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## Health Inequalities According to Poverty and Income

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**The availability of material resources is a key determinant of people's health. There is ample evidence of a positive relationship between income and health outcomes. At the same time, the existence of socioeconomic inequalities makes achieving higher health levels for the population as a whole more difficult. Barcelona is no exception in the challenge of reducing socioeconomic health inequalities. Significant differences in the perceived level of physical and mental health achieved depending on material poverty and by income level are shown as a gradient. Having confirmed the continued presence of social exclusion and inequalities on both a local and a transnational scale, policies aimed at the most vulnerable segments of the population are needed. The most universalist policies and those aimed at levelling inequalities due to socioeconomic status also need to be reinforced.**

### Introduction

The positive relationship between health and income level (the higher the income level, the better the state of health) is well known. It is, however, a decreasing relationship; in other words, after a certain level, increases in income no longer result in a significant improvement in state of health, as in the case of life expectancy (the so-called Preston curve, Preston, 1975). This relationship, which is non-linear and can be observed on an aggregate scale, depends as much on the average income level of the population as on inequality. If inequality is high, increases or transfers in the lowest income brackets result in higher health levels than those perceived in the highest income bands and, overall, a redistribution of resources results in an increase in the average level of health of the population (Rodgers, 1979). There is, therefore, empirical evidence of a negative relationship between income inequality on an aggregate scale and the health of the population. Less egalitarian societies tend to present worse population health indicators, such as more mental health disorders and alcohol and drug addiction, obesity, a lower life expectancy and worse child welfare indicators (Wilkinson and Pickett, 2009). The countries with the worst health outcomes are the United States and other English-speaking countries with a more liberal political tradition, and the best results are obtained by Scandinavian countries, which have a more egalitarian tradition and a more developed welfare state. In between these are a plurality of experiences with different degrees of inequality, the empirical evidence for which is less conclusive, especially if disaggregated data on an individual scale are taken into account (Lynch *et al.*, 2004; van Doorslaer and Koolman, 2004; Kondo *et al.*, 2009).

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Given the hypothesis that it is income level that determines a person's health (absolute income hypothesis), another theory has been suggested according to which health, and above all psychosocial problems such as stress and anxiety (Marmot, 2004), is affected by comparing one's social status with that of other benchmark social groups (relative income hypothesis). What is important in the absolute income hypothesis is the availability of the material resources that condition a broader range of effective life plan opportunities and achievements, while the relative income hypothesis attaches greater importance to support networks and social cohesion. There is certainly strong empirical evidence to support the absolute income hypothesis, in addition to weaker evidence for the relative income hypothesis (Wagstaff and Van Doorslaer, 2000). Either way, what the two hypotheses share is the recognition that society as a whole loses the potential for greater collective well-being when a significant proportion of the population is trapped in situations of poverty or limited resources. Context-related factors in particular affect both the acquisition of healthy habits and the opportunities for development throughout a person's life, and it is especially important to ensure environments that favour development and provide a higher social return from childhood (Galobardes *et al.*, 2006).

This paper explores the unequal distribution of health according to material poverty and income levels for men and women residing in the city of Barcelona, showing how health outcomes worsen in a gradient as financial resources decrease.

### **Brief Description of the Methodology**

The health survey carried out in 2016 (through to May 2017) on a representative sample of the population of Barcelona provides information about the city's socioeconomic situation and state of health. Two indicators were selected to establish state of health with respect to income levels: perceived health and mental health. Citizens were asked about their state of health as they perceived it, with a choice of five responses ranging from excellent to poor. Their answers were then grouped into perceived good health (excellent, very good and good) and perceived poor health (acceptable and poor). Mental health was measured using the *General Health Questionnaire* (GHQ-12), which detects mood disorders and psychosocial problems such as anxiety. This indicator is interpreted as the risk of psychological suffering.

Regarding the poverty and income measures, the survey contains three indicators (among others): material poverty, monthly available individual income and annual available family income. Material poverty was measured using the same instrument as in other European living conditions surveys, based on nine indicators<sup>4</sup>. The indicators cover the impossibility of having food, clothing and access to housing (four items), social engagement (one item), and the availability of durable goods (four items). If three out of the nine deprivation indicators are met, material poverty is considered to exist. It must be remembered that this indicator refers to households, not just to individuals. Regarding income indicators, surveys often unfortunately record a high number of missing values, so in this case the missing values were imputed based on different socioeconomic variables. Four income categories were used to distribute the population evenly, both for individual monthly income and for annual family income.

