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Sob o prisma da equidade: financiamento federal do Sistema Único de Saúde no estado da Bahia1

Under the prism of equity: federal financing of Unified Health System in Bahia state, Brazil[1]

Sob o prisma da equidade: financiamento federal do Sistema Único de Saúde no estado da Bahia

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Abstract

This article aims to analyze the distribution of federal funding for the municipalities of the state of Bahia, in 2010, from the perspective of equity. The methodology used Brazil's "National Health Care Accounts" model to identify the flow of funds; Municipal Human Development Index (MHDI) as a proxy for health care needs; and health care supply indicators by macro-regions. Federal transfers totaled R$ 2 billion, R$ 146.36 per capita, 20% of these funds being destined to the 219 municipalities with the lowest MHDI indices. The 37 municipalities with the best MHDI indices received 60% of the funds; that is, over R$ 1.23 billion. 30% of the funds (R$ 615.45 million) were found to be destined to 40% of the state population spread through 348 municipalities, and over R$ 1 billion was also transferred to 40% of a population distributed through only 17 municipalities. The most populous region in the nine macro-regions, which also had the highest installed capacity, received 32.81% of the funds alone. The macro-region with the highest number of health care teams per inhabitant had the second best MHDI. A great concentration of funds was found to be destined to few municipalities with large populations and the highest MHDI indices, but smaller regions with higher health care needs received a low volume of funds.

Keywords: Health care equity; Health care funds; Health economics.

Resumo

O objetivo deste artigo é analisar a distribuição dos recursos financeiros federais para os municípios do estado da Bahia, em 2010, na perspectiva da equidade. A metodologia utilizou o modelo "Contas Nacionais de Saúde" para identificação do fluxo de recursos; o Índice de Desenvolvimento Humano Municipal (IDHM) como *proxy* das necessidades de saúde; e indicadores de oferta de serviços de saúde por macrorregião. As transferências federais totalizaram R$ 2 bilhões, R$ 146,36 *per capita*, sendo 20% dos recursos destinados aos 219 municípios com menor IDHM. Os 37 municípios com melhor IDHM detiveram 60% dos recursos, ou seja, mais de R$ 1,23 bilhões. Evidenciou-se que 30% dos recursos (R$ 615,45 milhões) foram destinados a 40% da população do estado, espalhada por 348 municípios, e mais de R$ 1 bilhão foi transferido também para 40% da população, mas que se distribuía por apenas 17 municípios. A mais populosa das nove macrorregiões e de maior capacidade instalada recebeu, sozinha, 32,81% dos recursos. A macrorregião com mais equipes de saúde por habitante tinha o segundo melhor IDHM. Verificou-se grande concentração de recursos destinada a poucos municípios de grande porte populacional e com os mais altos IDHM, e fraco aporte para regiões com maiores necessidades de saúde.

Palavras-chave: Equidade em saúde; Recursos financeiros em saúde; Economia da saúde.

Introduction

The final report from Brazil's 8th National Health Conference was summarized in three topics: health as a right; redesigning of Brazil's National Health Care System; and funding of the sector. The eighth proposition of the latter stated that the fair distribution of financial resources should take in to account, besides population sizes and collected taxes, each region's life and health conditions (Brasil, 1986).

Almost 30 years later, funding is still a significant obstacle for fully reaching the principles and guidelines of the Brazilian Unified Health System (SUS). It is important to point out that the health care funding challenge encompasses the need for increased financial resources, taking into account the construction of an universal, comprehensive, and egalitarian public system, but also the improvement of health care expenses, certainly. Based on the premise that these resources are limited, rationalizing their use based on the needs of populations can undoubtedly represent gains in efficiency and mainly in equity in the allocation of resources for SUS (Brasil, 2007).

Without settling the controversy regarding the financial resources needed for funding public health care in Brazil, complementary Law no. 141 (LC 141), from January 20, 2015, was approved. It regulates paragraph 3 of article 198 in Brazil's Federal Constitution of 1988, and consequently Constitutional Amendment no. 29 (EC 29), from September 13, 2000 (Brasil, 2012). If, on one hand, the states and municipalities obligation to respectively destine 12% and 15% of its revenue to the health care sector was ratified; on the other, the original proposal known as PEC no. 196 was not approved - Brazil's federal government was supposed to apply 10% of its current gross revenue. That is, they maintained the regulation that was already adopted in the application of the value from the previous year plus the nominal gross domestic product variation to the federal government.

