Index of Health Development: conceptualization and reflections on its need

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Summary

This article aimed to review the concept of social indices by focusing on their practical use and need in the health setting. For this purpose, the initial consideration was how these indices are defined, their possible use, and the importance they have as a means of depicting the real world. Thus, a wide concept of health, consistent with the current view, was adopted. Health was further described within international and national settings, emphasizing indicators that can be employed to estimate health problems in the population were highlighted. Finally, as no specific social index describing health in a Brazilian setting has been developed, the need to rely on the Health Development Index was indicated. This index will serve as a tool for managers, inspection agents, and the general population to follow-up the developments reached and the shortcomings that should be addressed to ensure a better health status for the majority of the population.

Keywords: Index; social development; health.

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Introduction

During the middle of last century, while recovering from losses resulting from World War II, several countries realized the need to delimit conditions of excellence for a harmonious coexistence, respecting rights and defining guidelines for a more socially equitable society. Organizations such as the United Nations (UN) and the World Health Organization (WHO) were strengthened. As a result UN activity, plans of defining parameters to compare and follow the development of nations gained strength. Thus, the human development index (HDI) was proposed, based on three basic dimensions: long and healthy life, education, and standard of living[1].

Those experiences soon defined a new field of interest for statisticians, political scientists, economists, sociologists, and social psychologists, interested in quantifying and/or promoting better life conditions. However, this restlessness was not restricted to the academic scope; several managers of public and private, governmental and non-governmental, national and international organizations realized the value of tools to map population needs and assist in managing and promoting better life conditions for a greater number of people[2,3]. Kayano and Caldas[4] listed at least three main reasons for the world trend towards social indices: (a) the requirement from international organizations funding public policy programs and projects, which needed to rely on some sort of implementation measurement; (2) the need to legitimize by empirical data both governmental policies and complaints filed by civil society about irregularities and distortions; and (3) the demand for the democratization of the information on social realities with the purpose of increasing the dialogue between government and civil society by encouraging the creation of agendas including the participation of civil society in the formulation, monitoring, and evaluation of the actions.

In health care, such an index could promote evidence-based policies and require more accountable providers, and the efficacy of their actions would be permanently monitored[5]. In this case, both the general population searching for health care services and professionals involved in promoting these services would have a reference to evaluate the health care system in their city and/or region. This is not only a matter of evaluating political actions, but of guiding providers to deliver a more appropriate health care system. Considering these issues, this article's objective of gathering the elements necessary to elaborate a health development index is warranted. It is derived from experiences carried out in this area, mainly those of the UN[6].

Development indices: conceptualization

Despite the fact that indices seem to be a self-evident concept, especially because they are frequently shown in the media[2,4], it is useful to approach them in detail. Conceptually, indices comprise numbers describing some aspect of reality or the relationship among several aspects, allowing for a further characterization of reality. They are a quantitative reference, an attempt to express reality through numbers, consisting of a difficult task mainly within the social level, where a common unit of measurement is practically non-existent. In this setting, variables characterizing the population cannot be simply added together[3].

Indices avoid treating or assessing reality through personal factors or impressions, as they are inaccurate and subjective[2,4]. Reality may be appropriately operationalized through indicators, which are specific variables (observable markers) representing a dimension (*construto latente*) that will make up a determined index. Each indicator can be turned into a sub-index expressed as a value from 0 to 1 by applying the formula sub-index = (actual score – minimum value) / (maximum value – minimum value). Minimum and maximal values can be statistically estimated and defined on the basis of experts in the area being evaluated or even empirically defined from data available for each indicator. When these values do not present upper/absolute limits to indicate whether a need is poorly or fully met are not shown, values usually set for convenience are considered, by calculating, for example, their logarithm (log). This procedure is adopted when people's monthly income is considered, since reaching a dignified level of human development does not require an unlimited income.

After computing sub-indices, it is recommended that they should be weighted, i.e., they are assumed to have unique importance ("different weights") to define the end result[4]. These weights are usually defined according to the importance assigned to each sub-index. Once sub-indices weighing has been performed, the calculation of the index itself, also referred as a composite index, is made. This index often corresponds to the arithmetic mean of scores achieved for sub-indices; its function is to synthetize a certain set of aspects of reality into a single number.

