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**Welfare state regimes and income related health inequalities:
a comparison of 23 European countries**

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Abstract

Introduction: The objective of this study was to determine whether the magnitude of income related health inequalities varies between welfare regimes (Scandinavian, Anglo-Saxon, Bismarckian, Southern and Eastern). Specifically, it examined whether the Scandinavian welfare state regime has smaller income based health inequalities than the other welfare state regimes.

Methods: The first (2002) and second (2004) waves of the representative cross-sectional European Social Survey (ESS), which comprised more than 80,000 respondents, were used to analyse income inequalities (relative health difference between the first and third income tertile) in self-reported health (general health, limiting longstanding illness) amongst those aged 25 or more. Data related to 23 European countries classified into five welfare state regimes. The study controlled for age and adjusted for educational attainment.

Results: When comparing the health of the first income tertile with the third, the Scandinavian countries only seemed to hold an intermediate position: they did not have the smallest, or the largest, health inequalities. However, the Anglo-Saxon welfare states had the largest income related health inequalities for both men and women, while countries with Bismarckian welfare states tended to demonstrate the smallest. This pattern was unchanged after controlling for educational attainment. However, education seemed to explain the largest part of income related health inequalities in the Southern regime.

Conclusion: This study shows that the magnitudes of income-related health inequalities indeed vary by welfare state regime. However, this variation was not always in the direction expected as the Scandinavian countries did not exhibit the smallest health inequalities.

Keywords: Europe, health inequalities, income, welfare state regimes

Introduction

Studies focusing on individual health differences within wealthy nations have shown that there is a strong and consistent gradient along the whole income hierarchy. (1, 2) It might therefore be expected that income related health inequalities would be smaller in the Scandinavian countries than elsewhere given their relatively generous and universal welfare provision and the strong emphasis they place on equality of outcomes, such as income. (3) However, from the few studies that have investigated health inequalities by European region, the Scandinavian countries do not perform as well on this in relation to other countries as might be expected given their relative standing in terms of overall population health and income inequalities. In fact, previous studies of the association between self-assessed health and relative income position in the wider European context have suggested that such health inequalities are perhaps not actually the smallest in the Scandinavian countries. (4-8) Instead, these empirical studies have almost consistently reported that income related health inequalities are smallest in the Central European countries (particularly in Germany). In addition, they have reported that they are largest in the UK.

More recently, the comparative literature on income related health inequalities has utilised the concept of welfare state regimes. It is widely acknowledged that welfare states are important determinants of health and health inequalities as they mediate the extent, and impact, of socio-economic position on health. Welfare state provision varies extensively across Europe, but typologies have been put forward to categorise them into distinctive types or welfare state regimes. Increasingly, despite debates about how countries should be classified (9) and the cohesiveness of regimes (e.g. there is considerable debate within the comparative social policy literature about the existence of a distinctive Southern regime with some commentators such as Esping-Andersen (3) arguing against and others, most notably Ferrera (10) and Leibfreid (11) arguing in favour), there is a growing consensus that there are five regime types within Europe:

Scandinavian, Anglo-Saxon, Bismarckian, Southern and Eastern. (10-13) In some cases, most notably in terms of the Scandinavian welfare state regime, these regimes are similar to the geographic clusters mentioned above so the "regional" differences noted in earlier studies may well be due to differences in welfare state arrangements – but this has not been explored to date. Studies which have examined how health varies by welfare state regime have invariably all concluded that population health is enhanced by the relatively generous and universal welfare provision of the more egalitarian and redistributive Scandinavian countries. (14-16)