To explore health inequalities, the distribution of poor health according to the existence or lack of poverty and for each income category was shown. As a second step, the additional likelihood of suffering worse health outcomes according to the existence of poverty and lower individual and family income, as opposed to not suffering from poverty and being in the highest income bracket, was calculated. These additional odds ratios are shown for men and women, adjusted for age to

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<sup>4</sup> The nine items are: paying without falling into arrears, expenses related to housing (such as mortgage or rent, gas bills or residents association expenses) or to deferred purchases; able to go on holiday for at least one week a year; able to make a meal with meat, chicken or fish (or the vegetarian equivalent) at least once every two days; able to cope with unforeseen expenses; able to afford a telephone (including a mobile phone); able to afford a television; able to afford a washing machine; able to afford a car; able to keep the home at a reasonable temperature.

control for the effect of ageing, and, in the case of family income, for the number of people living in the household (equivalent family income).

### Health According to Poverty and Income

22.8% of the women reported poor perceived health, compared to 16.2% of the men. 19.2% of the women and 16.7% of the men were at risk of poor mental health. Regarding socioeconomic status indicators, 13.9% of the men and 17.1% of the women surveyed were in a situation of poverty. The women had worse indicators than the men for all the indicators. Regarding the distribution of individual income, 26.3% of the men and 44.5% of the women had a monthly income of €900 or less. Half the population had an individual monthly income in the range of €1,200 to €1,800 and an annual family income of €18,000 to €30,000, while 23.3% of the men and 10.5% of the women had monthly incomes of more than €1,800. 31.4% of the men and 26.6% of the women had an annual family income of more than €30,000 (table 1)

**Table 1. Distribution according to material poverty and income by gender. Barcelona 2016**

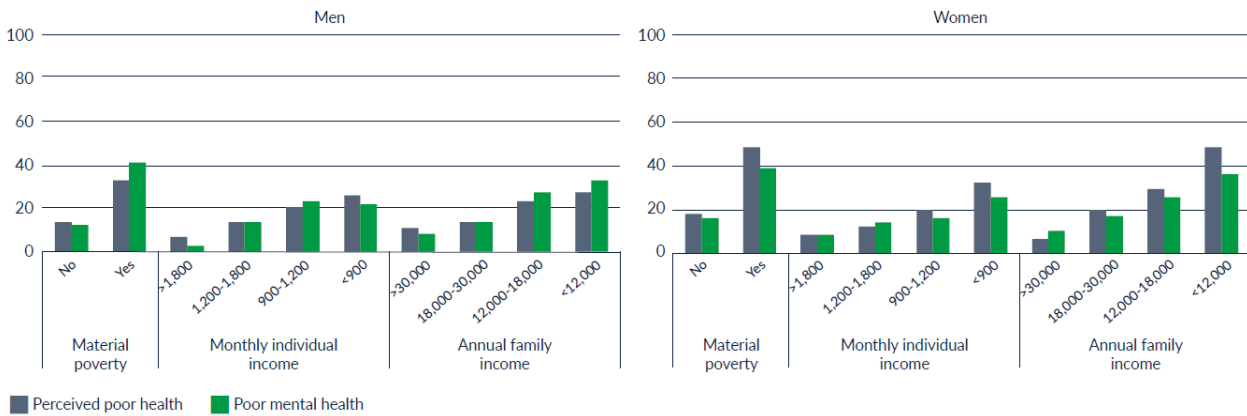
	Men (N=1,586)	Women (N=1,762)
<b>Material poverty</b>		
No	86.1	82.9
Yes	13.9	17.1
<b>Monthly individual income<sup>1</sup></b>		
>1,800	23.3	10.5
1,201-1,800	31.0	23.5
901-1,200	19.4	21.5
<900	26.3	44.5
<b>Annual family income</b>		
>30,000	31.5	26.6
18,001-30,000	36.8	35.2
12,001-18,000	20.9	23.1
<12,000	10.8	15.1

