Equity and health: a perspective on nonrandom distribution of health in the population

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ABSTRACT

The nonrandom distribution of ill health across and within populations is cause for ethical concern. Systematic differences in health across populations and subpopulations are a result of interactions among many types of influences operating on broad ecological, community, and individual levels. The operation of this web of influences potentiates health disadvantage for some populations and subpopulations and, conversely, enhances resilience to health threats in more advantaged populations. Understanding the genesis of inequity requires an appreciation of the dynamics of these interactions. Thus, research directed at elucidating the causes of inequity in order to facilitate policy changes requires the adoption of conceptual frameworks to guide more efficient and effective future scientific inquiry concerning this worldwide imperative.

Key words   Health status, health inequalities, equity, socioeconomic factors, health services research.

Inequalities in health do not occur randomly. Rather, health problems cluster systematically in the population: some people and some groups within the population experience more than their ìfairî share of ill health, and some have less. With the exception of some survey data, this systematic variability is masked in virtually all existing information on the health of populations. The average health statistics that characterize health at the national, state, regional, or local level convey no information about the extent of clustering of health

problems and compromises to health; as represented by most vital statistics, average figures hide wide variations within the population.

Although the burden of illness, as conventionally assessed, increases with age, clustering is not primarily an age effect, nor are differences in clustering in different populations a result of differing age distributions. (The well-accepted notion of increased illness with aging is the main reason for standardization of mortality rates within and across health services systems.) In fact, the nonrandomness of illness distributions is greater in younger age groups than in older ones (1).

Geneticists have long known that the mere presence of a faulty gene seldom causes disease, even when the

gene is ìdominant.î Studies deriving from the ancient science of animal husbandry provided abundant evidence that disease causation is often multifactorial and very complex (2). Terms were coined to describe this variability in vulnerability to illness and, conversely, in resilience to illness in the face of a risk factor. ìPenetranceî is the term for conveying the notion that the mere presence of a gene normally associated with the occurrence of a disease does not always cause the disease. ìPleiotropismî indicates the capacity of a gene to simultaneously influence multiple characteristics associated with abnormality (3). Conversely, ìetiologic heterogeneityî describes situations in which a disease appears to be associated with a variety

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of genetic abnormalities (4). The great complexity in the web of disease causation linked to genetic mechanisms holds equally true for diseases for which there is no known genetic predisposition, and being aware of this complexity provides the basis for understanding why diseases and ill health are not distributed randomly in the population.

Figures 1 and 2 illustrate the complex web of causality of illness and risk states and why ill health and its manifestations cluster systematically in populations. Figure 1 represents, albeit in simplified form, the variety of influences on the health of individuals. The ìpathwayî is represented by environmental exposures, material circumstances, personal behaviors and cultural practices, social networks and resources, beliefs and attitudes, and

exposures to various types of health services. Not shown in the diagram is the way in which these act internally on physiologic and neuroendocrine pathways (5). Therefore, the influences in the middle of the diagram show characteristics at the individual level, those just to the left of them represent characteristics of the individual that are aggregated at the community level and thus show ecological influences, and those at the extreme left of the diagram show ecological influences that characterize the context apart from the individuals within it.

Figure 2 is a similar diagram but is more relevant to understanding the level of population health as well as the distribution of health within populations. This diagram places more emphasis on influences that operate at the contextual level, while recognizing

that the pathway ultimately causes changes at the individual level.

The interacting linkages across the categories and types of influences provide the basis for understanding the clustering of ill health. That is, vulnerability to one type of influence results in, or at least is associated with, vulnerability to others. The impact of vulnerability is thus compounded such that certain individuals or population groups are vulnerable to a multiplicity of insults to health. Conversely, resilience in one category of influences predisposes to resilience in others such that less vulnerable individuals and populations are more resilient to a wide variety of effects on health.

Both diagrams reflect the extraordinary complexity of the challenge of understanding the genesis of health inequities. From a policy vantage, the

