



PERGAMON

Social Science & Medicine 54 (2002) 1323–1332

SOCIAL
SCIENCE
&
MEDICINE

www.elsevier.com/locate/socscimed

Comparing social inequalities in health in Spain: 1987 and 1995/97

Enrique Regidor^{a,*}, Juan L. Gutierrez-Fisac^b, Vicente Domínguez^a,
M. Elisa Calle^a, Pedro Navarro^a

^a *Department of Preventive Medicine and Public Health, Faculty of Medicine, Universidad Complutense de Madrid, Ciudad Universitaria s/n, 28040 Madrid, Spain*

^b *Department of Preventive Medicine and Public Health, Faculty of Medicine, Universidad Autónoma de Madrid, Spain*

Abstract

To evaluate the trend in social inequalities in health in Spain between 1987 and 1995/97, we carried out a secondary analysis of the Spanish National Interview Surveys from 1987, 1995 and 1997. We studied less-than-good perceived general health and four chronic conditions—heart disease, diabetes mellitus, chronic bronchitis/asthma and allergies—by social class and educational level in men and women aged 25–74 years. Among men, the age-adjusted prevalence rate ratio of less-than-good perceived general health by social class decreased from 1.32 to 1.23 between 1987 and 1995/97; however, the prevalence rate ratio by educational level increased from 1.47 to 1.57. Among women, the prevalence rate ratio of less-than-good perceived general health increased between the first and second period as much by social class—from 1.18 to 1.26, as by educational level—from 1.59 to 1.66. For heart disease the age-adjusted prevalence rate ratio by social class among men was 1.12 in 1987 and 0.72 in 1995/97, while the prevalence rate ratio by educational level was around 1 in both periods; among women, the prevalence rate ratio for heart disease by social class was the same in 1987 and in 1995/97, but the prevalence rate ratio by educational level increased between the first and second period. For diabetes mellitus and chronic bronchitis/asthma, the prevalence rate ratio increased by social class and educational level between the first and second period in both men and women. Finally, the prevalence rate ratio for allergies was always <1, although its magnitude increased between 1987 and 1995/97. In general, health inequalities were larger by educational level than by social class and were larger in women than in men. Inequalities in perceived general health, diabetes mellitus and chronic bronchitis/asthma increased in Spain between 1987 and 1995/97. © 2002 Elsevier Science Ltd. All rights reserved.

Keywords: Health inequalities; Spain; Social class; Education

Introduction

A large body of research in the developed countries has consistently shown a relation between socioeconomic level and health, which is basically characterised by the occurrence of higher mortality and a greater frequency of a wide range of health problems in the lower socioeconomic strata of the population. Studies in some of these countries have shown an increase in socioeconomic differences in mortality and health in the last 20 years (Pappas, Queen, Hadden, & Fisher, 1993;

Valkonen, Martelin, Rimpelä, Notjola, & Savela, 1993; Lang & Ducimetière, 1995; Regidor, Gutiérrez-Fisac, & Rodríguez, 1995; Dever, Whitehead, & Roden, 1996). Although economic prosperity and life expectancy have increased, the differences in mortality between individuals at the highest and lowest levels of the social hierarchy have increased. In fact, this is one of the leading conclusions of a report on social inequalities in health in England, which was made by a group of independent experts for the Secretary of State for Health (Acheson, 1998). The same conclusion can also be seen in a report on social inequalities in Spain (Navarro et al., 1996).

*Corresponding author.

Comparative studies have demonstrated that the magnitude of socioeconomic differences in health varies from one country to another (Kunst, Geurts, & vanden Berg, 1995; Kunst & Mackenbach, 1994). One of the European countries with the smallest inequalities in health in the 1980s was Spain, as shown by several studies using mortality and morbidity data from those years (Mackenbach, Kunst, Cavelaars, Groenhof, & Geurts, 1997; Cavelaars et al., 1998). In this regard, it is important to evaluate the trend in health inequalities in a country where the size of the health inequalities was relatively small, since this may generate new empirical evidence that can be of great interest in explaining health inequalities. In addition, monitoring this trend helps to evaluate the intersectorial policies that directly or indirectly affect health, by considering their impact on health inequalities in the population.

Unfortunately, the lack of socioeconomic information from death certificates, together with legal restrictions on the access to available data via linked registries, makes it difficult to monitor mortality in the different socioeconomic groups in Spain. Nevertheless, it is important to describe inequalities in other aspects of health. Since 1987, information provided by the national health surveys has made it possible to study the evolution of the prevalence of various health problems by individual socioeconomic characteristics, such as social class based on occupation and education.

It has been observed that occupation influences health through exposure to certain work-related risks and by means of its relation with income since it reflects a certain socioeconomic position in the labour market (Sorlie, Backlund, & Keller, 1995; Davey Smith et al., 1998). Education also influences health through its relation with higher income and better living conditions, since well educated people are less likely to be unemployed and more likely to have jobs with higher salaries (Ross & Wu, 1995). Furthermore, the well educated have certain psychological resources, such as a strong sense of personal control and social support, in addition to economic resources, that are associated with higher health status. The objective of the present work is to analyse social inequalities in self-perceived health and in the prevalence of various chronic conditions in the Spanish population in 1987 and 1995/97, using social class based on occupation and education as an indicator of socioeconomic position.

