

Health inequalities and social group differences: what should we measure?

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Both health inequalities and social group health differences are important aspects of measuring population health. Despite widespread recognition of their magnitude in many high- and low-income countries, there is considerable debate about the meaning and measurement of health inequalities, social group health differences and inequities. The lack of standard definitions, measurement strategies and indicators has and will continue to limit comparisons — between and within countries, and over time — of health inequalities, and perhaps more importantly comparative analyses of their determinants. Such comparative work, however, will be essential to find effective policies for governments to reduce health inequalities. This article addresses the question of whether we should be measuring health inequalities or social group health differences. To help clarify the strengths and weaknesses of these two approaches, we review some of the major arguments for and against each of them.

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Introduction

Inequalities in health, both between and within populations, are a major public concern that demands attention. For example, life expectancy at birth of native American males in some counties of the USA is 56 years, while that of Asian American women in other counties is above 95 years (1). The long-standing interest in health-related inequalities (2) has increased since the early 1980s and includes health differences between social groups (3–6). Interest in this subject has been expressed in the political arena in the USA and Europe, as well as by WHO, and in several publications (7, 8).

Despite wide recognition of the extent of health inequalities and social group health differences in many high-income and low-income countries, there is considerable debate about the meaning and measurement of health inequalities, social group health differences, and inequities (9–11). The lack of standard definitions, measurement strategies, and indicators have limited and will continue to limit comparisons — between and within countries, and over time — of health inequalities and, perhaps more importantly, comparative analyses of their determinants. Comparative studies are essential for formu-

lating effective policies, with which governments will be able to reduce these inequalities.

We hope this article will contribute to the increasing attention on social group health differences, inequalities, and inequities by addressing the question of whether we should be measuring health inequalities or social group health differences. We use the term “health inequalities” to refer to composite measures of the variation in health status across individuals in a population. Particular measures of health inequalities can reflect the range of variation from best to worst or the distribution of individuals within that range. This definition of the term “health inequality” has been used by other disciplines, such as the extensive study of income inequality across individuals (12, 13). For example, income inequality is frequently measured using the Gini coefficient, which is a function of the distribution of individual income. Measures of inequality of income or health are important because the same average level of income or health could correspond to vastly different distributions of these variables across individuals in a population. A concern for inequality is a concern for the distribution of attributes such as income or health across individuals. In other words, average levels do not convey sufficient information.

Social group health differences are considered to be the differences across subgroups of the population, which may be based on biological, social, economic or geographical characteristics. Social group health indicators are summary measures of subgroups of the population, and as such they mask part of the range of inequality present in the population. In much of the published literature, health inequalities are taken to be synonymous with

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social group differences in health. For example, Valkonen reports that the standardized mortality ratio (SMR) for upper white-collar workers in Finland was 57 in 1986–90 as compared to 121 for blue-collar workers (14). Mackenbach & Kunst reviewed various summary indicators of health inequality, all of which are indicators of the magnitude of social group health differences (11). When social group health differences are equated with health inequality, the critical choice is that of the variable used to distribute the population into social groups. Analytical traditions vary: in the United Kingdom, social groups have been defined using five categories of occupation-based social class; in some countries in continental Europe, educational attainment or occupational categories have been used; and in the USA, most research focuses on social categories defined in terms of racial groups. Social groups defined by location deserve special note. When the geographical areas used to categorize the population are small and represent relatively homogeneous groups, they provide a more refined categorization of the population which can come close to revealing the extent of individual variation in the population.

The term “health inequities” refers to the part of the existing inequalities that are unjust according to some theory of justice (15). It can legitimately be argued that the focus of health policy should be on reducing health inequities. In this critical reflection, however, we focus on the measurement of health inequality and social group differences.

There is intrinsic interest in both health inequalities and social group health differences. To help clarify the strengths and weaknesses of these two approaches, we review some of the major arguments for and against measuring health inequalities and social group health differences. Focusing on inequalities measured as the distribution across individuals has many advantages. First, measuring the distribution of health across individuals is the natural complement to measuring the average level of health in a population. Second, the individuals with the worst levels of health can be identified without choosing *ex ante* the variables used to define social groups. Third, comparisons of the degree of inequality between populations or for the same population over a period of time are straightforward. There are no concerns about comparability of groups or changes in group composition. There will continue to be a rich debate on the best summary indicator of the distribution of health across individuals, as there is for income (13). But once an indicator is chosen, comparability of results is assured. Fourth, by separating the definition and measurement of inequality from *ex ante* causal hypotheses (see below) or normative positions, inequality itself becomes an object of scientific inquiry. Despite these advantages, there are few studies of health inequalities, as defined here (16–19). The paucity of studies may in part be due to the following arguments against measuring health inequalities or those in favour of measuring social group differences.