However, as existing studies of income related health inequalities are few in number, have only examined a limited number of countries, have focused on regions (rather than welfare state regimes) and may even be a little outdated, there remains a need to determine more clearly any patterns in income related health inequalities in Europe and how this varies by welfare state regime. The objective of the present study is therefore to determine whether the magnitude of income related health inequalities varies by welfare regime (Scandinavian, Anglo-Saxon, Bismarckian, Southern and Eastern). (9, 12, 17) The *Anglo-Saxon welfare state regime* (UK and Ireland) is characterised by its basic and minimal levels of provision: social transfers are modest and often attract strict entitlement criteria; recipients are usually means-tested and stigmatised; the dominance of the market is encouraged both passively, by guaranteeing only a minimum, and actively, by subsidising private welfare schemes. The *Bismarckian welfare state regime* (Germany, France, Austria, Belgium, and, to a lesser extent, the Netherlands) is distinguished by its 'status differentiating' welfare programs in which benefits are often earnings related, administered through the employer; and geared towards maintaining existing social patterns. The role of the family is also emphasised and the redistributive impact is minimal. However, the role of the market is marginalised. The Scandinavian welfare regime (Denmark, Finland, Norway and Sweden) is characterised by universalism, comparatively generous social transfers, a commitment

to full employment and income protection; and a strongly interventionist state. The state is used to promote social equality through a redistributive social security system. The *southern welfare state regime* (Greece, Italy, Portugal and Spain) is characterised by a fragmented system of welfare provision which consists of diverse income maintenance schemes that range from the meagre to the generous and a health care system that provides only limited and partial coverage. There is also a strong reliance on the family and charitable sector. Countries belonging to the *eastern welfare state regime* (Czech Republic, Estonia, Hungary, Poland, Slovakia, and Slovenia) are clearly the most under defined and understudied region in terms of welfare state development. The formerly Communist countries of East Europe have experienced extensive economic upheaval and have undertaken extensive social reforms throughout the 1990s. These have seen the demise of the universalism of the Communist welfare state and a shift towards policies associated more with the liberal welfare state regime notably marketisation and decentralisation. In comparison with the other member states of the European Union, they have limited health service provision.

It should be noted that these are generalised descriptions of ideal type regimes; no single country will have all the characteristics of a specific regime.

The present paper examines whether the magnitude of income related health inequalities varies between welfare state regimes (Anglo-Saxon, Bismarckian, Scandinavian, Southern and Eastern. The European Social Survey is well suited for this purpose, as it provides regularly updated data on self-assessed health from 23 European countries. If a between-regime pattern were to be found, then it could suggest that certain within-regime policies may be an important factor in terms of understanding, and thereby finding ways of reducing, the health gap that exists between income groups across Europe.

Data and Methods

The present study is based on data from the first and second wave of the European Social Survey (ESS), conducted in 2002 and 2004, comprising more than 80,000 respondents in 23 countries. The main objective of the ESS is to provide high quality data over time about changing social attitudes and values in Europe. The objective of the ESS sampling strategy is the "design and implementation of workable and equivalent sampling strategies in all participating countries". The requirement is for random (probability) samples with comparable estimates based on full coverage of the eligible residential populations aged 15+. They are based on the same basic principles of strict probability and representativeness. The data and extensive documentation are freely available for downloading at the Norwegian Social Science Data Services (NSD) web site. (Norwegian Social Science Data Services) A total number of 69 821 respondents were available in the sample after deleting cases listwise by each variable in our analysis (99,4 % of the original sample for the included age groups).

We used two indicators of morbidity from the ESS: self reported general health and limiting longstanding illness. Self reported general health was constructed from a variable asking; 'How is your (physical and mental) health in general?'. Eligible responses were 'very good', 'good', 'fair', 'bad', and 'very bad'. We dichotomized the variable into 'very good or good' health versus 'less than good' health ('fair', 'bad', and 'very bad'). Regarding the second variable, participants were asked if they were hampered in daily activities in any way by any longstanding illness or disability, infirmity or mental health problem. Eligible responses were 'yes a lot', 'yes to some extent' and 'no'. We dichotomized this variable into 'yes' (regardless of whether to some extent or a lot) and 'no'. The European Social Survey also gives information on household income and education. The respondents were shown a card, on which weekly, monthly and annual wage

intervals were given, each marked with a letter. The respondents were then asked: 'Using this card, if you add up the income from all sources, which letter describes your household's total net income? If you don't know the exact figure, please give an estimate. Use the part of the card that you know best: weekly, monthly or annual income'. From this variable, we constructed a scaled variable based on the median value of these intervals, which then was recoded into a weekly equivalent income variable, using the OECD-modified scale. This scale was first proposed by Haagenars et al. (18) and assigns a value 1 to the household head, 0.5 to each additional adult member and 0.3 to each child. This variable was divided into three equal sized groups (tertiles), which will be used to answer our research question (see Table 1 for an overview of all variables). Education was measured as years of full-time education completed.