Methods

Source of data

The data were taken from the national health surveys carried out by the Ministry of Health in the adult population in 1987, 1995 and 1997. In these surveys

interviews were held with a household sample of persons representative of the non-institutionalised Spanish population aged 16 years and above. The number of persons interviewed in each survey was 29,647, 6395 and 6396, respectively. The 1987 sample was made up of 50 provincial subsamples, each of which was selected using a multistage procedure and stratified by size of locality. Because the sampling fraction was not the same in each province, each individual in the sample was assigned a weighting coefficient as a function of the province of origin. In contrast, in 1995 and 1997 the samples were self-weighted, since in both of those years a single sample was selected at the national level, also using a multistage procedure and stratified by size of locality. Data collection in 1987 was carried out in July, while in 1995 and 1997 it was carried out during the entire year. The response rate ranged between 90% in the survey carried out in 1987 and 85% in those carried out in 1995 and 1997. In order to compensate for the difference in sample size, the 1995 and 1997 surveys were combined, so that the estimates in the first period were obtained with the data from the 1987 survey, while the estimates for the second period are based on the data taken from combining the 1995 and 1997 surveys. Combining the persons selected in two surveys with a similar sampling design makes it possible to increase the number of subjects in the analysis, although it should be noted that the results obtained are a mean of the 1995 and 1997 estimates. The present study is limited to the population aged 25–74 years.

Study variables

The surveys collected information on self-perceived health and on the presence of several chronic conditions. Self-perceived health was obtained by asking the following question: “During the last 12 months, how would you say your health has been: very good, good, average, poor or very poor?” In the present study the persons interviewed were considered to have a negative perception of their health when they replied that their health was average, poor or very poor.

To elicit information about chronic health problems, the persons interviewed were shown a list of chronic conditions and asked if they suffered from any of them. In the 1987 survey this list included 25 chronic conditions, while in the 1995 and 1997 surveys it included seven. They were asked to reply yes or no for each chronic disease on the list. In the present work we have studied only the following four chronic diseases, which were included in the questionnaire for both the first and second periods: heart disease, diabetes mellitus, chronic bronchitis or asthma, and allergies.

The socioeconomic characteristics analysed were social class and educational level. Social class was based on the occupation of the head of family; when the head

of family was retired or unemployed, the previous occupation was used. Because the rate of employment in Spanish women is very low, the use of the social class of the head of family was the best way to include all the women in the study. The national health surveys code occupation into 11 categories and each category was assigned to one of the following social classes—upper-level non-manual workers (employers, farmers or managers with six or more employees and professionals), lower-level non-manual workers (self-employed or employers, farmers and managers with five or less employees, supervisors, and administrative workers), skilled manual workers and unskilled manual workers. This classification scheme has been shown to have high powers of discrimination in the study of socioeconomic differences in the prevalence of different health problems in the Spanish population (Navarro et al., 1996). It was not possible to assign a social class to some 9% of those interviewed in the first period and 5% of those in the second. Educational level was classified into three categories—low (no education or education terminated at 14–15 years), middle (education terminated at 16–19 years or subsequent non-university education) and high (university studies).

Statistical analysis

We first calculated the age-adjusted percentage of persons with less-than-good perceived health and the age-adjusted prevalence of each chronic condition in the different categories of social class and educational level. The age distribution of the 1987 population was used as a standard. After we tested the lack of interaction between age and social class or educational level, binomial regression was used to analyse the statistical significance of the trend in the different levels of education and social class (Skov, Deddens, Petersen, & Endahl, 1998), introducing age as a categorical variable in the model and educational level or social class as an ordinal variable.

After grouping social class and educational level into two categories—manual versus non-manual workers and low versus middle or high educational level, we estimated the percentage ratio or the prevalence ratio among manual and non-manual workers and among persons with low educational level and those with middle or high educational level. These ratios were calculated using the binomial regression model (Skov et al., 1998). We estimated the prevalence ratio adjusted for age for each socioeconomic characteristic. The GENMOD procedure of the SAS statistical program was used for the binomial regression estimate, both to analyse the trend and to calculate the percentage or prevalence ratios (SAS/STAT, 1996). All the estimates based on the 1987 survey were weighted using the provincial weighting coefficient.

Results

Table 1 shows the total number of persons included in the analysis, distributed by social class and educational level in each period. The percentage of people included in the unskilled manual class and with low educational level decreased between 1987 and 1995/97. The percentage of those with less-than-good perceived health and the prevalence of each chronic condition by social class are presented in Tables 2 and 3. The percentage of individuals with less-than-good perceived health and the prevalence of diabetes mellitus and chronic bronchitis/asthma were higher in manual than in non-manual workers, although trends in diabetes mellitus were not significant in men. No relation was found between heart disease and social class, except for men in 1995/97—in this period the prevalence was 6.9% in the upper-level non-manual workers versus 4.4% in unskilled manual workers. The prevalence of allergies was greater in non-manual workers than in manual workers, except for men in the second period.