It should be highlighted that the decentralized management process for states and municipalities represented a signification advancement for public

health care policies. Considering that the relative share of the federal government in the expenditures with health care gradually diminished after EC 29 was enacted, unlike the states and municipalities, which increased the availability of its revenue, this measure is recognized to have fostered the expansion in health care services, even though equity was of little importance in the fund-allocation policy (Ugá et al., 2003; Brasil, 2011).

There is a consensus in the sense that universal systems must focus on equity as a guiding principle for achieving a population's best health care state. However, the term "equity" was not explicitly mentioned in Brazil's 1988 constitution, which extends health care as a right for all and as a government duty through universal and egalitarian access to initiatives and services in the health care system; it was not mentioned in the organic health care laws (Campos, 2006). Despite this, equity has been incorporated and interpreted both in the official statement and by social players as one important principle of SUS.

All in all, principles such as equality and equity are essential in their differences for the development of the health care system. The equality principle is based on the definition of civic rights, through which all individuals are equal, and therefore, have the same rights. Equity, in turn, recovers ethics and justice in distribution values and rules and recognizes that, due to the differences between individuals, different individuals should be treated differently to make up for existing inequalities. That is, unequal treatment is fair when it is provided to whom needs it most (Vianna et al., 2001).

In a broad sense, equity is defined as the absence of systemic and decreasable differences in health care and its determinants among groups of different genders, social classes, races, and ethnicities. Such definition expresses the central idea that the existing inequalities in society are not naturally determined, but rather synthesized by a historical process, as well as by the social organization and production model (Braveman; Gruskin, 2003; Nunes, 2004).

Thus, term "iniquity" has moral and ethical dimensions, and it represents a situation that is seen as unfair in the social context. The health care differences established due to biological determi-

nants and improper volunteer individual behaviors towards health care are considered inevitable. In turn, the differences caused by the social inability to change a lifestyle that is viewed as harmful, the exposure to poor working conditions, and the lack of access to public health care services would be weighted as avoidable and unfair; hence, health care iniquities (Whitehead, 2000).

Regarding the distribution of public funds, equality and equity are seen as tow of the most important principles in the just paradigms. Distribution provisions based on the equality principle channel strategies for universalizing social policies, whereas decisions based on equity commonly imply focusing these policies. The application of these principles directly influences the structure of inequalities in a society, the expenditures from social policies and their implementation and control process. The way through which such application is conducted may increase or minimize the existing structure. This discussion is extremely opportune in Brazil, where resources are scarce and social inequalities lead the majority of the population to depend on services provided by the state, which makes the results from this allocation to have direct and significant impacts on the lives of users, mainly those who are the most underprivileged (Medeiros, 1999).

The concept of necessity is polysemic; however, it carries in itself an idea of restriction of freedom of chose or even dependency (Coelho; Scatena, 2014). Health care needs, in a broader sense, do not only regard to health care aspects (diseases, suffering, conditions), but they also encompass needs or vulnerabilities that express what is required for people to be healthy. They also involve essential conditions for enjoying life that are determined by social and historical contexts (Hino et al., 2009).

In the health care sector, equity may be both related to accessibility and funding issues. The inequalities in the access to services and in the quality of health care have been show to persist and affect poorer populations more strongly (Nunes et al., 2014). The evidence of this correlation and the failure to meet its Millennium Development Goals led the United Nations Economic and Social Council to propose structural changes focusing on the distribution

equity to be reached through plans emphasizing the reduction of inequalities (Buss et al., 2014).

It is important to point out that a transference of funds does not necessarily denote fair distribution, once equity in the distribution of financial resources is the one that favors municipalities and/or regions that are unprivileged in health and socioeconomic terms. Thus, allocating resources to fund health care initiatives and services should be primarily based on the needs of populations and include indicators that are capable of reflecting these needs and measuring inequalities in different geographical regions (Ugá; Porto; Piola, 2012).