Although seemingly simple to calculate, some indices can be more complex, implying the consideration of multiple aspects, including those which are different in nature (e.g., socially, economically, politically different)[5]. Difficulty is often a confounder even among those representing the interests of the very same institutions. For example, by reviewing the World Health Report from 2000, Ugá et al.[7] presented criticism and suggestions for health sub-indices calculation which, despite their heuristic value, were lessened by WHO representatives who did not hesitate to suggest their inadequacy[8]. However, these are secondary issues to be surpassed when attempting to define indices that enjoy consensus among investigators,

providers, and institutions they represent. The very choice of indicators raises questions, as it might depend on political options and views of the reality[9]. The investigator must cope with the dilemma of getting closer to actual phenomena, yet trying to include the lowest number of variables to prevent the index from becoming inviable[2].

It follows that the process of constructing an appropriate and widely accepted index needs to incorporate a few standard characteristics and/or qualities. Essentially, the process needs to be operationalized through indicators meeting important criteria, six of which appear to have reached a consensus status[3,4,9-12].

- *Universality:* indicators should represent most of the potential geopolitical units of interest;
- *Simplicity:* they should be easily understood by lay people.
- *Availability:* they are low cost, easily obtained and can be periodically known.
- *Representativeness*: they appropriately mirror a certain reality and cover its main aspects.
- *Reliability:* data should be of good quality, with the collection being systematic and standardized and/or obtained from reliable sources.
- *Acceptability:* they need to be accepted by national and international public policy management and development organizations.

In addition to the above criteria, Kayano and Caldas[4] stressed that indicators allowing comparability should be selected. This aspect, however, suggests a critical element in selecting indicators: generalization *versus* individualization. The more generalized the indicator, the greater the possibility of comparing it with other realities; conversely, greater individualization ensures the possibility of knowing certain local specificities that are useful for decision-making and intervention. These authors further suggest that indicators should consist of historical series, allowing for the comparison of geopolitical units with each other and with themselves regarding their performance in measurements performed over the years.

These criteria should not limit the investigator at the time of selecting the best indicators to define a certain index. They need, however, to guide that activity. Other equally useful criteria can be considered, but those aforementioned seem to represent satisfactorily the practice guiding the creation of human development and quality of life indices. Regarding the practice, Kayano and Caldas[4] offered valuable recommendations by designing a flowchart to be followed: (1) *Delineation of the framework*. It is necessary to consider the purpose of policies and programs, breaking reality into aspects that are more relevant for the dimension to be evaluated. (2) *Delineation of the evaluation object and objective.* The object is expected to be limited in space (observation unit), time (unit or interval), measurements (one-dimensional, multidimensional, or keeping relationships across dimensions), and the processing and analysis of such measures. (3) *Selection of the variables composing indicators.* Reality is comprised by a set of somewhat disorderly events, usually related to each other. Focusing on the most relevant variables to represent the dimensions to be measured is required. (4) *Determination of the composition of indicators.* Determine which indicators compose each sub-index, how they relate to each other, the weight they have, and how they connect to define the index. (5) *Access or creation of the information system.* In case variables have been previously measured and are available, the investigator should group them to create a database; if this possibility is non-existing or inappropriate, the information needed should be created.

Finally, it should be noted that, whatever the index is, its purpose is to reach a diagnosis of the development status in a determined geopolitical unit. Thus, it is imperative to have a performance standard or classification for all those participating in the universe being evaluated. The Programa de las Naciones Unidas para el Desarrollo[1] suggests classifying countries into three human development groups: low (HDI < 0.500), medium (0.500 < HDI < 0.800), and high (HDI ≥ 0.800) development. Despite being heuristic, this classification is biased, as it does not distinguish performance below the average score (0.500) or show the categories as equal intervals; thus, other intervals can be established[13]. Therefore, the relevance of standardizing the scores in terms of a z curve could be studied by distinguishing six groups according to their distance (s, sigma) from the midpoint (0, zero).