Figs. 1 and 2 show the percentage of less-than-good perceived health and the prevalence of each chronic condition by educational level, respectively. The percentage of less-than-good perceived health and the prevalence of diabetes mellitus and chronic bronchitis/asthma were higher in those with low educational level than in those with middle or high educational level, except for the prevalence of chronic bronchitis/asthma among women in 1987. In 1987 there was no significant trend in diabetes mellitus among men. No relation was found between heart disease and educational level. Finally, the prevalence of allergies was higher in people with middle and upper educational level, except for men in 1995/97.

Table 4 presents the percentage or prevalence ratio adjusted for age for self-perceived health and for the four chronic conditions. The percentage ratio for less-than-good general health by social class decreased in men between 1987 and 1995/97 (1.32 versus 1.23); in contrast, the percentage ratio for less-than-good perceived general health by educational level increased from 1.47 to 1.57. In women, the percentage ratio increased between the first and second period, both for social class (from 1.18 to 1.26) and for educational level (from 1.59 to 1.66).

For heart disease, the prevalence ratio by social class in men dropped from a magnitude higher than 1 in 1987 to a magnitude lower than 1 in 1995/97, while the prevalence ratio by educational level was similar in both periods; in women the magnitude of the prevalence ratio by social class was unchanged from one period to the other, but the prevalence ratio increased by educational level. For diabetes mellitus and chronic bronchitis the prevalence ratio in both men and women increased by social class and educational level between the first and

Table 1
Distribution and number of people by social class and educational level in men and women: Spain, 1987 and 1995/97

	1987	1995/97
Men		
<i>Social class</i>		
Upper non-manual	957 (7.3)	1032 (17.1)
Lower non-manual	4288 (32.7)	1851 (30.7)
Skilled manual workers	4493 (34.3)	2114 (35.0)
Unskilled manual workers	3379 (25.8)	1038 (17.2)
	13,117 (100.0)	6035 (100.0)
<i>Educational level</i>		
High	1766 (12.5)	745 (12.4)
Middle	3897 (27.6)	1851 (30.9)
Low	8435 (59.8)	3402 (56.7)
	14,098 (100.0)	5998 (100.0)
Women		
<i>Social class</i>		
Upper non-manual	846 (6.2)	958 (15.6)
Lower non-manual	4279 (31.5)	1952 (31.7)
Skilled manual workers	4759 (35.1)	2001 (32.5)
Unskilled manual workers	3686 (27.2)	1241 (20.2)
	13,570 (100.0)	6152 (100.0)
<i>Educational level</i>		
High	1314 (8.6)	689 (10.9)
Middle	3330 (21.7)	1563 (24.7)
Low	10,668 (69.7)	4065 (64.4)
	15,312 (100.0)	6317 (100.0)

Table 2
Age-adjusted prevalence (per 100) of poor general health and four chronic conditions by social class in men: Spain, 1987 and 1995/97

	Upper non-manual		Lower non-manual		Skilled manual workers		Unskilled manual workers		<i>p</i> value for trend
	%	SE	%	SE	%	SE	%	SE	
<i>Less-than-good perceived general health</i>									
1987	22.3	(1.6)	25.4	(0.8)	30.1	(0.8)	35.6	(0.9)	0.0001
1995/97	23.0	(1.5)	27.7	(1.2)	30.8	(1.1)	37.7	(1.7)	0.0001
<i>Heart disease</i>									
1987	6.5	(1.0)	3.6	(0.3)	5.0	(0.4)	4.1	(0.4)	0.6000
1995/97	6.9	(1.0)	5.1	(3.9)	4.0	(0.5)	4.4	(0.7)	0.0070
<i>Diabetes mellitus</i>									
1987	2.9	(0.7)	3.7	(0.3)	4.0	(0.3)	3.5	(0.4)	0.8990
1995/97	3.5	(0.7)	4.3	(0.6)	4.3	(3.3)	5.9	(0.9)	0.0930
<i>Chronic bronchitis and asthma</i>									
1987	7.1	(1.0)	6.0	(0.4)	8.8	(0.5)	8.9	(0.6)	0.0002
1995/97	5.0	(0.8)	3.9	(0.5)	5.3	(0.6)	8.3	(1.0)	0.4600
<i>Allergies</i>									
1987	5.4	(0.8)	4.3	(0.4)	4.3	(0.4)	3.6	(0.4)	0.0200
1995/97	5.4	(0.8)	5.5	(0.6)	5.7	(0.6)	4.5	(0.8)	0.4600

Table 3

Age-adjusted prevalence (per 100) of poor general health and four chronic conditions by social class in women: Spain, 1987 and 1995/97

