**Editorial**

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# INEQUALITIES IN HEALTH AND SOCIAL POLICY

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## ABSTRACT

WHO and the European Commission impart great importance to promoting activities aimed at reducing inequalities in health. The article raised methodological problems of studies on the causes of inequalities in health. Author draws attention to the need for field studies focused on comparing well-specified population groups in order to achieve greater accuracy of studies to obtain preventive actions better fit to the specific needs of a given population. He also indicates the difficulties related to the comparisons made on an international scale due to the large number of variables that could interfere with investigated exposure. A significant part of the article is devoted to the interpretation of the measurement of poverty and the relationship between economic inequality and inequities in health. The author points out that there are no simple relations in this area, but the impact of economic inequality is particularly pronounced where inequalities in income of families bring large fractions of a society below the threshold of poverty.

**Keywords:** *inequalities in health, income inequality, measures of inequality, social policy*

## INTRODUCTION

Project for health strategy for the EU „Provide Good Health for All" by David Byrne, EU Commissioner for Health and Consumer Protection. Has been sent to ministries of health of member countries on 20 April 2004. Despite its utopian title, referring to the Resolution 32 of the World Health Assembly, this document in a totally pragmatic way proposed to reflect on the new EU health strategy, and indicated difficult to contest, directions of action for individual European Union countries. „This objective is built into EU action to complement national efforts to promote health, minimize health inequalities and combating the factors that have a negative effect on health," Byrne wrote in the introduction to the document.

Action taken by the European Commission in 2004 reflected earlier activity of World Health Organization (WHO). In 1979. Thirty-second World Health Assembly introduced the „Global Strategy for Health for All by the year 2000" by adopting a resolution WHA32.30. It was connected with the support of the Report and Declaration of the International Conference on Primary Health Care held in Alma-Ata (now Almaty) in 1978.

In the same resolution, the World Health Organization appealed to the individual member states of formulating national strategies for improvement of social health and then the creation of regional and wider strategies at international level.

Important development of issues related to the health inequalities within societies and between societies is presented in three successive reports made by the committees of experts led by Michael Marmot. The first report was commissioned by the WHO and concerned health inequalities on a global scale (1), the next was made at the request of the Secretary of Health in UK referring to the same issues (2), and another presented an analysis of the social determinants of health on the scale of European Union (3). Reports differ on the territorial range and specificity associated with the economic and cultural differences as well as the resulting scale of the problem, but in terms of methodology have the same structure, namely:

1. identification of the challenges of inequalities in health and highlight the most important directions of future policies and actions.
2. indication of how empirical evidence can be translated into practical action.

3. indication of possible aims and methods of operation. At the national level would be a reference to the Ministry of Finance agreed with the government spending plan (Public Service Agreement Targets)

Reports of teams led by M. Marmot are characterized by a comprehensive approach taking into account both cultural and economic aspects of the determinants of health inequalities occurring in the societies as well as in identifying possible and desirable solutions. The problem of inequalities in health is deeply rooted in economic and political situation of whole societies, as well as occurring in the some specific sub-populations. In these reports it is strongly underlined the relationship between causes of inequalities and the health policy and the ways for action to reduce them. Marmot accepted external evaluation of these reports as "evidence-based politics". It has to be a policy in the Aristotelian sense: the search for solutions for the common good. Even with such an idealistic identification of the policy project puts heavy demands both in terms of determining the targets as the methods of its achievement. The very definition of what is „scientific justification" is not easy. But the particular difficulty converting knowledge into practice: to determine the lays in extent and manner in which the scientific evidence may be converted into practical actions of politicians and administrators.

Marmot reports refer to numerous studies linking the economic situation of entire countries and individual people with their health condition. The problem is that the economic situation of people is linked to a number of factors that might have confounding or modifying effects. Many of them are so deeply rooted in the tradition of individuals, families and entire populations that with the change of financial situation, their impact may be subject of much slower change. There are no sufficient premises to assume that the health consequences of economic changes have an universal character. They may be different in different populations. An important illustration of the relationship between economic condition of the society and health condition of its citizens is a problem of the relationship between economic inequalities and inequalities in health.

In Poland, National Institute of Public Health and the WHO Regional Office in cooperation with the Ministry of Health has prepared an extensive report „Social Inequalities in Health in Poland" (4). The report presents the state of health inequalities occurring in Polish society and their relationship to socio-economic conditions in different social groups. It also brings issue of socio-economic factors affecting the deterioration of health. It is the document of high-quality, fundamental to the issues in question.

## INEQUALITIES IN HEALTH VERSUS COMMON GOOD

How can be determined „common good", which is dimished by inequalities in health? For epidemiologist it should be clear that it does not exist as an abstract entity, but is an expression of the statistical distribution in the population of people defined as healthy and those with health deficiencies of varying type and severity. Really crude, but relatively easily measurable indicators are measures of mortality and survival.