Striving for equity in the geographical distribution of resources caused several countries to adopt methodologies to guide the allocation of resources considering the populations' health care needs. England was the first to adopt RAWP formula (resource allocation working party) in the 1970s. This formula used mortality rates as standardized by gender and age as a proxy for health care needs. The main criticism to this model related to the fact that it only used one indicator to represent needs, without observing the supply effect. A further advancement changed the proposal by incorporating usage data in the services for estimating the health care demand (Nunes, 2004; Coelho; Scatena, 2014; Porto et al., 2003). Brazil's attempt to use this model was not shown to be applicable to SUS reality, and this generated inconsistent results (Porto et al., 2007).

Although the discussion regarding the adoption of distributive mechanisms is gaining momentum, the increase in the total health care expenditures that was reached through the increased participation of states and municipalities in the funding of health care services (Vazquez, 2011). Nonetheless, the Brazilian fund allocation status still favors municipalities and regions with the highest installed capacity rates, rather than the ones that need the services the most, which accentuates the existing discrepancies (Mendes; Leite; Marques, 2011).

In this context, equity in funding is seen as an image-goal that is especially related to the proper and fair distribution of financial resources. Thus, having financial resources is a required, albeit insufficient condition for health care initiatives and services to be available to whom needs them the most, as it is essential to ensure that expenditures be made wisely, resources are distributed fairly, and waste is avoided. To deal with this equation, health care managers and planners must pay attention to the implications and responsibilities that originate from the distributive processes in progress (Coelho; Scatena, 2014; Sen, 2011).

Given the importance of producing further knowledge on the financial flow that is destined to health care, this article aimed to analyze the distribution of federal funds for the municipalities in Bahia state, in 2010, from the perspective of equity, in 2010.

Methodology

The study scope comprised the whole Bahia state as divided in sectors through *Plano Diretor de Regionalização* (PDR - Regionalization Master Plan), an instrument that details the organization of health care and organizes the health care regionalization process to reduce the existing discrepancies among municipalities and to promote increased access from the population to all health care levels (Brasil, 2006a). According to the last PDR update made official by CIB Resolution no. 164, from May 28, 2013 (Brazil, 2013), 417 municipalities in 28 health care regions are part of Bahia, as well as nine macro-regions: North, West, Central-North, Central-East, Northeast, East, Southeast, South, and Far South.

The study used online data from the Brazilian Information System on Public Health Budgets (SIOPS), for the data regarding the transferences of federal resources to municipalities; from the Brazilian Institute of Geography and Statistics' (IBGE) population-based information; and from the United Nations Development Program's (UNDP) Atlas of Human Development, which was used to obtain the Municipal Human Development Index (MHDI). It is important to highlight that using secondary data economically enables health care studies, values information systems, providing subsidies for their enhancement, and fosters their use in decision-making, as long as their limitations are known.

SIOPS is an instrument for SUS' social planning, management, and control that gathers information

submitted by municipalities, states, and by the federal government on the funding of health care initiatives and services (Brasil, 2011). According to the provisions of LC 141/2012 (Brasil, 2012), submitting and updating data on SIOPS is mandatory to states, to enable inspecting and evaluating the funding of health care in Brazil.

The data were collected between August 2013 and September 2014, a period in which all 417 municipalities in Bahia had provided their data on federal fund transfers to SIOPS, regarding 2010, when the state had a population of 14,016,906 inhabitants. The year of 2010, however, is justified from the perspective of comprehensiveness of all databases involved.

The process for measuring the differentials in the allocation of federal funds destined to health care secretariats in the municipalities in Bahia state was conducted at two times: compiling of tables for assessing the total federal fund transfers to the macro-regions and, in a disaggregated way, to the municipalities; and analysis of transfers in regards to the equity dimension.

The model that guided the compiling of tables was the one from Brazil's National Health Accounts (CNS) - which aims to serve as an instrument to support budget management from the planning to the execution states, and it should contribute to the achievement of the national health care policies, as it allows following the flow of financial resources from their origins to their destinations. This study used the first in the four basic tables of the model: funding sources versus funding agents. The sources represent the entities responsible for providing funds to the health care sector, whereas the agents are considered as the intermediate receivers as they receive and use these resources for paying for products and services (WHO, 2003).