	Upper non-manual		Lower non-manual		Skilled manual workers		Unskilled manual workers		<i>p</i> value for trend
	%	SE	%	SE	for trend	SE	%	SE	
<i>Less-than-good perceived general health</i>									
1987	25.1	(1.8)	36.3	(0.8)	39.7	(0.8)	43.3	(12.2)	0.0001
1995/97	26.7	(1.6)	32.8	(1.2)	38.2	(1.2)	43.8	(10.0)	0.0001
<i>Heart disease</i>									
1987	3.3	(0.8)	4.3	(0.4)	4.4	(0.4)	4.8	(1.9)	0.1870
1995/97	4.4	(0.8)	3.6	(0.5)	3.9	(0.5)	4.3	(1.8)	0.4673
<i>Diabetes mellitus</i>									
1987	2.2	(0.6)	4.7	(0.4)	4.4	(0.4)	5.1	(2.0)	0.0490
1995/97	4.1	(0.8)	4.7	(0.5)	5.6	(0.6)	7.4	(2.9)	0.0010
<i>Chronic bronchitis and asthma</i>									
1987	4.8	(0.9)	4.3	(0.4)	5.0	(0.4)	5.8	(1.8)	0.0230
1995/97	3.0	(0.7)	2.8	(0.4)	3.9	(0.5)	5.4	(2.0)	0.0004
<i>Allergies</i>									
1987	7.7	(1.1)	7.9	(0.5)	7.3	(0.4)	6.3	(1.6)	0.0180
1995/97	11.0	(1.2)	8.8	(0.8)	9.0	(0.7)	7.0	(1.8)	0.0160

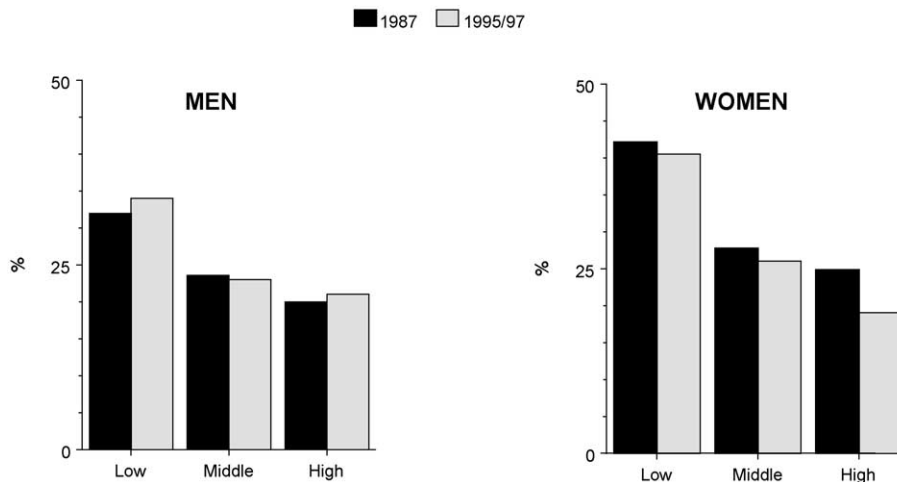


Fig. 1. Age-adjusted percentage* of less-than-good perceived general health by educational level: Spain, 1987 and 1995/97.

second period. This increase was especially notable in women by educational level: the prevalence rate ratio rose from 2.57 to 4.61 for diabetes mellitus, and from 0.78 to 2.06 for chronic bronchitis and asthma. Finally, the prevalence ratio for allergies increased between the two periods in men, so that in 1995/97 it was close to 1 by social class and 0.90 by educational level; in women this ratio increased only with educational level, and it was always < 1.

Discussion

This study has examined the association between different measures of perceived health and two indicators of socioeconomic status—social class based on occupation and on education in Spain at two different points in time. It has been seen that the percentage of persons included in the non-manual class, especially the upper non-manual class, increased in the second period.