Development indices: applications

Development indices are not only used internationally. Several attempts are being implemented in Brazil to obtain summaries of multiple aspects of reality. For example, Negrão and Garcia[13] presented a housing development index taking into account the physical inadequacy of the residence, the family densification level, and the availability of urban infrastructure services. In Latin America, only three countries had a satisfactory development level (above 0.70): Uruguay, Argentina, and Chile; Brazil was fourth in a total of 17 countries, with an index of 0.68. Among Brazilian states, the best performances in 1998 were observed in São Paulo (0.87), Rio de Janeiro (0.86) and the Federal District (0.84). It is not difficult to realize how valuable this index is; for example, it can be employed to decide where to invest in civil construction, to set rent values, or to indicate which states require more efforts from the government into housing programs.

The tourist development index (TDI), introduced by Castro and Nascimento[11], is another example of the relevance of objective indices. The authors proposed to demonstrate to accountable agencies the course and difficulties that tourism activity is experiencing at a determined site and time. In addition to serving as a guideline for selecting a tourist destination by civil society, this index seeks to quantify inequalities in tourist development in the country, by identifying sites in need of investment and planning. It is based on three main sub-indices: economic development, basic infrastructure and environment.

In health, a few initiatives have taken place. Consistently with the UN strategies, Sliwiany[3] evaluated quality of life and social programs in cities of the state of Paraná. Additionally, Silva Filho and Gomes[2] engaged in understanding the social welfare of people living in towns of the Guaribas River watershed in Piauí. In both studies, the health sub-index appears, contemplating several indicators, such as life expectancy at birth, rate of houses with access to general water supply, rate of houses having a bathroom or toilet, maternal mortality, mortality from communicable diseases, and vaccine coverage for the population of susceptible children; the only common indicator was child mortality rate. Borja and Moraes[10] have also evaluated health by proposing a specific index; however, this index regarded environmental health more directly, by identifying a list with 39 indicators to represent it (e.g., ratio between the volume of collected and treated domestic solid waste; percentage of samples with residual chlorine below the allowed level; cholera, dengue, leptospirosis, schistosomiasis, trachoma, and yellow fever prevalence).

Tanaka et al.[14] engaged in developing an index to quantify women's health in the State of São Paulo. According to these authors, since single indicators (e.g., maternal mortality) fail to raise the awareness of authorities, health managers, health providers and the general population, a composite index would be needed to more appropriately reveal the setting of inequality and iniquity found in women's care during the pregnancy-puerperal cycle. Thus, five indicators were assembled: maternal mortality ratio, early neonatal mortality coefficient, C-section percentage, low birth weight percentage, and coefficient of syphilis incidence.

Finally, in 2000, the WHO[6] first attempted to create a health index. In fact, the WHO aimed to obtain a performance index of health care systems among its members, which compared them with each other and with specific aspects of progress or deterioration within each one. Thus, five main indicators in health systems were considered: achievements regarding health level, distribution of health, responsiveness level, distribution of responsiveness, and economic contribution equity.

In summary, all parties apparently realized the advantages of moving from personal, casuistic, and subjective evaluations to those representing reality through numerical indices. These indices, however, do not fully describe the reality analyzed, and their reading and interpretation need to be followed by a more thorough analysis of the phenomena studied[4]. Brazilian investigators have proposed new indices, but little has been effectively done in health care. This aspect reinforces the need to elaborate an index of health development in Brazil.

Development and health worldwide

The WHO constitution, established in 1946, states among its key principles the definition of health as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity", committing the organization, in Article 1, to the purpose of "attainment by all peoples of the highest possible level of health". The constitution was approved on April 7, 1948, and Brazil was one of the signatory-states. In Article 2, among the functions of the WHO, is "to promote, in co-operation with other specialized agencies where necessary, the improvement of nutrition, housing, sanitation, recreation, economic or working conditions and other aspects of environmental hygiene"[15].