1. Men N=1,429; Women N=1,537

Source: Original. Public Health Survey

Graph 1 shows the distribution of health indicators according to poverty and individual and family income levels. There are differences in all the health indicators when there is poverty and a low economic level. To this effect, perceived poor physical and mental health were reported by 33.1% and 41% of the men in situations of poverty, respectively, as opposed to only 13.4% and 12.5% of the men who were not. The women presented similar differences: 48.4% and 39.4% of the women in situations of poverty perceived poor physical and mental health, compared with only 17.5% and 15.9% of the women who were not. With regard to income, lower percentages of poor health were observed in people with higher incomes, and poor health increased as income decreased. An initial approximation of inequalities according to income can be obtained by subtracting the poor health percentages from the most and least advantaged. These differences were between 18% and 25% for the men and the women, with poor health for the women as the only exception, while the difference for family income was 43%.

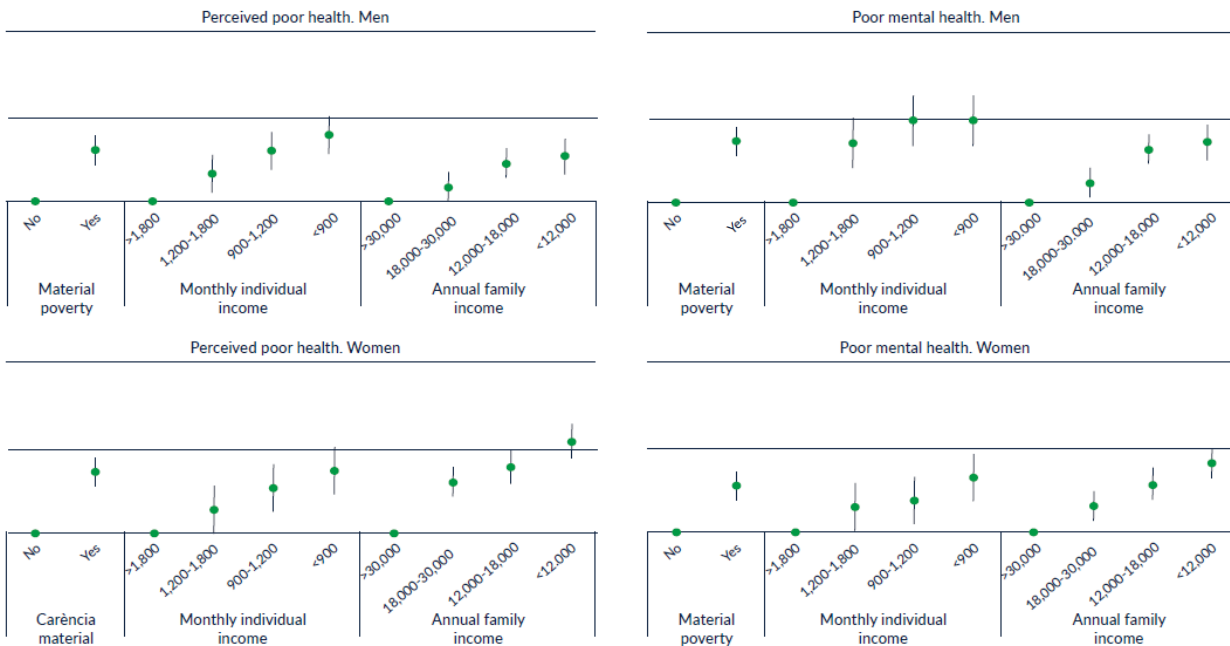
**Graph1. Poor health percentages according to material poverty and income by gender. Barcelona 2016**



Source: Original. Barcelona Health Survey 2016/17.

For a clearer picture, it must be considered that socioeconomic groups may be comprised of people of different ages, which would explain part of the results. Similarly, the number of people living in a household may be related to the amount of available income per person. Graph 2 is a comparison of poor health according to socioeconomic status after adjusting for these effects. The red dots represent the highest probability of poor health compared with the most advantaged situation (represented on the x-axis).

**Graph 2. Likelihood of worse health according to material poverty and income level compared with the most advantaged situation and by gender (odds ratio and 95% confidence intervals). Barcelona 2016**



NB: All indicators for family income are adjusted by age and by the number of people in the household. The most advantageous situation superimposed on the x-axis. All the odds ratios are significant with respect to the base category.  
Source: Original. Barcelona Health Survey 2016/17.