Public revenues are described by the Brazilian government as "all non-refundable inflows of funds received by any government levels for allocating and paying for public expenditures (Brasil, 2004, p. 14). In the budget perspective, revenues go through some stages (estimation, posting, raising, collection). When a transaction has already been executed, revenue is considered as "carried out". The advantage in using the values corresponding to the carried out expenditures is that their destinations are informed when they are of the "tied" type; that is, they meet the specification in the legislation in force, with most of federal health care transferences being of this type (Brasil, 2004).

The transfers from the federal entity constitute themselves as revenue for municipalities to fund and supply health care initiatives and services (Teles; Coelho, 2011). Thus, all revenues whose purpose was directly related to health care that were carried out in the studied year and properly informed by the municipalities to SIOPS were considered to be federal transfers

To standardize the concepts used, the CNS model adopts the basic principles from Organization for Economic Cooperation and Development's (OECD) System of Health Accounts (SHA) contained in SHA's Classification Manual, the International Classification for Health Accounts (ICHA) (WHO, 2003). As SHA is more useful for health care systems with a single funding source, CNS disaggregates all categories to make them more flexible and adequate to the complexity of countries such as Brazil, having been adapted to our information systems (Rosa; Coelho, 2011).

The tables were compiled in different steps that comprised the construction of operational instruments, in which the financial values and the collection per se were accommodated. However, these moments could not be consecutive and linear, as they feed into each other in a way that, at the end of the construction-feeding, we could obtain all funding sources (origin) used by all municipalities grouped into macro-regions (horizontal axis) and all funding agents or managers (vertical axis), in a single table.

to analyze the decentralization of federal resources to the health care macro-regions, the following indicators were used: (a) federal health care transfers (FHCT) - total of financial resources transferred to municipalities between 01/01 and 12/31/2010; (b) federal health care transfers per capita (FHCT per capita) - total federal transfers in the year divided by the population in the same year; (c) state FHCT per capita average (FHCT-AV *per capita*); (d) ratio between FHCT per capita and FHCT-AV per capita – FHCT PER CAPITA/FHCT-AV

per capita x 100. Besides that, we calculated the MHDI averages per macro-regions and observed aspects regarding the installed capacity through the following health care supply indicators: total beds and SUS beds per inhabitant; % of SUS beds; medium-complexity procedures (MC); high-complexity procedures (HC); number of health care teams; health care teams/10,000 inhabitants.

A factor that makes analysis through MHDI difficult is installed capacity (supply of services) that influences demand and funding, especially from medium and high-complexity (MHC), once Basic Health Care (BHC) funding has re-distributive mechanisms that use a population-based criterion. Thus, low MHDI may result from increased lack of health care services, among other aspects. Among the factors that contribute to increasing life expectancy (one of the components of MHDI) is the increase in the supply of health care services, which generates a higher allocative need of resources (Pelegrini; Castro; Drachler, 2005; Barreto; Carmo, 2007).

The analysis of the distribution of federal resources for all of Bahia's municipalities, from the perspective of equity, resorted to Lorenz curve, a graphic representation of accumulated frequencies that compares the distribution obtained through a certain variable, which is supposedly a perfectly egalitarian distribution, which is represented by a 45° slope (Hoffmann, 2002). The farther away the accumulated relative frequency curve is formed from this line, the higher will inequality be, or, depending on the variable used, the broader will an iniquity be (Schneider et al., 2002; Matos, 2005).

In regards to the health care needs, a measure that intends to represent them constitutes an important challenge for the fair distribution of resources. However, this is an issue for which no consensus exists, nor there is a universal formula on the ideal set of variables to be used in the most distinct realities of populations. Given the difficulty in accurately measuring populational health care needs, a series of experiences have been using socioeconomic, epidemiological, and demographic variables that indicate scientific evidence of positive associations with health care needs, which imply serious problems regarding both the availability and the reliability of the indicators for these dimensions (Ugá; Porto; Piola, 2012; Vazquez, 2011).