A study introduced by the WHO Secretariat of the Commission on Social Determinants of Health, in March 2005[16], indicates that the goals defined by the organization at its foundation were overshadowed over the following decades by the predominance of vertical programs adopted in public health on the basis of technological progress, notably new antibiotic discoveries and the consequent strengthening of the pharmaceutical industry. Smallpox eradication was the success hallmark of this model, while one of the signs of its failure was the malaria eradication campaign, focused on mass spraying of dichlorodiphenyltrichloroethane (DDT). The need to approach social factors, such as poverty, in determining the harm to the health of populations strongly re-emerged through the Health for All by the Year 2000 program, proposed by Halfdan Mahler at the WHO General Assembly of 1976, and approved at the Alma-Ata Conference in 1978. The care model adopted to enable the program was based on primary health care.

Frustrating Mahler's followers, the 1980's were marked by deep changes in the world economy and by the emergence of neoliberalism, focused on privatization, reduced state size, and market liberalization. Under the aegis of neoliberal thought, actions targeting the improvement of health conditions implemented by the state seemed unachievable in many settings. Primary care was made "selective", prioritizing a few high cost-benefit interventions and assigning less importance to

the social dimension. Indeed, neoliberal political and economic guidelines were characterized by the opening of national economies, which allowed the free movement of international capital – the flagship of globalization, ensuring the supremacy of the capital over national states and, obviously, minimum participation of the State in the economy through reduced state size, little government intervention in the labor market, generous privatization of state-owned companies, and standing against the control of product and service prices by the state, and favoring de-bureaucratization. Economy globalization under neoliberalism deepened unemployment, reduced wages, increased the dependence on international capital and caused extraordinarily increased social differences.

This dramatic situation was acknowledged by the UN in the report "Crisis Figures" on the efforts to reach the Millenium Development Goals[17]. Under the suggestive subtitle "The Faces of Poverty", the UN acknowledged that: (a) over one billion people in the world live on less than one dollar a day; other 2.7 billion struggle to survive on less than two dollars a day; (b) every year, 11 million children die, most of them under the age of 5; and over six million die due to completely avoidable causes, such as malaria, diarrhea, and pneumonia; (c) in some exceedingly poor countries, less than 50% of children are in elementary school and less than 20% go to high school. Some data showing causes and expressions of the poverty affecting over one third of the world population are:

Health: (i) every year, six million children die from malnutrition under the age of 5; (ii) over 50% of Africans have diseases related to water quality, such as cholera and childhood diarrhea; (iii) every day, human immunodeficiency virus (HIV) kills 6,000 people and infects other 8,200 people; (iv) every 30 seconds, an African child dies due to malaria – over a million dead children a year; (v) every year, 300 to 500 million people are infected by malaria, with around three million dying from this disease; (vi) tuberculosis (TB) is the main cause of death related to acquired immunodeficiency syndrome (AIDS) and, in some regions of Africa, 75% of HIV carriers also have TB.

Hunger: (i) over 800 million people go to bed hungry every night; among them, 300 million are children; of these children, 8% are starving or in other emergency condition. Over 90% have extended malnutrition and micronutrient deficits; and (ii) every 3.6 seconds, one person dies from starvation, mostly children under the age of 5.

Water: (i) over 2.6 billion people – over 40% of the world population – need basic sanitation and over one billion are continually using water unfit for consumption; (ii) four out of ten people lack access to a latrine; and (iii) five million people, mostly children, die every year from diseases related to water quality.

As shown by the above data, neoliberal economic models devastatingly impacted social determinants of health. This mainly results from "packages" of structural adjustment of social sector spending in several countries, which has been mostly characterized by severe cuts in education, food programs, water supply, sanitation systems, transportation, housing, and other forms of social protection budgets, in addition to direct spending on health. In fact, the 37 poorest countries in the world were found to have public spending for education reduced by 25% over the 1980s, while those resources assigned to health fell by 50%[16].

In contrast with that foreseen by the managers of the neoliberal order, the expected economic growth that would come at the expense of great human suffering did not occur. In an attempt to revert this picture and promote the development of nations, the UN held the Millenium Summit in 2000 in which 192 members formally committed to achieve eight goals in pursuit of peace, development, human rights, and fundamental freedoms. The Millenium Declaration synthesized the meeting and, with its eight related goals, constitutes a real denunciation against the economic order and neoliberal policy. The Millenium Development Goals (MDGs) were: (1) eradicating extreme poverty and hunger; (2) achieving universal primary education; (3) promoting gender equality and empowering women; (4) reducing child mortality rates; (5) improving maternal health; (6) combating HIV/AIDS, malaria, and other diseases; (7) ensuring environmental sustainability, and (8) developing a global partnership for development[18].