The question arises why statistical distributions of health status of individuals has to be the „common good"? The fact that it does is confirmed both in epidemiological studies as well as in simple everyday observations. Not only the health of individuals may be linked to their own material situation, but it is also reflected on the economic situation of their families and, in a broader context also on the condition of the whole population.

The essence of the study of inequality is that the condition and/or its duration must be compared within populations and among subpopulations, which requires studies of people with specific comparable groups. Matching health indicators to measures of exposure in subpopulations allows for more precise analysis, due to reduction of the number of confounding variables. What groups of people should be compared in specific studies, depends not only on testing analytic tools, but belongs to the realm of evaluative research, and to a large extent is left to the assessment of the investigator. The validity of many of these groups came to the tradition of epidemiological studies. Differences in the incidence of health indicators in these groups have been repeatedly tested in different populations and comparing them with each other has a vast bibliography. The importance of different exposure variables from the point of view of health inequalities, can be determined by the size of differences in epidemiological measures, but also by the possibility to reduce these differences through public health actions.

An important extension of the research on health inequalities is to compare the inequalities in the health of populations living in different countries, regions and continents. When comparing strongly contrasted areas of the globe researcher operates with significant differences in the value of exposure, which significantly extends the capabilities determine the strength of the relationship between exposure and its health effect.

There are many studies indicating a significant role of economic inequality as determinants of health inequalities (5). Depending on the level of poverty, people have less access to safe water and food, live in the overpopulated households, more often work in

adverse health conditions and have limited access to medical care. Income levels are related to the types and severity of social pathologies. An important correlate of poverty is the lower level of education, which also leads to lowering of health indicators.

## MEASURES OF INCOME INEQUALITIES

The basic unit used for calculating the distribution of national income are households. The cumulative income distribution of households ordered by the "relation greater than/equal (≥)" shows the Lorenz curve. It is therefore a curve constantly growing, and its first derivative is a non-decreasing. If revenues of households are consecutively getting higher, this curve grows faster, if it is equal to the previous ones it grows linearly. Fig. 1.
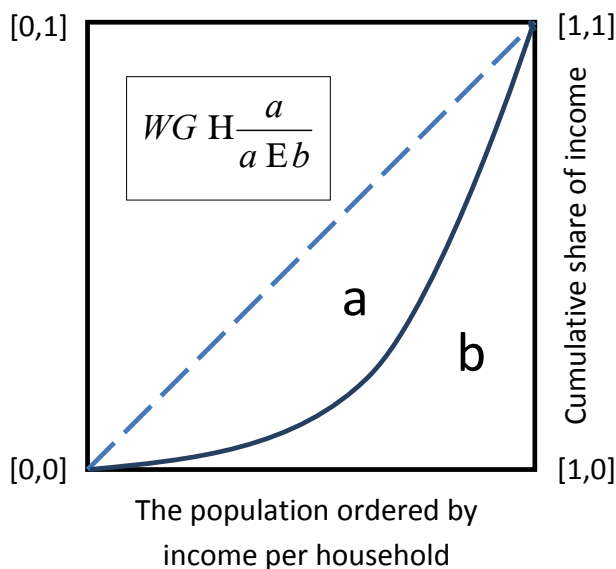


Ryc. 1.    Lorenz curve representing the cumulative function of household income, sorted by increasing size of income. The „a" represents the degree of departure of income from their complete equality represented by a strait segment between the points [0.0] and [1.1].

The curve is calibrated in relative units. On the abscissa are marked percentiles number of households, and on the ordinate the fractions of cumulative national income. In the case of absolutely equal income of all households Lorenz curve takes the form of a diagonal, straight section connecting the points (0,0) and (1,1). With inequalities in income the points of cumulative income connect curve lying below the diagonal. Lorenz curve represents a function and cannot be completely represented by one indicator. Therefore, one must remember that parametric comparison of inequalities in health that requires reliance on single figures, always is a simplification.

The elementary requirement of such indicators is to follow the Pigou-Dalton principle (6,7,8): "Within the population assessed in terms of income inequality, any transfer of income from individuals (households) with higher incomes to those with lower, must change the value of the indicator toward a reduction in inequality".

The second requirement is that the index of inequality has to be independent of the choice of scale, i. e.: the absolute amount of income should not have an effect on index numerical value. It is desirable also that the scale should have limits, so it can be normalized in the range [0,1].

Numerous indicators of economic inequalities were introduced based on different mathematical formulas. The simplest of these is the coefficient of variation. A separate group of indicators is based on a comparison of quantile of the lower and the upper compartments of the Lorenz curve.