Thus, we chose to use MHDI as a measure for health care needs and as an indicator of social and health care inequalities, as it is of easy access and reflects the socioeconomic reality of the studied entities. The municipalities were arranged in an ascending order according to their populations and MHDI indices. The ordinate axis represented the accumulated share of federal transfers to municipalities in Bahia and the axis of abscissas showed the accumulated shares of population and MHDI. Lorenz curve was divided in ten parts, in ascending order of concentrations (Medeiros, 2006).

MHDI is a comprehensive indicator that is obtained through a methodological adjustment of global Human Development Index (HDI) for adapting it to the context of the Brazilian municipalities and the indicators disclosed by the country's demographic censuses. It comprises three human development dimensions: education level, income level, and life expectancy-based income level, which reflects health conditions and public health services. The index ranges from 0 to 1. The closest the index is to 1, the higher the HDI of a municipality is - from 0 to 0,499 it is considered very low; from 0,500 to 0,599, low; from 0,600 to 0,699, medium; from 0,700 to 0,799, high; and from 0,800 to 1, very high (not found in Bahia) (PNUD , 2013).

Results and discussion

Despite the advancements in the decentralization of resources allocated in the health care sector, the participation of the federal government in the funding of SUS remains an important inducer of policies towards the development of health care initiatives. The transference of federal financial resources to municipalities has been taking place mainly through regular and automatic transfers, directly from Brazil's National Health Care Fund to state and municipal health care funds, to both enable an approximation in the funding of sub-national levels and extend their health care expenditures. However, the normative ability of the federal government was established on infra-national levels and exercised

increasing regulating powers through health care policies (Coelho; Scatena, 2014; Brasil, 2003).

In 2010, according to reports from SIOPS, the federal transfers to Bahia state totaled R$ 2,051,521,189.26, which corresponds to a per capita value of R$ 146.36. Out of this total, 44.13% of the resources were transferred to BHC, 49.04% of which to MHC and 6.83% to other funding blocks.

The per capita value reflects the fair distribution contained in the population-based federal transfer mechanisms. However, at the same time, it ignores the different health care needs among municipalities and health care regions, by concealing the inequalities in the distribution of financial resources.

It is important to point out that this distribution is only based on the municipalities' statements regarding the federal transfers received, but it disregards the transactions conducted by Bahia state Health Care Secretariat, which are virtually never transferred to these administrations (although these funds can be applied in these municipalities' health sector), as they mainly fund MHC initiatives conducted by their own health care units, irregularly distributing funds through the state, with higher concentrations in the state capital.

Table 1 shows the distribution of FHCTs as reported by the municipalities aggregated in macro-regions of Bahia, as it reveals a seriously unbalanced situation, mainly as compared to FHCT-AV per capita in the state. The East macro-region received, in 2010, approximately R$ 673.02 million, which accounted for 32.81% of all FHCTs in the state. By adding to this value the one that was transferred to Central-East and Southwest macro-regions, we have a total of R$ 1.23 billion, which implies that only three macro-regions received 60.17% of the total federal transfers, with the remaining ones sharing the 40% left.

Table 1 – Federal health care transfers (FHCT) reported by the municipalities in Bahia state, by macro-regions, in 2010

Macro-region	FHCT (R$)	%	FHCT per capita (R$)	FHCT per capita / FHCT–AV per capita
East	673.021.875,48	32,81	154,58	105,62
Central-East	292.373.781,51	14,25	139,33	95,20
Southeast	269.041.747,16	13,11	157,84	107,84
South	195.836.929,62	9,55	120,76	82,51
North	158.902.126,39	7,75	156,28	106,77
West	128.579.258,74	6,27	146,64	100,19
Northeast	86.000.016,99	4,19	105,75	72,25
Central-North	115.841.391,34	5,65	150,20	102,62
Far South	131.924.062,03	6,43	173,54	118,57
Bahia	**2.051.521.189,26**	**100,00**	**146,36**	**100,00**

Source: Brazilian Information System on Public Health Budgets (SIOPS); Brazilian Institute of Geography and Statistics (IBGE)