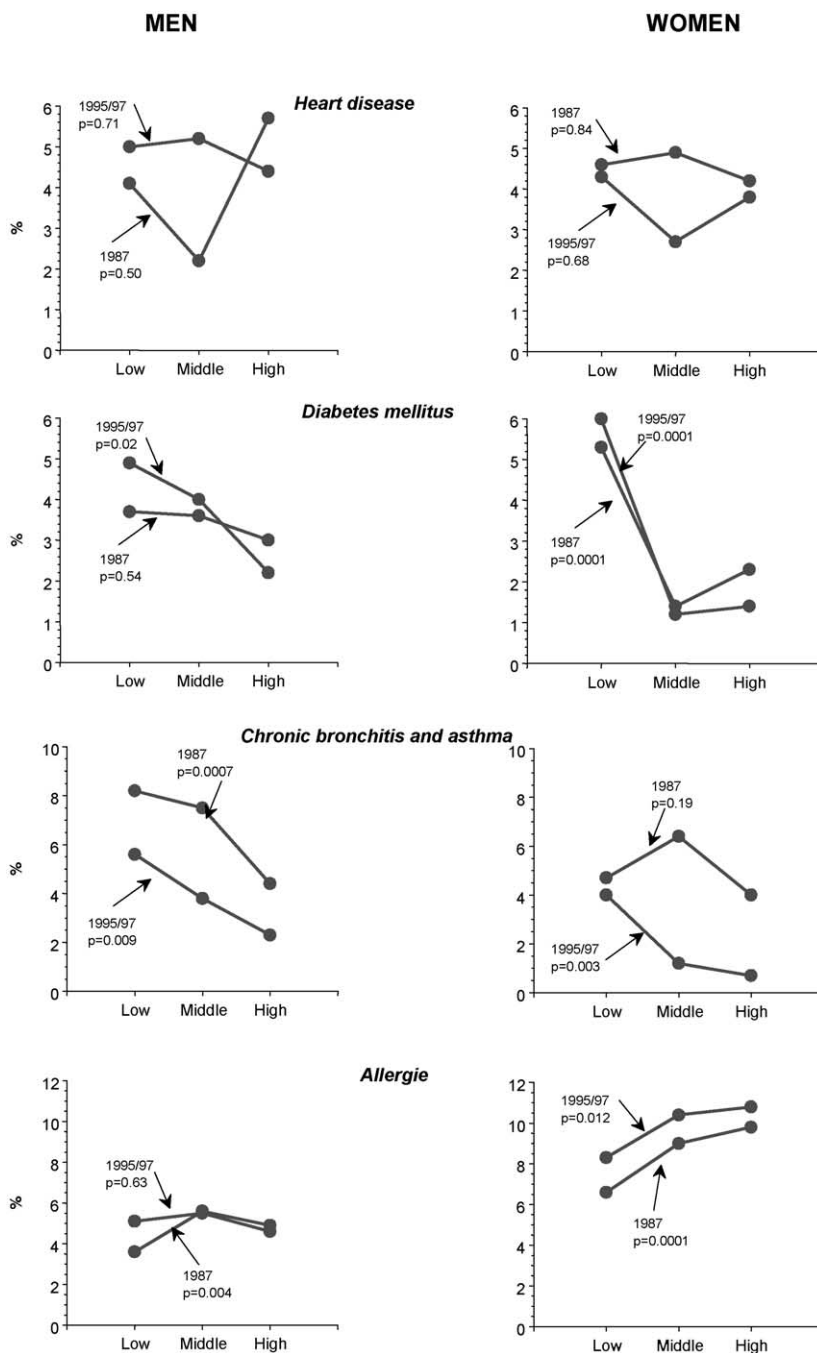


Fig. 2. Age-adjusted prevalence (per 100) of four chronic conditions by educational level: Spain, 1987 and 1995/97.

Part of that increase is probably due to a classification bias, since in the 1987 classification it was possible to distinguish between administrative workers and auxiliary administrative workers, the latter were assigned to the category of skilled manual workers, thus the percentage of manual workers was somewhat greater

in 1987 than in 1995/97. However, this increase may also have been influenced by circumstances related to the job market, since Spain experienced a strong period of economic growth starting in 1995, after a number of years of stagnation (Eurostat) and, consequently, there may have been a certain degree of social mobility.

Table 4

Age-adjusted prevalence rate ratio (95% confidence intervals) of perceived general health and chronic conditions: Spain, 1987 and 1995/97

	Manual versus non manual		Low versus middle and higher education	
	Men	Women	Men	Women
<i>Less-than-good perceived general health</i>				
1987	1.32 (1.24–1.41)	1.18 (1.11–1.24)	1.47 (1.36–1.60)	1.59 (1.46–1.74)
1995/97	1.23 (1.13–1.35)	1.26 (1.18–1.36)	1.57 (1.40–1.77)	1.66 (1.48–1.87)
<i>Heart disease</i>				
1987	1.12 (0.92–1.35)	1.09 (0.91–1.32)	1.02 (0.81–1.28)	0.97 (0.73–1.30)
1995/97	0.72 (0.56–0.93)	1.10 (0.84–1.44)	1.03 (0.74–1.42)	1.30 (0.84–2.01)
<i>Diabetes mellitus</i>				
1987	1.04 (0.85–1.29)	1.09 (0.91–1.31)	1.04 (0.80–1.35)	2.57 (1.74–3.78)
1995/97	1.17 (0.89–1.55)	1.37 (1.08–1.72)	1.46 (1.00–2.13)	4.61 (2.43–8.74)
<i>Chronic bronchitis and asthma</i>				
1987	1.41 (1.22–1.64)	1.21 (1.01–1.45)	1.30 (1.08–1.55)	0.78 (0.62–0.98)
1995/97	1.43 (1.11–1.85)	1.62 (1.20–2.19)	1.48 (1.05–2.07)	2.06 (1.30–3.26)
<i>Allergies</i>				
1987	0.87 (0.72–1.06)	0.87 (0.75–1.00)	0.66 (0.54–0.81)	0.68 (0.58–0.80)
1995/97	0.95 (0.75–1.22)	0.87 (0.72–1.04)	0.90 (0.69–1.17)	0.78 (0.63–0.97)

This change in the occupational structure had little impact on the results observed in women, since the prevalence ratios by social class are similar to the prevalence ratios by education. In men, on the other hand, the estimates based on social class sometimes show a different pattern from those by education, as occurs, for example, with self-perceived health or with heart disease. These differences between men and women in the results by social class are probably due to factors related to occupation in itself rather than the level of material wellbeing provided by occupation, since 85% of the men interviewed in both periods were heads of family and were classified in accordance with their own occupation, whereas the percentage of women classified in accordance with their own occupation was insignificant.