FIGURE 1. Factors that influence health at the individual level
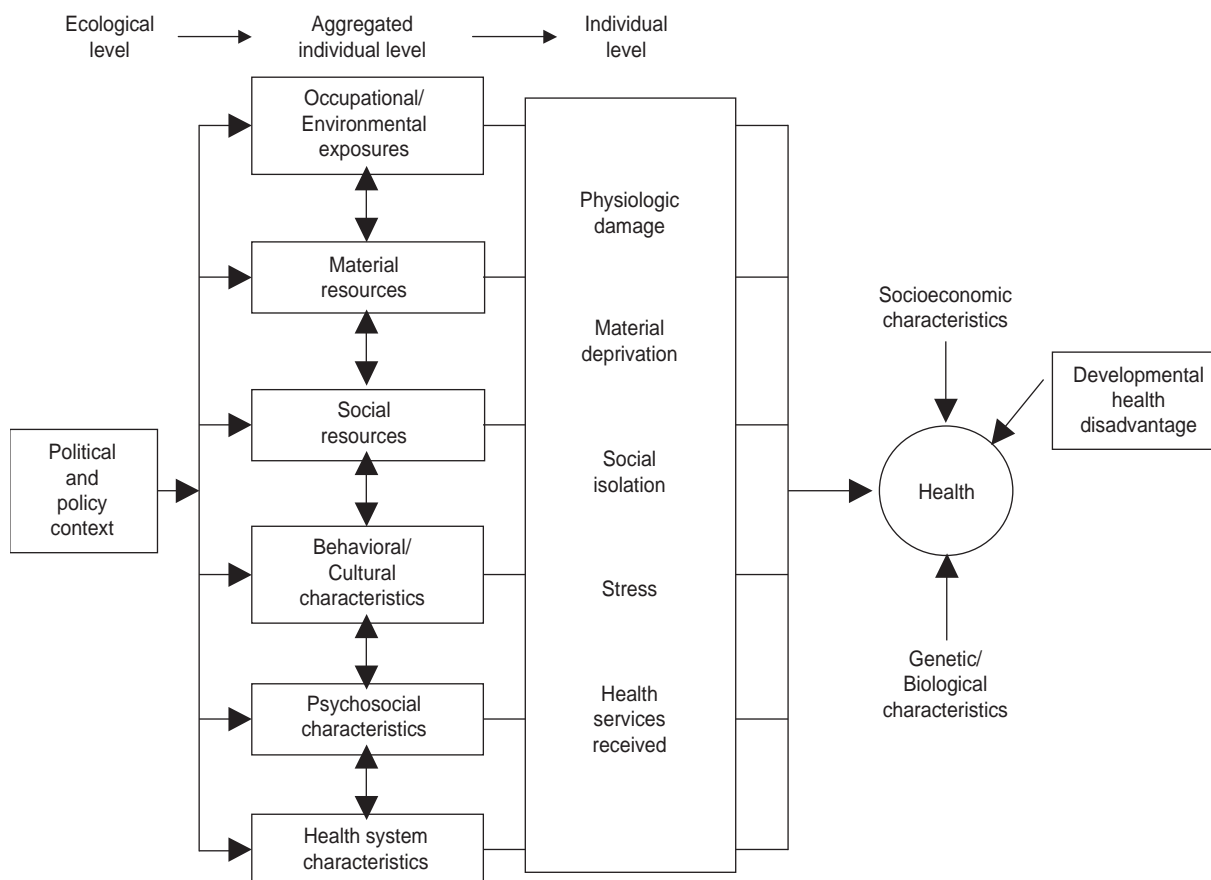
FIGURE 2. Factors that influence health at the population level
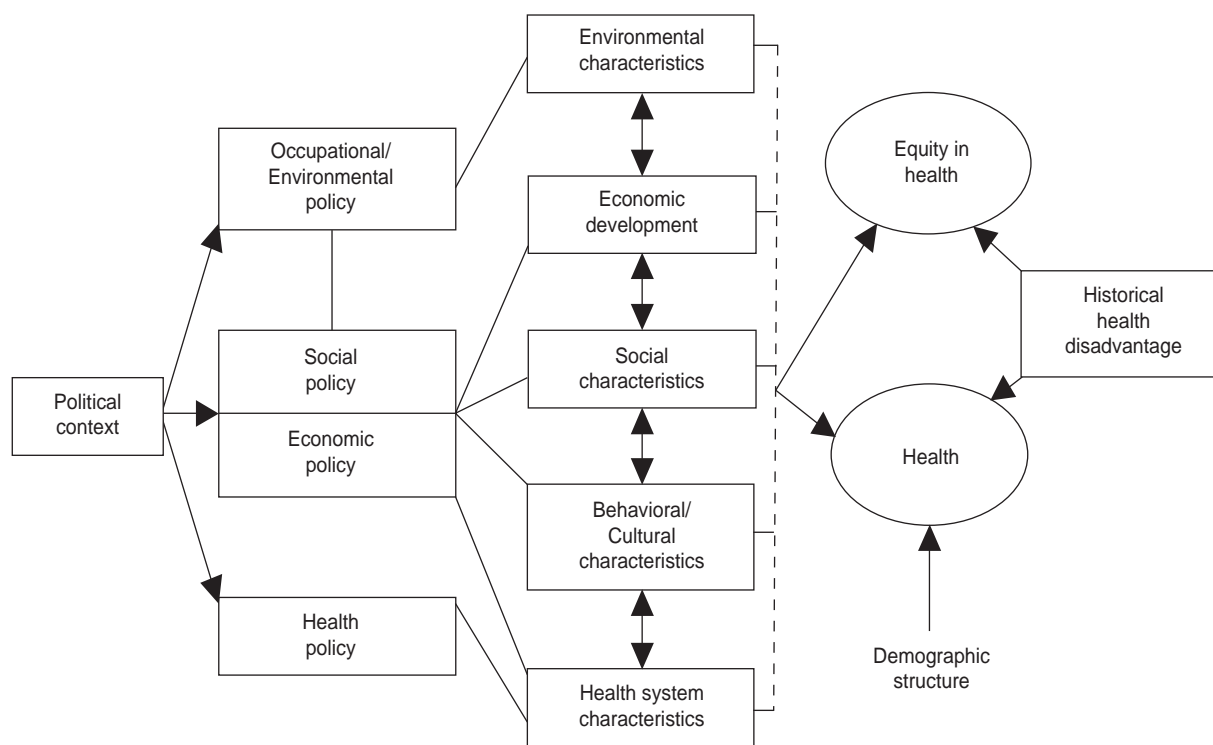
Dashed lines indicate that the ecological characteristics operate through aggregated individuals as well as individual-level characteristics that most proximally influence health.