The Northeast macro-region was observed to be the one that least received federal transfers both in absolute terms (approximately R$ 86 million) and in the per capita distribution (72.25% of the state per capita average). In other words, the geographical reality of the situation in Brazil's Northeast region is presented here twice in terms of inequality. Grouping municipalities in macro-regions is observed to be biased in itself, as it aggregates smaller municipalities around other large ones which house health care regions and are provided services in a compatible way, which relativizes (but does not eliminate) the differences in installed capacity among the macro-regions and conceals the transference biases. This information becomes important, as it shows significant differences in the distribution of resources, even

though regionalization is meant to cater to the decentralization strategy of health care management, which aims to provide universal and comprehensive access and equity in initiatives by SUS.

It is important to point out that the analysis of the distribution of resources per capita minimizes the interference of the size of the populations in the municipalities that are comprised in the health care macro-regions, once some transfers (such as in the case of the Fixed Basic Health Care Floor), in which funds are transferred according to inhabitant numbers. However, the values are nonetheless found to keep oscillating considerably. Per capita transfers ranged between R$ 105.75 - in the Northeast macro-region, which is 27.75% below the per capita state value - and R$ 173.54 - in the Far South, which represents 118.57% of the per capita state value. Furthermore, the data presented point out that the FHCT per capita for most macro-regions (East, Southeast, North, West, Central-North, and Far South) were superior to the state average of R$ 146.36.

The increase in transferences that was caused by the technological incorporation in MHC, besides keeping the health care model unchanged, penalizes poor regions with serious health care needs (Nunes, 2004; Nunes et al., 2014; Porto et al., 2003; Vazquez, 2011). The criterion for allocation of resources that was adopted in Brazil does not take into account the uneven needs for health care services by the populations, as it does not include variables that determine these needs in the definition of transferences (Ugá; Porto; Piola, 2012).

Thus, to better observe the iniquities/inequalities found in the distribution of federal transfers, it is necessary to explore a bit the probable effects from the installed capacity in the macro-regions. Table 2 shows data on the supply of health care services that aim to contextualize and minimize possible distortions of this variable in the interpretation of results.

Naturally, the number of beds per inhabitant is capable of providing a general framework of the installed capacity in terms of health care services in a municipality or region. The East macro-region, which houses the state capital, is known to have the highest installed capacity and the highest number of beds per inhabitant, followed by the South macro-region. Due to that, the number of procedures conducted in MHC was very significant in that region.

The Northeast and North macro-regions stood out, with the highest number of beds. However, when we observe the share of SUS beds, the situation is considerably altered, as 94% of the beds in these macro-regions were provided by SUS, whereas in the East macro-region they have not exceeded 70%.

Table 2 — Population, average MHDI, and health care supply indicators in Bahia, per macro-region, in 2010

Macro-region	Population	Average MHDI	Beds/ inhab.	SUS beds/ inhab.	% SUS beds	Proced. MC/inhab.	Proced. HC/inhab.	Health Care Teams	Teams/10,000 inhab.
East	4.353.829	0,631	2,70	1,90	70	7,60	3,80	633	1,45
Central-East	2.098.402	0,589	2,00	1,80	90	3,20	0,30	583	2,78
Southeast	1.704.534	0,587	2,20	1,90	83	3,00	0,10	484	2,84
South	1.621.761	0,587	2,60	2,30	88	4,60	0,00	471	2,90
North	1.016.807	0,589	1,60	1,50	94	3,30	0,10	266	2,62
West	876.843	0,600	1,90	1,70	89	3,60	0,00	213	2,43
Northeast	813.271	0,572	1,40	1,30	93	3,10	0,00	228	2,80
Central-North	771.253	0,584	2,40	2,20	92	2,70	0,00	225	2,92
Far South	760.206	0,622	2,00	1,70	85	3,80	0,20	255	3,35
Bahia	**14.016.906**	**0,596**	**2,09**	**1,81**	**87**	**3,90**	**0,50**	**3358**	**2,40**

Source: Bahia State Health Care Secretariat (BAHIA, 2012); Brazilian Institute of Geography and Statistics (IBGE); United Nations Development Program (UNDP)

It is also important to notice that, in complete macro-regions (Northeast, South, West, and Central-North), no CA procedures have been conducted. In other words, not always is the regionalization-based organizational arrangement of the municipalities enough to effectively ensure access to all complexity levels.