Another consideration to be kept in mind when interpreting these results is the fact that the 1987 health survey was carried out in July, while the 1995 and 1997 surveys took place throughout the entire year. The different times of year in which the data were obtained will certainly have affected the estimates of acute conditions and of those related with temporary restriction of activity, but it is highly unlikely that they would have modified the estimates of self-perceived health or the chronic conditions studied in the present work.

Possible changes in the reporting of diseases by the persons interviewed should also be kept in mind when analysing these results. Between the first and second period the increase in the frequency of medical consultation was relatively higher in persons with a

higher educational level and those belonging to the non-manual social class (Ministry of Health and Consumer Affairs) (Ministerio de Sanidad y Consumo, 1989, 1999). Accordingly, perceived health problems could have increased in larger proportion in these population groups and, therefore, the magnitude of the prevalence ratios would be underestimated in the second period with respect to the first. This is unlikely to have occurred, however, since the results for self-perceived health reflected as a sense of general wellbeing related with a series of physical, mental or social events are similar to those obtained for chronic conditions.

As has been seen in all studies on this subject, persons with the lowest socioeconomic level had the highest percentage of poor self-reported health. In the case of education, the size of this relation increased between the two periods in both men and women. According to one author, the educational level attained has an important influence on health due to the opportunities it creates for improved living conditions rather than to the specific effects of education itself (Davey Smith et al., 1998). Thus, as countries develop economically, persons with more education may be better able to take advantage of the higher level of material wellbeing produced as a result of this growth. Accordingly, the strong economic growth produced in Spain in the second period could explain the increase in the association between educational level and a measure of general health such as self-perceived health.

We also observed an increased association between social class and the percentage of women who report

less-than-good health. This increase is probably due to the same phenomenon noted in the case of education; that is, women of a higher socioeconomic status are more likely to have benefited to a greater degree from economic growth. In contrast, the relation between social class and the percentage of men who report less-than-good health decreased in the second period. In men, the importance of occupation in itself should be considered as a possible explanation of this finding, since most of the men interviewed were classified in accordance with their own occupation. As has been noted, a greater degree of social mobility is likely to be produced in a period of economic growth, which may explain why in the second period a large proportion of men belonging to the non-manual social class had a low educational level. It is possible that men who occupy high positions with relation to their professional qualifications are not able to respond to the inherent demands of their work, which leads to a stressful situation and, probably, to a subjective perception of discomfort.

This may also explain why men in the non-manual social class report a greater frequency of heart disease in the second period. Among men with low educational level the frequency of heart disease in 1987 was 20% less in the non-manual than in the manual class, whereas in 1995/97 it was 50% higher (data not shown). Since Karasek (1979) proposed the model of job stress, according to which the combination of high job demands and low control produces job strain, some studies have shown that workers with high job strain show a greater risk of heart disease (Schnall & Landsbergis, 1994). Among women, the association between education and heart disease increased in the second period, although the magnitude of the relation was not statistically significant. A possible change in the relation between smoking, the main risk factor, and education cannot explain this finding, because women with a lower educational level in Spain continue to have the lowest frequency of smoking (Regidor & Gutiérrez-Fisac, 1999). It is not easy, therefore, to argue a general explanation for this increase in the association in women.

The frequency of diabetes mellitus increased between the two periods, while that of chronic bronchitis and asthma declined. For both of these chronic conditions the association with the socioeconomic indicators increased in the second period, although the increase was very small in the case of men by social class. In the case of diabetes mellitus, the stronger association was due to the fact that the increase in the frequency of the disease was proportionally greater in persons belonging to the manual social classes and in those with a lower educational level, whereas in the case of chronic bronchitis or asthma it was because the decrease in the frequency of these conditions was proportionally greater

in persons belonging to the non-manual social classes and in those with a higher educational level.