Are health inequalities interesting?

Even if we can measure health inequalities across individuals, some authors argue that this is not intrinsically interesting (9–11, 20); “...the main problem is that such a measure [of individual inequality] answers a different — possibly rather uninteresting — question about generalized variability within a society distinct from systematic variability based on social stratification within society” (20). Variation across individuals in health can be attributed at the simplest level to four factors: chance, genes, the environment (broadly defined to include all physical and social factors), and the interaction between genes and the environment. The argument that individual variation is uninteresting must rest on the claim that the components of individual variation due to chance and perhaps genes are not important or are without normative significance. In the era of the human genome project, the claim that health inequality due to differences between the genetic endowment of individuals is uninteresting seems hard to defend.

Should we be so uninterested in health inequalities due to chance that we do not include them in our measurement of health inequality? First, it is difficult to justify the claim that we should not measure health inequality across populations because some component of inequality is due to random rather than systematic variation. Variation in the magnitude of health inequality across countries is unlikely to be due to chance alone, so that the fact that some of the variation is attributable to chance events is irrelevant to the total assessment. Second, most of us are concerned with inequality of risk and inequality of outcome. Consider the analogy to income. If the government taxes every individual one dollar and then selects one individual through a lottery to receive all the proceeds, real income inequality would increase. But this is only due to chance; the expectation of income is equally distributed prior to the outcome of the lottery. In the case of income and health, risks and outcomes both matter. If all differences across individuals are simply due to chance, the degree of inequality across countries would be the same. The empirical results on health inequality across populations will resolve this concern.

Can health inequality across individuals be measured?

For some commonly used health measures such as annual mortality rates, inequality at the individual level is not very meaningful. Survival over one year is a dichotomous variable: individuals are either alive or dead at the end of the year. The proportion of the population that is dead (the period death rate) contains all the information on the level and distribution across individuals. Because there is a one-to-one correspondence between the proportion dead and the distribution of the population in the

categories dead and alive, the proportion dead is fully informative of level and distribution. Nevertheless, even if we know the distribution of the population in the categories dead and alive, there will probably be differences in mortality rates across subgroups of the population. Measuring social group differences in period mortality is thus an important adjunct to measuring the population death rate.

As soon as mortality data are used to calculate a continuous variable, survival time, such as in a cohort life table, individual inequality contains important information that is not included in the average survival time of the population. The same average survival or cohort life expectancy can occur with widely different distributions of ages at death. Similarly, inequality of individual healthy life expectancy for a cohort could be measured with the appropriate data. For all polychotomous or continuous measurements of health (e.g. SF-36, Euroqol, Activities of Daily Living or the Health Utilities Index), health inequalities across individuals can be relatively easily measured. One popular measure, period life expectancy, is the survival of a hypothetical birth cohort exposed to currently observed mortality rates. Measurement of inequality across these hypothetical individuals in terms of the age at death is possible (17), but difficult to interpret because of the hypothetical nature of a period life table.

Are measures of health inequality sensitive to changes in socioeconomic status?

Some authors argue that “it clearly is a defect [of measures of individual inequality] if one takes the view — as many do — that what is interesting — and indeed worrying — about inequalities in health is not that they exist, but that they mirror inequalities in socioeconomic status” (see 9, page 546). This is not a positive but strictly a normative argument, albeit a defensible normative argument (15). Wagstaff et al. argue that only those health inequalities that correlate with other socioeconomic inequalities are interesting (9). If health is a critical component of human well-being, with which most would agree, one wonders why inequality of health should not be considered intrinsically important, independent of its correlation with other components of well-being. The parallel argument for income, that income inequality is interesting only to the extent that it correlates with health or education inequality, would not be seriously considered. Rather, it is clearly a conceptual and analytical strength to separate the measurement of health inequality from normative claims on the types of health inequalities that are considered inequitable and deserving of public action.

Social group health differences

Notwithstanding the advantages of measuring health inequality across individuals, there is extensive work

on health differences across social groups. A number of arguments can be advanced to support studying social group health differences instead of health inequalities. These are reviewed below. Ultimately, the main challenge of the approach of measuring social group health differences is the choice of social groups, and the profound problems of comparability and interpretation that this introduces.