immediate focus should be on finding the most feasible ìattack point.î That is, while a long-term strategy should be to elucidate and eliminate all causes of health inequities, both distal and proximal, the immediate imperative is to find links in the cross-chains that are remediable through the concerted effort of countries and international organizations. One promising approach is to examine changes in the extent and types of inequity in health that can be linked to policy changes (6). Policy changes can then be implemented on a trial basis and examined for their impact.

Inequity results from systematic and a potentially remediable disadvantage in one or more aspects of health across socially, demographically, or geographically defined populations or population subgroups. Understanding the genesis of inequity requires an appreciation of the dy-

namics of interactions within the web of causality as represented by the two figures. It is very unlikely that this web operates in the same way in all countries, in all regions of a country, in different population groups within a country, in different cohorts of people, or for different measures of health. Studies of these pathways have become increasingly common over the past five years, but the research literature still lacks the common framework that will be necessary to translate this information into effective action for understanding and for change. An agenda that organizes the new information into coherent patterns is essential for making the information useful in any concerted attempt to eliminate inequities in health through policy reforms (7).

The very large variety of characteristics that need to be considered is daunting (8), and this poses an enor-

mous challenge to policy-related research and evaluation efforts. It seems clear that collaborations within and across countries on such investigations are mandatory if there is to be timely applicability of findings around the world. A new organization working in that direction is the International Society for Equity in Health (ISEqH), whose aim is to encourage and catalyze research efforts so that they can be optimally useful in making the case for changes toward attaining equity within and among countries. Those interested in contributing toward this goal are encouraged to become members of the group and to participate in its activities. Information on ISEqH and its conferences and other activities is available from the groupís Web site, at http://www.iseqh.org. An electronic journal has also been launched; information about it can be found at: http://www.equityhealthj.com.

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RESUMEN

Equidad y salud: una perspectiva sobre la distribución no aleatoria de la salud en la población

La distribución no aleatoria de los problemas de salud en una población y entre diferentes poblaciones es un problema ético. Las diferencias sistemáticas en la salud de diferentes poblaciones y subpoblaciones son el resultado de interacciones entre muchos tipos de influencias que act˙an en los ámbitos ecológico, comunitario e individual. La actuación de esta red de influencias potencia las desventajas de salud de algunas poblaciones y subpoblaciones, al mismo tiempo que incrementa la resistencia a las amenazas para la salud en las poblaciones mejor situadas. Para comprender la g énesis de la inequidad es necesario tener en cuenta la dinámica de estas interacciones. Así pues, las investigaciones destinadas a elucidar las causas de la inequidad con el fin de facilitar la modificación de las polÌticas requieren la adopción de marcos conceptuales que dirijan de forma más eficaz y eficiente las investigaciones científicas futuras relacionadas con este imperativo mundial.

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