For scientific purposes particularly useful, due to the its high precision, are coefficients based on the mathematical theory of entropy. Among them is Theil index (9). This indicator gives the possibility for territorial or group decomposition allowing separation of results and assigning individual indices to subpopulations by applying the appropriate weights.

Another important measure of income inequality is the Atkinson index (10). It is based on a theoretical redistribution of income to the level that would lead to complete equality.

The most widely used indicator for comparing different populations in terms of income inequality is the Gini coefficient (11.12).

$$G(y) = \frac{\sum_{i=1}^{n}(2i - n - 1)y_i}{n^2 \overline{y}}$$

Where $y_i$ is the value of „i" observation ( eg. income of „i" household) and $\overline{y}$ is the everage value of all observations $y_i$

e.g. everage income of hoseholds:

$$\overline{y} = \frac{1}{n} \sum_{i=1}^{n} y_i$$

In the graphic representation of the Lorenz curve, Gini index corresponds to a fraction „a", of the field lying under the straight line connecting the points (0,0) and (1,1).

Field "a" represents departure from the perfect equity.

Particular Lorenz curve defines exactly one Gini index, while the same value of index may correspond to different Lorenz curves representing different income distributions. It is easy to see that the same size of surface „a" can be limited by different course of

curves steadily increasing which have not decreasing first derivative.

A convenient range of Gini index of 0 to 1 provides a relative measure that allows for easy comparison of the degree of inequality in the populations of different sizes and different average income. It also allows to compare the changes in income inequality in the population over time. However, as mentioned above, its ambiguity in relation to income distribution caused that the same Gini coefficient may characterize populations with different Lorenz curves.

In the studies of large populations as a whole, the Gini coefficient gives generally higher values than those for its territorial components. Eg. for the USA as a whole, the Gini coefficient is greater than measured for most individual states. There is only 9 states that it is equal to or higher than for the USA as a whole. Therefore, the conclusions from the comparison of countries widely varying in population size have to be brought very carefully with taking consideration for other factors determining the specificity of comparable units.

Many researchers draws attention to the fact that the course of Lorenz curve indicates that the size of the Gini coefficient is mostly affected by the data from the central part of the curve representing the incomes of the middle class. Indeed, in this part Lorenz curve mostly departed from the diagonal indicating total equality of income.

However, comparison of the actual distribution of household incomes for almost a full list of countries around the globe made by J.G. Palma, led him to the conclusion that apart from a few countries with large areas of poverty and extreme economic stratification such as Namibia, almost exactly half of the cummulated national income of households is located in the deciles of 5 -9 of the Lorenz curve, and the other half is shared between the poorest four deciles and tenth decile including the richest people (13). On this basis, palm proposed income inequality index, which expresses the ratio of income of 40% of the population with lowest income to the cummulative income of the 10% of the richest. Done by Cobham and Sumner comparisons of inequalities in income for the same countries using the Gini index and index of Palma showed a very high compatibility of botn measures. (14).

## IMPACT OF INCOME INEQUALITIES ON HEALTH INEQUALITIES

Indicators of inequality in income, according with their objectives, must be separated from the absolute level of income. But in rich societies inequalities in household incomes may leave in the sphere of absolute poverty les people then in societies with very low average income. Absolute poverty resulting from inequal-

ity is intuitively an obvious factor in the deterioration of the health of people belonging to these groups. As highlighted above, poverty is associated with limited access to safe water and food, opportunities, and often habits of personal hygiene, housing conditions, and the character and conditions of occupational work. In many societies, the situation of the poor is worsen by violence and addiction to alcohol and drugs. Poverty may play an important role inequalities in access to medical care. Many health problems resulting from poverty can also depend on inequalities in respecting civil rights. But one should keep in mind that with the same level of inequalities, poverty areas may have different ranges depending on the average per capita income and the quality of the social welfare system in the country. However, there is a large group of serious writers who ascribe specific economic inequalities effect on the health of societies. In their opinion this effect would be independent of other factors.

An example of such approach is the book by Richard Wilkinson and Kate Pickett, „The spirit level" (16). With relatively simple methodology, using population data, these authors linked the economic inequality in selected, highly developed countries with a large number of health condition measures for a population and showed significant linkage between inequalities and adverse health events. Without questioning these results in the populations studied, it is worth noting that when comparing a wider group of countries with very different societies and different levels of national income, the number of variables affecting population health condition do not allow such a far-reaching simplification. Table 1 shows a comparison of the three groups of countries with Gini coefficients respectively remaining within the limits of: 40-49, 30-29 and 20-29 clearly shows the substantial differences of the average

Tab 1.    Comparison of the value of the Gini coefficient in its various ranges with an average life expectancy and the purchasing power parity per capita of the population in selected countries.