Nobody in their right mind would oppose these goals. However, perhaps because of lack of confidence in the authorities to honor the commitments, many do not believe they will be achieved. That is probably the reason why Kofi Annan, then Secretary-General of the United Nations, submitted his Report to the UN General Assembly in 2005, struggling to explain why the goals were so important. According to the Secretary, first, because the goals are focused on the human being and therefore they must be achieved within deadlines that can be measured; second, they are based on a global alliance, supported by the accountability of developing countries to have their own house in order and by developed countries to support these endeavors; third, they have unprecedented political support, expressed by the higher levels in developed and developing countries, civil society, and the main development organizations; fourth, the goals are achievable[19].

Finally, of note, three out of the eight goals directly regard health. However, it is obvious that the other five goals decisively influence the sanitation conditions of the

population. From poverty and hunger eradication to environment preservation policies, the health impacts are undeniable.

Development and health in Brazil

The Brazilian constitution, proclaimed in 1988, is considered one of the greatest social achievements of recent times. In fact, it resulted from a wide process of popular mobilization ending an over 20-year-long military dictatorship, ensuring individual rights and a new access to public and social policies. Concerning health, the achievements were significant. Article 196, opening the Health Section in the Social Security Chapter, clearly determines the state's responsibility in ensuring, through social and economic policies, the universal and equalitarian access to services and actions aiming to promote, protect, and recover the health of the Brazilian population. Following, the Unified Health System (Sistema Único de Saúde – SUS) was created, establishing its guidelines and that the resources to make it feasible should come from the social security budget from the federation, states, federal district, local governments and a number of other sources[20].

The subsequent regulation occurred in 1990 through the Law 8080, referred as the Health Organic Law. By ensuring the faithful interpretation of the constitutional text, the law defines, in its Article 3, health determinant and constraint factors, listing, among others, food, housing, sanitation, environment, jobs, income, education, transportation, leisure, and access to essential goods and services. In conclusion, it states that the health levels of the population express the social and economic organization of the country[21]. This definition embodies the concept of social determinants of health accepted by the WHO.

Any citizen knowledgeable of these laws can realize that there is a great distance between theory and practice. Almost 20 years after its promulgation, the Constitution is still a distant dream for millions of Brazilians, who are far from that condition Hanna Arendt[22] would define as a life worth living, that is, that simple and tough strife to meet biological needs of the existence, of mere living. Brazil, as well as other developing countries, has been through the bitter hardships of neoliberalism. If, on one hand, the end of the military dictatorship and the achievement of democratic freedoms in the second half of the 1980s raised the hope in the constitution, on the other hand, direct elections in 1990 (after Fernando Collor's rise to power) marked the time the "new liberal order" was implanted in the country.

Buss and Pellegrini Filho[23], quoting Margareth Whitehead, report inequities in health among groups and individuals, that is, "those health inequalities which are not only systematic and relevant, but also avoidable, unfair, and unnecessary", pointing out "they are one of the most striking features characterizing health in Brazil". In this country, the ideal universality of the Unified Health System does not work as it should and even if qualitative and quantitative improvements over time are admitted, they do not match medicinal and scientific progress, economic development, democratic opening, national wealth, and Brazilian working potential.

Education level shows the cruel face of this inequality. Almost one third of the population of the state of Alagoas aged ≥ 15 years is illiterate; one fourth (approximately) of this age group in other Brazilian Northeastern states also lacks literacy. On the other hand, Southern states have the lowest illiteracy rates in Brazil. Similarly, a report from the Health Surveillance Secretary of the Ministry of Health (MS) states that "the average years of schooling for people 25 years of age and older has a discrepancy of 4.3 years of schooling between the federal unit with the highest average and the unit with the lowest average, namely the Federal District and Piauí. This mirrors the huge inequality between Brazilian regions"[24].