Our research question will be addressed applying relative inequality measures, comparing the richest (third income tertile) with the poorest (first income tertile) income group. The variables representing the first and second income tertiles were introduced as independent variables in a logistic regression analysis, controlled for age, with health variables as the dependent variable. Next, these odds ratios were adjusted by also including education in the models. The analysis is based on responses from people aged 25 or over. A weight has been applied (dweight) to correct for design effects due to sampling designs in countries where not all individuals in the population have an identical selection probability (for example, the unweighted samples in some countries over- or under-represent people in certain types of address or household, such as those in larger households).

The results are presented as thematic maps. For each of the five welfare regimes data pertaining to odds ratios with 95% confidence interval were input into ArcMap (v8.0) in dbf format. Based on the country field, attribute data were joined to shapefiles accessed from the Centers for

Disease Control and Prevention, Atlanta (<http://www.cdc.gov/EPIINFO/europe.htm>) to produce choropleth maps.

Results

Figure 1 shows odds ratios with 95 % confidence intervals for each of the five welfare regimes and for men and women separately (country specific odds ratios are shown in web table C). When comparing the odds between the first and third income tertiles, the results showed that the Scandinavian welfare regimes only had intermediate odds ratios compared to the other regime types. For limiting longstanding illness the odds ratios were 1.82_{men} and 1.89_{women} , while they were calculated to be 1.97_{men} and 2.14_{women} with respect to poor/fair health respectively. Furthermore, the largest inequalities were found in the Anglo-Saxon welfare regimes (limiting longstanding illness: $OR_{\text{men}}=2.67$ and $OR_{\text{women}}=2.21$ / general health: $OR_{\text{men}}=2.86$ and $OR_{\text{women}}=2.73$) while the Bismarckian welfare regimes demonstrated the smallest (limiting longstanding illness: $OR_{\text{men}}=1.80$ and $OR_{\text{women}}=1.57$ / general health: $OR_{\text{men}}=1.68$ and $OR_{\text{women}}=1.81$).

The odds ratios were reduced in all regimes after the adjustment for educational attainment (Figure 2). However, the Scandinavian welfare regimes still only held an average position compared to other regime types. Educational attainment explained the largest part for women in the South, as the proportional reduction of the odds ratios was largest in this welfare regime (40% for men and 55 % for women with respect to limiting longstanding illness and 51 % for men and 39 % for women with respect to poor/fair general health). The slightly larger reduction of women's odds ratio of poor/fair general health in the East (41 %) was the only exception from this pattern.

--- Figure 1 and 2 about here ---

Discussion

Returning to our original research questions, we have found that the magnitude of income related health inequalities does vary by welfare state regime; that the smallest income related health inequalities are found in the Bismarckian welfare regime; and that the Anglo-Saxon countries (UK in particular) have the largest health inequalities.

Our results are in keeping with previous *regional* studies of income related morbidity differences. With the exception of rather large health inequalities among Dutch men and the intermediate position of French men and women, the observations of [Cavelaars et al. \(4\)](#) seem to be largely in line with ours, as they also observed smallest inequalities in the Bismarckian countries (West Germany and the Netherlands), intermediate in Scandinavian welfare regimes (Finland and Sweden), while they were largest in the UK. [Van Doorslaer & Koolman \(7\)](#) also found relatively small inequalities in Bismarckian welfare regimes (Netherlands, Germany, Belgium and Austria), while they were observed intermediate/large in Scandinavia (Denmark) and large in the UK. The only clear discrepancies from our results were smaller inequalities in the Anglo-Saxon regime Ireland. Another study of nine industrialized countries showed particularly large inequalities in the UK (and the United States), while amongst other European countries, Sweden, Finland and the former East Germany had the lowest inequality. [\(8\)](#) Finally, [Kunst et al. \(6\)](#) reported larger inequalities among British men and women and smallest in (West) Germany, both in the 1980s and the 1990s. Although these studies did not have a particular focus on welfare regimes and were based on different data sources and methodological strategies, they seem to reinforce our main results.