| Country | Gini coeficient % | Average life expectancy (WHO) | Purchasing power parity p.c. in USD, 2013 |
|---|---|---|---|
| Philipines | 44.8 | 72.8 | 4.700 |
| Russia | 42.0 | 70.0 | 18 100 |
| China | 47.3 | 76.0 | 9 800 |
| USA | 45.0 | 79.8 | 52 800 |
| India | 36.8 | 65.0 | 4 000 |
| Poland | 34.1 | 77.5 | 21 100 |
| UK | 32.3 | 81.0 | 37 300 |
| Japan | 37.6 | 84.6 | 37 100 |
| Kazakhstan | 28.9 | 70.24 | 14.100 |
| Bielarus | 27.2 | 72.15 | 16.100 |
| Germany | 27.0 | 81.0 | 39 500 |
| Sweden | 23.0 | 83.0 | 40 900 |

life expectancy and in the purchasing capacity of the population in the countries with only slightly different numerical values of Gini index. The effect of "spirit level" vividly described by Wilkinson and Pickett, even if it occurs in some societies, dies at strongly interacting effects of extreme poverty areas, contaminated environment and social pathologies.

In the WHO publications on health inequalities are used two basic terms: „inequality" which specifies the differences in health indicators without taking into account their causes and „inequity", may be interpreted as „injustice", or „lack of equal access".

According to the WHO, „ Health inequalities can be defined as differences in health status or in the distribution of health determinants between different population groups. For example, differences in mobility between elderly people and younger populations or differences in mortality rates between people from different social classes. It is important to distinguish between inequality in health and inequity. Some health inequalities are attributable to biological variations or free choice and others are attributable to the external environment and conditions mainly outside the control of the individuals concerned. In the first case it may be impossible or ethically or ideologically unacceptable to change the health determinants and so the health inequalities are unavoidable. In the second, the uneven distribution may be unnecessary and avoidable as well as unjust and unfair, so that the resulting health inequalities also lead to inequity in health."(17).

This text is strongly tinted ideologically and as a definition contains a vicious circle, but one has to appreciate the nobility of its intentions. WHO divides health inequalities on related to human biology, the genetics and aging, but also caused by accidental events and they cause the component of inequality that cannot be compensated. In this group are included also those inequalities which „depend on free choice", ie. the lifestyle, diet used in conditions of free access, addiction and other factors harmful or beneficial to health about which individual person can decide. But „injustice" concerns those factors affecting health, which depend on the socio-economic condition of particular social groups, and may be modified by administrative and organizational factors that affect economic security, access to education and access to the amenities of civilization including medical care.

Adaptation of the situation in Poland to the expectations of the WHO and the European Commission on issues of inequalities in health, in large part lies in the political will of the government and awareness of the problems. Obviously they are closely related to the development of the country's financial possibilities. This also applies to those matters which are within the scope of health promotion.

## DIFFICULT TRANSITION FROM IDEOLOGY TO EFFECTIVE PRACTICE

To begin with, the identification of economic inequality with injustice poses considerable methodological concerns. The accumulated private capital, which has its source in innovations, or the accumulation of honestly acquired assets for generations, not impoverish people who do not have this property. On the contrary dependent on investment and economic development of the country private capital can contribute to the prosperity of employees. However, in many countries where in recent decades there were political changes, a significant part of the property previously nationalized went into private hands by means of administrative decisions causing a sharp rise in income disparities. Similarly acquisition of international aid by privileged elites in poor countries leads to imbalances that at no sense are just. They rarely lead to the development of the country, and more often increase the areas of extreme poverty.

Deep social and economic transformations are beyond the reach of public health programs and actions. But good orientation in economic conditions of specific social groups, and sometimes the individual people is a prerequisite for the effectiveness of these programs and effective use of available means. Only a well-planned field studies are able to provide insight into the needs of particular social group both in terms of direct economic assistance as well as regarding information needed on healthy lifestyles and access to health services. It is also necessary to assess local environmental hazards to provide the administrative authorities with signals indicating the need to remove the threats.

In planning the fieldwork aimed at reduction of the health effects of each adverse factor is crucial to optimizing the scale of these tests. Too extensive research may cober  group of people with such different needs that available preventive measures will be effective only to a limited extent. In turn, the study too narrow omit individuals and groups of persons to whom one could successfully reach. The presence and influence of environmental factors and lifestyle-related ones has its own geography, and often fixation in social networks. Even so, a seemingly universal risk factors like smoking and alcohol abuse have different ranges depending on the impact of gender, age, inhabited the area and the state of employment. For the effective prevention of disease it must be remembered that the basic starting point for health inequalities are inequalities in exposures to risk factors of disease. Since the primary site of action for public health programs are health hazards associated with risk factors for diseases.

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