Several indicators regard determinants and constraints in the health-illness process. Sanitation, as an example, stresses regional inequalities, with Northern and Northeastern regions leading the list of deficits. It boggles the mind that while DNA codes have been unlocked, 35% of the Northeastern population and 53% of Northern population have no access to a water supply system. 50% of these very same people have no concept of public garbage collection. In 2000, only 36% of Northeastern people and almost the same percentage of Northern people had access to a sanitation system and a septic tank[24].

The infant mortality rate is a measurement often used in public health, as it indicates the incidence of infectious diseases and malnutrition, in addition to qualifying prenatal, birth, and neonatal health care delivery. In 2001, child mortality was 27.4 per thousand live births. This rate's decline compared with 1990 was significant, but it is still high. The same rate was 12 in Chile, 23 in Colombia, 11 in Costa Rica, 9 in Cuba, 15 in Uruguay, 30 in Paraguay, 39 in Peru, 22 in Venezuela, 25 in Panama etc. Compared with developed countries, the difference in rate is notable: 8 in the United States, 6 in Australia, 7 in Canada, 6 in France. In the year of 2001, the child mortality rate in the Northern Region was 28.1; 43 in the Northeast; 18.2 in the Southeast; 16.5 in the South; and 20.9 in the Mid-West. It seems that reduced child mortality is initially achieved from a reduced incidence of infectious diseases and malnutrition, whereas reduced neonatal mortality is achieved from an improvement in prenatal and birth care. Currently, the main causes of child mortality in Brazil are perinatal conditions (53.62%)[24].

According to the Brazilian National Cancer Institute (Instituto Nacional do Câncer - INCA), based on the Estimate of Cancer Incidence in Brazil for 2006, "cervical cancer is the third leading malignant neoplasm among women, surpassed only by (non-melanoma) skin cancer and by breast cancer. It is the fourth leading cause of death from cancer in women. For the year 2006, 19,620 new cases of cervical cancer were expected to occur"[25]. The most relevant strategy to prevent mortality from this condition is early cancer detection through the best known cancer preventive test, the Pap smear. The epidermoid carcinoma is easily detected if found in the intraepithelial form, which greatly favors prevention. The test can be performed in primary care units and therefore requires no sophisticated techniques. Thus, high mortality rates from this neoplasm indicate a serious failure of public health system, regardless of the cause. The rate in Brazil is unacceptably high, second only to breast cancer. In developed countries, cervical cancer incidence is falling and endometrial cancer incidence is rising. In North America, the incidence rate for the former neoplasm is 9.1 per 100,000, whereas it is 30.1 per 100,000 in South America[26].

The Estimate of Cancer Incidence in Brazil for 2006 by the INCA/MS[27], disclosed that prostate cancer, the second leading cause in men, would have affected 47,280 new patients in 2006. PSA measurement combined with the digital rectal examination can detect early prostate cancer in asymptomatic men. However, there is some controversy. First, there seems to be a reasonable number of negative biopsies, which raises cost for the SUS and suffering for the patients (anxiety and morbidities)[28]. In addition, many detected and excised cancers might have a very slow progression, causing no damage to health. The fact that the lifelong incidence of prostate cancer detected by screening far exceeds death likelihood from this neoplasm supports this hypothesis, according to Martins et al.[28].

Breast cancer represents the main cause of death from cancer in women. In 2006, the INCA estimated that 48,930 new cases would occur in Brazil. Survival in patients having this type of cancer achieves a significant reduction if detected early[29]. The most effective forms of detecting early cancer are clinical breast exam and mammography. The most important risk factor for breast cancer is age, as it is rarely seen before the age of 35[30]. The other important factor is genetic predisposition, with other factors related to hormone action on the mammary gland.

The INCA, in its "Technical Parameters" for early breast cancer detection[30], highlights that clinical breast exam in asymptomatic women is indicated yearly from the age of 40. Mammography is indicated for women in the age group 50-69 years at least every two years. The clinical exam and yearly mammography are indicated for women from 35 years of age whose risk to develop breast cancer is high. Breast cancer is defined as early when diagnosed at UICC stages I and II and, thus, it is surgically treated through a breast-conserving procedure, with cure results being high when axillary lymph nodes are not positive for metastasis. The appropriate delivery of diagnostic tests and the number of tests performed in women within the age groups aforementioned are more reliable indicators than mortality regarding the quality of women's health care. The number of breast cancers detected at stages I and II would also indicate the effectiveness of the prevention system.

