never-smoker some 14 years older. Ever-smokers also reported gen-

Table 1 Comparison of demographic profile of respondents ($n = 827$) with West Glamorgan residents as reported in 1991 data

Characteristics	Study respondents (%)	1991 census (%)
Age (years):		
20–29	14.6	18.7
30–39	16.8	17.7
40–49	17.7	15.0
50–59	16.0	15.1
60–69	15.9	15.4
70–79	13.5	11.1
80–89	5.5	4.1
Sex:		
% female	54.5	52.6

Table 2 Mean difference in SF-36 scores and 95% confidence intervals (CIs) between ever-smokers and never-smokers (adjusted for age, sex, alcohol intake, and social group)

	Differences in mean scores between ever-smokers and never-smokers	95% CI
Physical functioning	-5.90	-2.35 to -9.46*
Role limitations due to physical problems	-5.01	0.45 to -10.49
Bodily pain	-5.76	-1.52 to -10.01*
General health perception	-7.76	-4.27 to -11.24*
Vitality	-4.54	-1.17 to -7.89*
Social functioning	-2.46	1.53 to -6.45
Role limitations due to emotional problems	-2.89	2.12 to -7.90
Mental health	-1.73	1.09 to -4.54

*p < 0.01.

eral health perceptions equivalent to never-smokers 14.6 years older and experienced the same level of bodily pain as never-smokers some 15.6 years older.

The use of a general health status measure, such as the SF-36, to compare levels of health in ever- and never-smokers is a significant addition to the literature. Measures of general health status, which take into account the effect of a wide variety of illnesses rather than merely their prevalence, are a more meaningful way to interpret the health effects of smoking in those not yet killed by cigarettes. This study, however, is a cross-sectional survey and we cannot attribute cause and effect. Longitudinal studies of smokers and nonsmokers incorporating modern health status measures are required to evaluate properly the effect of smoking on health-related quality of life. Data from such studies should be more interpretable to the public, particularly if the health effects of smoking are portrayed as easily understood ageing effects, and might have a greater impact on those who smoke or who are considering starting to smoke.

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