In terms of other research on welfare state regimes and health inequalities, a recent literature review, [Dahl et al. \(19\)](#) conclude that there was no apparent patterning of health inequalities by welfare state regime. However, this study utilised Esping-Andersen's three-fold welfare state typology, it reviewed studies which utilised various socio-economic indicators, based on national, rather than international, data sources and covered fewer countries than our ESS based study. Perhaps of more interest and relevance is therefore the study of health inequalities by welfare state regime which used education as the indicator of socio-economic status. The educational study [\(20\)](#) used the same data, countries and regime classification as the present study, and it too found an evident patterning of *educational* health inequalities by welfare state regime. This study found that Southern European welfare regimes had the largest health inequalities, while countries with Bismarckian welfare states tended to demonstrate the smallest. Although the other welfare regimes ranked relatively close to each other, the Scandinavian welfare regimes were placed less favourably than the Anglo-Saxon and East European. The findings for educational inequalities in health for the Southern European and Anglo-Saxon countries differ notably from the income inequalities finding. This could be due to the fact that while education is often regarded as a non-material resource, which promotes a healthy life-style, income on the other hand is usually considered to reflect material resources which are related to paid work. [\(21\)](#) In fact, in this income analysis, educational attainment seemed to explain the largest part of health inequalities in the South.

Our study has found that the Anglo-Saxon welfare state regime has the highest income related inequalities in health. This is in keeping with expectations as they are also the most unequal Western countries in terms of income inequality and operate the least generous social safety net. However, the finding that it is the Bismarckian welfare state regime which has the smallest health

inequalities and not the Scandinavian regime will need to be examined in more empirical detail in the future. In terms of the positioning of the Scandinavian welfare states, it could mean that social determinants of health are not as equally distributed as might be expected within the most egalitarian countries in the world. They have lower income inequalities and lower poverty rates than most other European countries (22) and the Scandinavian welfare states are also considered as the most egalitarian on almost all other social and cultural measures. (3) Despite this, over the years surveys of living conditions have documented that social inequalities prevail in respect to a number of material living conditions and life style behaviours. Thus, factors termed “social determinants of health” are systematically unevenly distributed among positions in the socioeconomic hierarchy. It seems that lower levels of income inequality do not negate inequalities in exposure to the other social determinants of health and that, as Diderichsen (23) suggests, “income and poverty therefore seem to have much less potential to reduce inequalities in health amongst adults, at least in those countries that already have universal entitlements or social insurance”. The degree to which the Scandinavian welfare regime departs in these respects from other regime types is hard to assess since comparative data are hard to find for the major determinants. The best evidence comes from life style factors such as smoking, and these studies show that social inequalities in smoking are wider in Northern Europe than in the south. (24-27) Dahl et al. (28) also suggest that relative deprivation may be a contributory factor and social exclusion of newer populations could also be involved. (20) Overall, it seems that the relatively egalitarian income distribution in Scandinavian welfare regimes has not prevented the emergence and maintenance of relatively large socioeconomic inequalities in health. However, it should be noted that the absolute inequalities in health are quite small and that health across the Scandinavian populations is generally better than elsewhere in Europe.

Our findings therefore require further exploration perhaps via sub-group analysis. For example, are the relative inequalities in health in different welfare state regimes consistent across different social or demographic groups e.g. are there variations by ethnicity, employment or immigration status. (20) Future research will need to explore such issues before we are able to fully explain the comparative performance of the Scandinavian welfare state regime. Further, our study has only focused on differences *between* welfare state regimes whereas in fact, there are also interesting differences in the magnitude of income based health inequalities *within* welfare state regimes. This is perhaps most notable in the Eastern regime where, for example, the differences in longstanding illness amongst men range from OR 1.13 (0.80 – 1.58) in the Czech republic to OR 3.20 (1.85 – 5.52) in Estonia (Web table C). Similarly, income based inequalities in health are smaller in Sweden, and to a lesser extent in Denmark, than in Norway or Finland (Web table C). Clearly comparing most similar cases (i.e. different countries within one welfare state regime) is the next step for comparative social epidemiology and may well serve to be very beneficial in terms of helping to isolate specific policy interventions to reduce inequalities in health.