In this case, the confidence intervals must be added in the calculation to establish whether the differences are significant. All the most disadvantaged socioeconomic categories presented significantly worse indicators than the most advantaged category. For example, the men in

situations of material poverty were 4 times more likely to have perceived poor health than the men without material poverty, and the women were 5.9 times more likely. Most of the health indicators produced a gradient where the indicators worsened as socioeconomic status lowered.

It must be remembered that these results only show an association between health and income level, and in no way do they show causation. It should also be remembered that despite being adjusted for age, they represent raw associations and that other factors - such as employment status - may explain the association between income level and health. Neither can we rule out bidirectional effects on causation, such as the fact that people with poorer health find it more difficult to find work, and so on, something that would be relevant for people with any kind of disability.

## Conclusion

The results show a significant degree of health inequality for both genders. People in situations of material poverty and those with a low individual or family income are much more likely to suffer from perceived physical and mental health problems. The results also show a gradient: at lower income levels, the likelihood of poor health gradually increases.

The analysis of the association between health and income reveals how the segments of the population with the least resources are a target for public policies, and specifically those relating to health, but so too are people with average income levels. An evaluation of the relationship between health and poverty and income makes sense in the context of the public provision of collective goods. If this is essential in terms of public health, just like air quality and public health in general, a broader view should also consider other goods that may be the subject of public provision or regulation, such as access to housing, healthcare resources, quality education and gainful employment. The Barcelona Public Health Agency (ASPB) monitors socioeconomic inequalities and their evolution. A variety of actions aimed at reducing inequalities are currently being implemented. In particular, within the framework of the 2004 Neighbourhood Law and the 2015 Neighbourhood Plan, actions have been prioritised in 23 neighbourhoods with the worst health and socioeconomic indicators, reinforcing community action in various fields aimed at vulnerable groups (Díez *et al.*, 2012). Another example is how reducing inequalities in life expectancy and psychological suffering, among other health outcomes, form part of the "Strategy for Inclusion and Reducing Social Inequality in Barcelona for 2017-2027", approved a few months ago.

Some programmes aimed at the most disadvantaged segments of the population can have very beneficial short-term effects, but long-term actions must also be planned, as these effects may disappear over time (Osypuk *et al.*, 2014). In all, despite decades of redistributive policies, improvements in the level of educational, and huge advances in technology and the provision of health services, structural inequalities and poverty remain. This phenomenon of persistence is not only local, but is common in varying degrees to the whole of Europe (Spain and some Eastern European countries have the highest poverty rates, in the 20-25% range, which is about half the figure for the Nordic countries). (Jenkins, 2018). Failure to deliver the Europe 2020 goals has led to this latest period 2010-2020 being called the "lost decade" (Atkinson *et al.*, 2017), although the economic crisis has been a contributory factor. In the context of global capitalism, employment policies aimed at increasing employment in low-wage jobs and restricting access to social protection policies, such as unemployment benefit, are hardly beneficial for achieving greater social inclusion. On the other hand, however, there is evidence to suggest that minimum income schemes reduce morbidity (Nelson and Fritzell, 2014).

The large portion of the population with an intermediate socioeconomic status (bearing in mind the low social mobility) can benefit from more widespread, universalist welfare state policies and from "proportional universalism"; in other words, the social groups with the greater needs must benefit most, with the aim of levelling out the social gradient (Davies and Sheriff, 2012). For this intermediate group, which is not the target of specific social inclusion programmes, the analysis of the income-health relationship must be complemented, taking into account the provision of certain



public goods including not just education and health services themselves, but also the services that are provided or promoted by the public health system. Smoking remains the main risk factor for morbidity, followed by alcohol and drug use, but being overweight and diet-related problems, in addition to other factors such as air quality, are also relevant. (Soriano *et al.*, 2018). These risk factors are also distributed according to the social gradient pattern. Improvements could also be made to other intangible aspects of the work environment, such as stress levels, the streamlining of time and the possibility of a better work-life balance. A large part of the huge inequality reflected in the social gradient in health can be attributed to work. These downstream policies can be accompanied by upstream policies such as a redistributive policy based on a more effective tax system, in line with the absolute income hypothesis. We must also advance research aimed at identifying the key determinants, the most effective actions and the essential elements to reverse long-term health inequalities.

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