Are social group health differences synonymous with health inequalities because of their moral significance?

To many analysts working on social group health differences, it is almost axiomatic that certain types of social categorizations are the best way to examine health inequalities because of their moral importance (for discussion, see 4, 9, 10, 21). The argument is that social groups and health gradients according to these groupings are more important because groups at the bottom of the social gradient have disadvantages in other spheres of well-being such as income, wealth or education (see 15, for discussion). The concern about health differences between social groups stems not from the health differences themselves, but from their covariance with other socioeconomic variables. To make this normative argument in favour of constructing health inequality as the preferred method of measurement rather than social group health differences, imagine two populations. In both populations, the average levels of health and the degree of health inequality across individuals are identical. In population A, those with lower educational attainment have worse health status than the more educated individuals; in population B, individuals with low educational attainment have better health than the more educated. It is reasonable to argue that health inequality in population A is of greater concern and deserving of public attention than that in population B. But a cogent moral argument could also be made that the inequality in A and B are equally of concern. Regardless of the moral position taken, it would seem strange to argue that there is less health inequality by definition in B than in A simply because of the correlation between health levels and education levels. The argument that social group health differences are the best approach to measuring health inequalities confounds a positive issue, the extent of inequality across individuals, and a normative question: which inequalities are unjust?

Is social position the fundamental latent variable determining health?

Some researchers, who agree that health inequality should not be measured in a normative manner, hold that social group health differences may be the best positive approach (21). One of the long-standing debates in sociology refers to the dimension along

which individuals are differentiated into social categories. In fact, such dimensions and the corresponding descriptions (e.g. social class, stratum, group, sector) are critical elements in defining the major theoretical traditions in the social sciences. Whether or not they are conscious of the theoretical implications, many studies in the health field utilize variables as indicators of underlying social constructs. Such an approach has gained prominence in high-income countries; according to this view, absolute deprivation is not a major determinant of health, even for the poor. What matters is an individual's relative social position. For example, Mackenbach & Kunst refer to this as socioeconomic status (SES): "SES refers to an individual's relative position in the social hierarchy and can be operationalized as level of education, occupation and/or income" (see 11, page 758). Relative social position in the language of measurement theory is a latent trait (22), which can only imperfectly be measured with a variety of proxies such as income, education, car ownership, wealth or occupation. It is with reference to this social position hypothesis that comparisons of occupation-based social class groupings in the United Kingdom and educational attainment-based groups in the Netherlands are justified (23). The notion that social position is a fundamental latent variable determining health is consistent with the Marxist tradition which defines social classes by their position in production relationships (24, 25).

Because social position is the key variable determining health, according to this view, defining health inequality in terms of social group differences is legitimate. There are two aspects to this approach that can be challenged. First, the hypothesis that a latent variable — social position — exists and is the key determinant of health is nearly impossible to falsify. Any contradictory evidence can simply be ascribed to the use of imperfect proxies for social position in a given cultural or political context. Second, defining health inequality as the difference in health status between social groups, with lower as compared to higher social position, does not allow for scientific inquiry into other key determinants of health inequality across individuals.

Socioeconomic factors and webs of causation

Much of the social epidemiology research on health inequalities in Europe and Latin America (26, 27) has focused on the concept of social position, while in North America epidemiologists and social demographers have looked at various socioeconomic factors as independent determinants of health operating through a complex causal web (28, 29). A major analytical challenge is to define the causal pathways operating from distal socioeconomic factors to proximal individual behaviours, and ultimately physiological factors. An example of such an approach for child mortality in developing countries linking

distal socioeconomic factors, proximal individual factors, and physiological factors was proposed by Mosley & Chen (30). For high-income countries, these causal webs will surely include important community-level characteristics, such as income inequality or social networks that operate at the individual level (31–33). Analysis of social group differences may stimulate the search for causal explanations through the complex webs of distal, proximate and physiological determinants. This cogent reason for studying social group health differences highlights the continuing importance of measuring them for analytical reasons; it does not qualify them as the best way to measure health inequalities.