Limitations

Our study is subject to the following limitations. The first limitation concerns those who have not reported their household income. Clearly, the Southern European countries, Austria, Luxembourg, Czech Republic and Slovakia have rather large proportions of respondents who do not report their income (up to 45.9 % among Italian women – see web table 1). To examine whether this missing data affected our results, we undertook a sensitivity analysis, using educational tertiles and three occupational class categories (comparing ESeC classes I and II and III to VII with VIII and IX). Both the education and class data showed that non-respondents did not report systematically different health status, as compared to those with known household income within the same educational tertiles or class categories.

The second potential limitation concerns the ESS response rates, which vary strongly between countries, as shown in web table A. This is especially the case for the first wave in Switzerland, which had a response rate of only 33.5 %. If the non-response is related to health and socio-economic position, then this would produce biased inequality measures. It should also be noted that we have data for only one year with respect to Italy, Slovakia, and Estonia, which makes the sample size smaller in these countries compared to the others. Another methodological issue is that our sample comes from two sweeps of the ESS. We therefore tested the effect of combining these data by means of a sensitivity analysis. This analysis (not shown in tables) showed that our main results could be replicated on the basis of each survey separately.

Third, self-assessed health might be comprehended across the income tertiles. However, van Doorslaer & Gerdham (29) studied the correlation between self-assessed health and mortality according to different income groups and found that there is no systematic adjustment of self-assessed health by socio-economic position and therefore that the measured income-related inequality in self-assessed health is unlikely to be biased by reporting error. Also, as European regions and welfare state regimes are so entwined, it is possible that regional variations in culture may have impacted on levels of self-rated health. However, a growing number of studies have shown that measures of self assessed health are strongly correlated with more objective measures such as mortality. (30, 31)

Fourthly, although we can not conclude whether the income inequalities in health are explained by health selection or social causation, available evidence from other investigations indicates that health selection explains only a small portion of the observed social gradient in health. (32)

Fifthly, interpretations of relative health inequalities may be misleading if absolute measures are not presented additionally. (33, 34) We have thus calculated the rate differences (RD) between the higher (3rd) and lower (1st) income tertile, additionally. We also calculated the (age-adjusted) percentages of the total sample reporting fair/poor general health and limiting longstanding illness in each welfare regime (web table B). The rate differences showed a similar pattern as compared to the odds ratios, although not totally consistent, as the rate differences (RD) in the Southern welfare regime were slightly smaller than the RD in Bismarckian regime with regard to limiting longstanding illness. The prevalence rates were reported intermediate in the Scandinavian countries, while they were consistently largest in Eastern Europe. Smallest prevalence rates were observed in the Anglo-Saxon countries with respect to poor/fair general health and in the Southern welfare states for cases of limiting longstanding illness.

Sixthly, the study is subject to the problem of common method variance as both the independent and the dependent variables were based on self reports. Reports of longstanding illness are considered less subjective than self-rated health measures, and evidence suggests that the former represents a source of reliable and valid data on health status. (30, 35)

Finally, we have not controlled for the variation of health between *individuals* within countries. However, sensitivity analyses by means of two-level multilevel models (not presented in tables) showed that the odds ratios did not change substantially as compared to our original findings.

KEY POINTS

- This study is the first to examine whether income related health inequalities vary by welfare state regime, using European Social Survey data for 23 European countries, classified into five welfare state regimes: Anglo-Saxon, Bismarckian, Eastern, Scandinavian and Southern.
- The study shows that the magnitude of income related (self-assessed) health inequalities vary between welfare state regimes, that they are smallest in the Bismarckian welfare

regimes, only intermediate in the Scandinavian welfare regimes and largest in the Anglo-Saxon welfare regimes (UK in particular).

- The countries with the least extensive welfare state (Anglo-Saxon countries of UK and Ireland) had the largest income related health inequalities. This suggests that the minimal approach taken in such countries exacerbates health inequalities.
- Reducing health inequalities should continue to be an important public health strategy in all European countries and particularly in the UK but the approach will need to be multi-faceted, tackling not just income inequalities but differential exposure by socio-economic status to the other major social determinants of health.

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