The incidence of many diseases can be reduced when effective mechanisms, such as vaccines providing high levels of protection, are available. Diphtheria has progressively declined due to the use of DTP vaccine, which has also caused pertussis incidence to fall from 40,000 cases/year in 1980 to less than 2,000 in 1996[24]. In 2002, less than 600 tetanus cases were reported in Brazil. For a long time, medicine has made the elements needed and sufficient to combat several communicable diseases, yet not all of them, available to society. Though not all communicable diseases are expected to be eradicated, smallpox has been eradicated since 1978, polio was considered eradicated in 1994, and measles is nearly eliminated.

Although the advent of AIDS has contributed to a great increase in tuberculosis cases, the latter disease has always been a serious problem in public health. Patients infected with HIV can acquire the disease from both endogenous and exogenous reinfection. These patients (and others undergoing immunosupressive therapy) contribute to increase the number of tuberculosis cases. However, the vast majority of tuberculosis patients in Brazil are not infected with HIV or immunosuppressed due to other causes. Tuberculosis arises from the expansion of poverty and its dire consequences (illiteracy, poor information, malnutrition, overwork, overcrowding in poor life conditions), in addition to neglect, underinvestment, and disorganized control services. Unquestionably, poor countries pay the highest and the worst taxes to the "white plague". Around 85 thousand new tuberculosis cases are reported very year (64 per 100,000 population/year) and mortality is nearly 6,000 cases/year[24]. As incidence has increased in the Southeastern region and reduced in Northern and Northeastern regions, under-notification is suspected in the latter regions, which are clearly poorer and, therefore, prone to exhibit higher numbers of cases.

Certain morbidity measurements, combined with fundamental economic and social indicators, can create an appropriate set of parameters not only to determine the frequency of unacceptably uncontrolled diseases,

but also useful to evaluate the development status of the sites. If appropriately selected, this set of parameters may reflect, in a given economic setting, the degree of government commitment and the effectiveness of health policies. This is what is meant by proposing an index of health development (IHD).

Conclusion

In accordance with all that has been previously described, there are methods to understand, prevent, and control many diseases. A number of these methods have been exemplarily employed in Brazil, while others have been neglected. Differences in social conditions, wide inequality in income distribution, and other unaddressed social determinants may contribute to inequalities in the Brazilian health situation. Therefore, there is no national victory to celebrate in this setting. For example, there is a diagnostic device that uses an electron antiparticle, whose electric charge is the same as that of the electron, but with an opposite sign, with a mass and spin also equal to that of the electron. This device has been used in large medical centers, for example, to decide with higher accuracy whether a single pulmonary nodule is malignant or benign. At the same time, in most Brazilian states, health managers negotiate the lowest price for standard chest X-rays, some of which are shown to be technically poor.

Directly related to the economic and social reality, there is a minimum set of attitudes from governments below which neglect, omission, or serious impediment might be considered. At this point, the need to have an index of health development targeting the definition of health adequacy levels in Brazil appears to be evident, as it would allow for the tracking of improvements and inform against issues deserving more attention from managers. This index, which will consist of indicators that can interpret the Brazilian health reality, will have a function of giving the society a tool to exert control, and demand from rulers those rights that are being withheld.

Finally, the current report conceptualizes what is meant by indices by showing how they have been accepted in several sectors, pointing at their practical use in issues as diverse as housing, tourism, and health. Precisely and in accordance with the WHO, health is understood as a wide concept depicting the diversity of related issues in international and national settings. Thus, several health issues that are singlely recorded (such as illiteracy rate, neonatal mortality rate, cancer incidence, vaccination) have been indicated. However, no specific index on population health development has been elaborated, thus strengthening the suggestion it should be created. Nonetheless, this is an empirical initiative collecting concrete health indicators, which demands a proposition-targeted action.

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