The biggest problem with this way of measuring health inequalities is the choice of variable to define social groups, and the subsequent inevitable problems of comparability across countries. A growing literature proposes methods to enhance comparability (e.g. 23) by standardizing summary indicators of social group health differences and by using the same variables to define social groups across countries or, more often, by assuming that different variables are in fact proxies for the same underlying variable, i.e. social position. While these attempts at standardization and enhanced comparability are laudable, they will never be completely satisfactory. Even if occupation-based social group health differences are larger in France than in the United Kingdom, there may always be some new variable that can be used to define other social groupings in which differences are greater in the United Kingdom than in France. One such variable is geographical location. In the USA, Murray et al. (1) revealed that the differences in life expectancy between counties were much larger than differences across socioeconomic variables. Small area analysis may hold out the greatest promise for studying the extent to which social group health differences vary across countries. Location can be defined in a culturally independent way for all countries, data sets are widely available on health by location, and location provides a social categorization with many more categories. Even for small area analysis, considerable problems remain in undertaking cross-national comparisons of the extent of social group differences in health. Because the choice of variables used to define social groups matters so much, it would be highly desirable to define and measure health inequalities independent of any particular social variable.

Conclusions

Both health inequalities and social group health differences are important aspects of measuring population health. In the face of the enormous variation in health within populations, we cannot simply focus on average levels of health. There are convincing reasons to measure social group health

differences: they are normatively important; they provide insights into causal pathways linking distal socioeconomic determinants and health; and they are relatively easy to measure. In fact, one particular approach to defining social groups, namely community location, has been much underutilized. Small area analyses are possible using existing vital registration data in many countries and are likely to reveal larger health inequalities than previously recognized. However, health inequality should be defined in terms of

inequality across individuals. By moving towards the measurement of the distribution of health across individuals, the study of inequality will be put on a sounder scientific footing. A shift towards measuring health inequalities across individuals will undoubtedly fuel a rich debate on the advantages and disadvantages of various summary indicators of the distribution of health. This debate can borrow from the extensive literature on the measurement of income inequality. ■

Résumé

Inégalités de santé ou différences entre groupes sociaux : que devons nous mesurer ?

Inégalités de santé et différences entre groupes sociaux sont deux éléments importants de la mesure de l'état sanitaire d'une population. Il existe dans les pays à faible ou à haut revenu des inégalités de santé et des différences entre groupes sociaux dont l'importance est largement reconnue, mais la signification et la mesure des inégalités ou des différences, voire des iniquités, sur le plan sanitaire entre groupes sociaux restent fortement sujettes à controverse. L'absence de définitions normalisées, de stratégies de mesure et d'indicateurs appropriés limitent et continueront de limiter la comparaison — d'un pays à l'autre, à l'intérieur d'un même pays ou encore dans le temps — des inégalités de santé et, ce qui est peut être plus grave, l'analyse comparative des causes de ces inégalités. Cette analyse comparative est pourtant essentielle pour les gouvernements qui s'efforcent de trouver des politiques permettant de réduire efficacement ces inégalités. Nous souhaitons que cet article puisse contribuer à attirer davantage l'attention sur les inégalités, iniquités et différences de santé entre groupes sociaux en posant la question de savoir s'il faut mesurer les inégalités de santé ou les différences sanitaires entre groupes sociaux.

La mesure des inégalités de santé et celle des différences sanitaires entre groupes sociaux sont toutes deux intrinsèquement intéressantes. Pour essayer de mieux voir les points forts et les points faibles de ces deux conceptions, nous examinons quelques-uns des principaux arguments qui sont avancés pour ou contre la mesure des inégalités de santé ou celle des différences sanitaires entre groupes sociaux. Par mesure des inégalités de santé, nous entendons la mesure composite de la variation de l'état de santé d'un individu à l'autre d'une population. Certaines mesures peuvent donner une image de l'ampleur de la variation qui sépare le pire du meilleur ou rendre compte de la distribution des

individus entre ces limites extrêmes. Les différences sanitaires entre groupes sociaux sont celles que l'on peut constater entre divers sous-groupes de la population, sous-groupes dont les caractéristiques peuvent être de nature biologique, sociale, économique ou géographique. Les indicateurs sanitaires relatifs aux groupes sociaux sont des mesures globales de l'état sanitaire des divers sous-groupes de la population et en tant que tels, ils masquent en partie l'éventail des inégalités qui existe à l'intérieur de la population.