Different circumstances may have contributed to this trend. In the case of diabetes mellitus, the importance of obesity—one of its main risk factors—should be noted. Between 1987 and 1995/97 there was a considerable increase in obesity in men and women in Spain (Gutiérrez-Fisac, Banegas, Rodríguez-Artalejo, & Regidor, 2000); this increase was proportionally greater in the lower socioeconomic groups, and especially in women with a lower educational level (Regidor & Gutiérrez-Fisac, 1999). This may explain why the association between education and diabetes in women in the second period was so extraordinarily high. Most likely, as has been shown in another study, family and social pressures to maintain a social image in accordance with reigning social values would have been more readily accepted in the higher socioeconomic groups, especially in women (Gutiérrez-Fisac, Regidor, & Rodríguez, 1996). With regard to chronic bronchitis and asthma, several studies have shown the importance of both respiratory infections during childhood and socioeconomic circumstances in childhood and adulthood in the development of respiratory diseases (Strachan, Anderson, Bland, & Peckham, 1988; Mann, Wadsworth, & Colley, 1992). The decline in the frequency of these diseases may be due to improved living conditions. This decline could have begun in the higher socioeconomic strata, due to the fact that they were the first to benefit from these improvements in living conditions, thus the increased socioeconomic differences observed in the second period would merely be a consequence of this tendency.

Improved living conditions could also be the reason for the increased prevalence of allergies in most socioeconomic groups. The increase in the prevalence of allergies in the industrialised societies during the 20th century has been attributed to improvements in household amenities and a higher standard of personal hygiene that has reduced the opportunity for cross infection in children (Strachan, 1989; Doull & Holgate, 1997). These improvements occurred first in wealthier people, which may explain why different studies have found a higher prevalence of allergic diseases in individuals of a high socioeconomic level. In Spain the prevalence of allergies in 1987 was also higher in persons of the upper socioeconomic level than in those of the lower one, although the magnitude of the association between the prevalence of allergies and socioeconomic level was lower in 1995/95 than in 1987. The fact that the low socioeconomic groups have acceded to improved living conditions later than the high socioeconomic groups may explain why the prevalence between the first and second period increased more in persons with a lower educational level and in those belonging to the manual class groups than in persons with a higher

educational level or those belonging to the non-manual class.

This study has also shown greater inequalities in women than in men, both by educational level and by social class. In the specialised literature on health inequalities, there is general agreement that health inequalities in the industrialised countries are greater in men than in women, although comparative studies in some countries have shown results similar to those of Spain (Kunst et al., 1995; Cavelaars et al., 1998). The authors of a study comparing Britain, Finland, Norway and Sweden found considerable differences in perceived health by social class in Swedish women, which they attributed to the high rate of employment (Lahelma & Arber, 1994). Likewise, a study in Holland pointed to the low rate of female employment as the reason for women's smaller socioeconomic differences in self-perceived health than in men (Stronks, vande Mheen, van den Bos, & Mackenbach, 1995). Paradoxically, this explanation stands in contrast to what has occurred in Spain, where women have one of the lowest employment rates in Europe, but greater socioeconomic differences in perceived health than men. It may be that the magnitude of socioeconomic differences in self-perceived health in men and women vary among regions depending not only on the socioeconomic context but also on the historical and cultural context.

In summary, the evolution of perceived health and the frequency of chronic conditions in Spain has been less favourable in men and women with a lower educational level and in women whose head of family belongs to the non-manual social class, although the estimated measures of association between the different health problems and the socioeconomic indicators in the second period are not statistically different from those in the first period. This trend is probably related with the economic growth that has taken place in Spain since 1995. Such growth would have favoured social mobility based on occupation, which would explain why the trend in some health problems in men has been more unfavourable in those belonging to the non-manual social class, since most men are classified in accordance with their own occupation.

Few studies have examined the trends in socioeconomic differences in perceived health in other countries. Finland is probably the country that has been studied the most in this respect. Among other investigations, a study was made of the evolution of differences in perceived health by educational level between 1986 and 1994 (Lahelma, Rahkonen, & Huuhka, 1997). The authors of this study did not find variations in the magnitude of health inequalities, despite the fact that the second period was one of major economic recession in Finland. It is possible that, as was noted with regard to health inequalities in men and women, the explanation of trends in social inequalities in

health varies from one place to the other, depending on the economic, as well as the historical and cultural context.