Compte tenu des variations considérables qui existent sur le plan sanitaire au sein d'une population, on ne peut pas se contenter de considérer un niveau sanitaire moyen. Il y a des arguments convaincants en faveur de la mesure des différences sanitaires entre groupes sociaux : elles sont importantes d'un point de vue normatif; elles éclairent sur les chaînes causales entre déterminants socio-économiques lointains et santé et enfin elles sont faciles à mesurer. De fait, il y a une méthode qui est très insuffisamment utilisée, à savoir le lieu de résidence des communautés. Dans un grand nombre de pays, on peut procéder à des analyses sur de petites zones en utilisant les données de l'état civil, analyses qui vont vraisemblablement révéler des inégalités sanitaires plus importantes qu'on ne le pensait. Il faut cependant définir les inégalités de santé en fonction des inégalités entre individus. En s'orientant vers la mesure de la distribution de la santé entre individus, l'étude des inégalités s'appuiera sur des bases scientifiques plus solides. Une réorientation vers la mesure des inégalités de santé entre individus ne peut manquer d'alimenter un débat fécond sur les avantages et les inconvénients que peuvent présenter les divers indicateurs globaux de la distribution de la santé. Ce débat peut se nourrir de la riche littérature consacrée à la mesure des inégalités de revenu.

Resumen

Desigualdades sanitarias y diferencias entre grupos sociales: ¿qué debemos medir?

Las desigualdades en materia de salud y las diferencias sanitarias entre grupos sociales son aspectos importantes para medir la salud de la población. Aunque se reconoce en general que hay importantes desigualdades de salud y diferencias sanitarias entre grupos sociales en muchos países, tanto de altos como de bajos ingresos,

hay gran controversia acerca del significado y la medición de las desigualdades de salud, las diferencias sanitarias entre grupos sociales y las situaciones de inequidad. La falta de definiciones normalizadas, de estrategias de medición y de indicadores ha limitado y seguirá limitando las comparaciones — entre los países y en los países a lo

largo del tiempo — de las desigualdades sanitarias y, algo tal vez más importante, los análisis comparativos de los determinantes de las desigualdades sanitarias. Ese análisis comparativo de las desigualdades en materia de salud, sin embargo, será esencial para formular políticas eficaces que permitan a los gobiernos reducir tales desigualdades. Esperamos que este artículo contribuya a la creciente atención prestada a las diferencias de salud entre grupos sociales, las desigualdades y la falta de equidad, para lo cual se aborda la cuestión de si deberíamos medir las desigualdades sanitarias o las diferencias de salud entre grupos sociales.

Tanto unas como otras revisten un interés intrínseco. Para ayudar a elucidar los puntos fuertes y débiles de esos dos enfoques, analizamos algunos de los principales argumentos a favor y en contra de la medición de cada una de esas variables. Aquí utilizamos la expresión desigualdades sanitarias para designar las medidas compuestas de las diferencias en el estado de salud entre un individuo y otro en una población. Esas medidas pueden reflejar el margen de diferencia entre el mejor y el peor de los casos, o bien la distribución de los individuos dentro de ese margen. Se consideran diferencias sanitarias entre grupos sociales las que se dan entre subgrupos de la población, subgrupos que se definen en función de características biológicas, sociales, económicas o geográficas. Los indicadores del estado de salud de grupos sociales son medidas que sintetizan la

situación de subgrupos de población, y que por consiguiente ocultan parte de las desigualdades existentes en la población.

Dadas las grandes diferencias de salud dentro de las poblaciones, no podemos contentarnos con determinar los niveles medios de salud. Hay razones convincentes para medir las diferencias sanitarias entre grupos sociales: son normativamente importantes; arrojan luz sobre las vías causales que enlazan los determinantes socioeconómicos distales y la salud; y son relativamente fáciles de medir. De hecho, un método de definición de los grupos sociales como es la ubicación de las comunidades ha sido claramente infrutilizado. Es posible realizar análisis de zonas reducidas a partir de los datos del registro civil en muchos países, y esos análisis pueden muy bien revelar desigualdades sanitarias más importantes de lo que se creía. Sin embargo, las desigualdades sanitarias deberían definirse desde el punto de vista de las desigualdades interindividuales. Desplazándose hacia la medición de la distribución de la salud entre los individuos, el estudio de las desigualdades dispondrá de una base científica más sólida, y ese desplazamiento impulsará sin duda un enriquecedor debate sobre las ventajas y los inconvenientes de los diversos indicadores resumidos de la distribución de la salud. Dicho debate puede beneficiarse de la extensa bibliografía disponible sobre la medición de las desigualdades en materia de ingresos.

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