References

- Acheson, D. (1998). *Independent inquiry into inequalities in health report*. London: The Stationery Office.
- Cavelaars, A. E. J. M., Kunst, A. E., Geurts, J. J. M., Crialesi, R., Grötvedt, L., & Helemert, W., et al. (1998). Differences in self reported morbidity by educational level: A comparison of 11 Western European countries. *Journal of Epidemiology and Community Health*, 52, 219–227.
- Davey Smith, G., Hart, C., Hole, D., Mackinnon, P., Gillis, C., Watt, G., Blane, D., & Hawthorne, V. (1998). Education and occupational social class: Which is the more important indicator of mortality risk? *Journal of Epidemiology and Community Health*, 5, 153–160.
- Dever, F., Whitehead, M., & Roden, M. (1996). Current patterns and trends in male mortality by social class (based occupation). *Population Trends*, 86, 15–20.
- Doull, I. J. M., & Holgate, S. (1997). Asthma: Early predisposing factors. *British Medical Bulletin*, 53(1), 71–80.
- Eurostat. Database New Cronos. <http://europa.eu.int/eurostat.html>.
- Gutiérrez-Fisac, J. L., Banegas, J. R., Rodríguez-Artalejo, F., & Regidor, E. (2000). Increasing prevalence of overweight and obesity among Spanish adults, 1987–1997. *International Journal of Obesity*, 24, 1677–1682.
- Gutiérrez-Fisac, J. L., Regidor, E., & Rodríguez, C. (1996). Trends in obesity differences by educational level in Spain. *Journal of Clinical Epidemiology*, 49, 351–354.
- Karasek, R. A. (1979). Job demands, job decision latitude and mental health: Implications for job redesign. *Administrative Science Quarterly*, 24, 285–307.
- Kunst, A. E., Geurts, J. J. M., & van den Berg, J. (1995). International variations in socioeconomic inequalities in self-reported health. *Journal of Epidemiology and Community Health*, 49, 117–123.
- Kunst, A. E., & Mackenbach, J. P. (1994). The size of mortality differences associated with educational level in nine industrialized countries. *American Journal of Public Health*, 84, 932–937.
- Lahelma, E., & Arber, S. (1994). Health inequalities among men and women in contrasting welfare states: Britain and three Nordic countries compared. *European Journal of Public Health*, 4, 227–240.
- Lahelma, E., Rahkonen, O., & Huuhka, M. (1997). Changes in the social patterning of health? The case of Finland 1986–1994. *Social Science and Medicine*, 44, 789–799.
- Lang, T., & Ducimetière, P. (1995). Premature cardiovascular mortality in France: Divergent evolution between social categories from 1970 to 1970. *International Journal of Epidemiology*, 24, 331–339.
- Mackenbach, J. P., Kunst, A. E., Cavelaars, A. E. J. M., Groenhouf, F., Geurts, J. J. M., & EU Working Group on Socioeconomic Inequalities in Health. (1997). Socioeconomic inequalities in morbidity and mortality in western Europe. *Lancet*, 349, 1655–1659.

- Mann, S. L., Wadsworth, M. E. J., & Colley, J. R. T. (1992). Accumulating of factors influencing respiratory illness in members of a national birth cohort and their offspring. *Journal of Epidemiology and Community Health*, *46*, 256–292.
- Ministerio de Sanidad y Consumo. (1989). Encuesta Nacional de Salud 1987. Madrid.
- Ministerio de Sanidad y Consumo. (1999). Encuesta Nacional de Salud de España 1997. Madrid.
- Navarro, V., Benach, J. y la Comisión Científica de estudios de las desigualdades sociales en salud en España. (1996). *Desigualdades sociales en salud en España*, Madrid: Ministerio de Sanidad y Consumo y The School of Hygiene and Public Health, The Johns Hopkins University.
- Pappas, G., Queen, S., Hadden, W., & Fisher, G. (1993). The increasing disparity in mortality between socioeconomic groups in The United States, 1960 and 1986. *New England Journal of Medicine*, *329*, 103–109.
- Regidor, E., & Gutiérrez-Fisac, J. L. (1999). *Health indicators. Fourth evaluation in Spain of the European regional health for all programme*. Madrid: Ministerio de Sanidad y Consumo.
- Regidor, E., Gutiérrez-Fisac, J. L., & Rodríguez, C. (1995). Increased socioeconomic differences in mortality in eight Spanish provinces. *Social Science and Medicine*, *41*, 801–807.
- Ross, C. E., & Wu, C. (1995). The link between education and health. *American Society of Reviews*, *60*, 719–745.
- SAS/STAT. (1996). Guide for personal computers v 6.0 Cary.:SAS Institute, NC.
- Schnall, P. L., & Landsbergis, P. A. (1994). Job strain and cardiovascular disease. *Annals of Review in Public Health*, *15*, 381–411.
- Skov, T., Deddens, J., Petersen, M. R., & Endahl, L. (1998). Prevalence proportion ratios: Estimation and hypothesis testing. *International Journal of Epidemiology*, *27*, 91–95.
- Sorlie, P. D., Backlund, E., & Keller, J. B. (1995). US mortality by economic, demographic, and social characteristics: The national longitudinal mortality study. *American Journal of Public Health*, *85*, 949–956.
- Strachan, D. P. (1989). Hay fever, hygiene, and household size. *British Medical Journal*, *299*, 1259–1260.
- Strachan, D. P., Anderson, H. R., Bland, J. M., & Peckham, C. (1988). Asthma as a link between chest illness in childhood and chronic cough and phlegm in young adults. *British Medical Journal*, *296*, 890–893.
- Stronks, K., van de Mheen, H., van den Bos, J., & Mackenbach, J. P. (1995). Smaller socioeconomic inequalities in health among women: The role of employment status. *International Journal of Epidemiology*, *24*, 559–568.
- Valkonen, T., Martelin, T., Rimpelä, A., Notjola, V., & Savela, S. (1993). *Socioeconomic differences in Finland 1981–1990*. Helsinki: Central Statistical Office of Finland.