We found that, in the Far South macro-region, 85% of the beds were provided by SUS, and that a small number of CA procedures were conducted. This is the macro-region with the smallest number of municipalities and with the smallest population, as compared to others. Nevertheless, what calls our attention is the fact that this macro-region has the highest number of health care teams per 10,000 inhabitants, which is over twice the number in the East macro-region. This region also has the second highest MHDI index, which implies that, although other factors are involved, a strong BHC may reflect in MHDI. This situation also warns us of the importance in **how** resources are spent, rather than only **how much** is received.

Macro-regions East, West, and Far South have the highest MHDI averages. In the East macro-region, 73% of the municipalities are in the range above 0.600 - classified as medium or high MHDI. It is worth mentioning that half of the municipalities with high MHDI indices in the state belong to this macro-region. On the other hand, in the Northeast macro-region, which contains the municipalities with the worst MHDI indices, around 82% of them were rated as having low or very low MHDI indices. Hence, this macro-region had the worst average (0.572).

The size of populations was shown to be significant in the analysis of relationship between the accumulated percentage of health care resources and the accumulated population percentage, with the municipalities grouped in ascending population order (Chart 1). Lorenz curve was found to be somehow concave regarding the 45° slope, which illustrates uneven distribution of resources. Although the arc of the curve is not very marked, this inequality favored the set of municipalities with the highest number of inhabitants, as 30% of the funds (approximately R$ 615.45 million) were be destined to 40% of the state population, which spread through 348 municipalities out of a total of 417, whereas 50% - which corresponds to over R$ 1 billion - were transferred to 40% of a population concentrated in only 17 municipalities.

Chart 1 – Distribution of federal resources through the municipalities in Bahia state by ascending order of population, in 2010
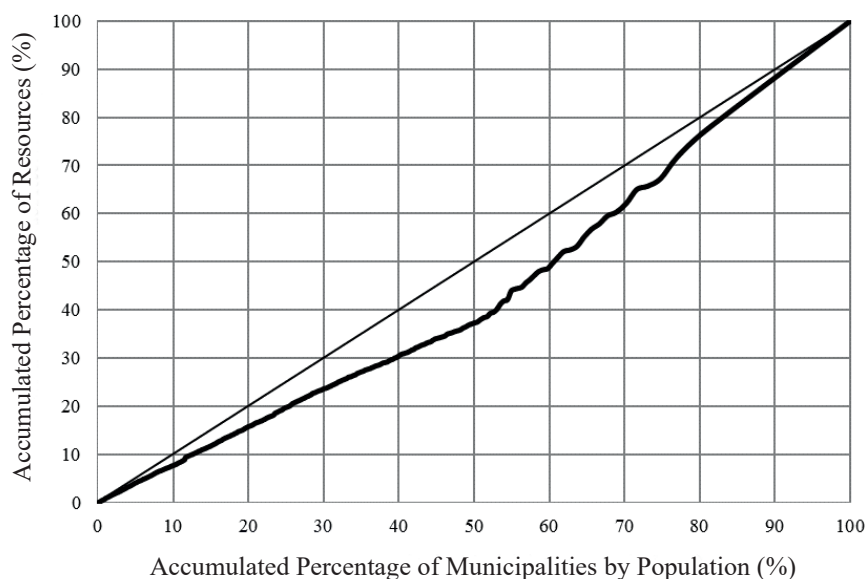
Source: Brazilian Information System on Public Health Budgets (SIOPS); Brazilian Institute of Geography and Statistics (IBGE)

From the perspective of equity, the distribution of resources to SUS requires more than a policy for allocation of funds that is only based on an egalitarian value per capita. Population-based adjustments must indeed be conducted. However, the inequalities between health care needs and the supply of services in the macro-regions, health care regions, and municipalities must be considered above all else (Buss et al., 2014; Porto et al., 2003).

The distribution of federal health care funds for the municipalities in Bahia was found to be clearly proportional to the MHDI indices: the lower a municipality's MHDI index is, the smaller is the transference of funds. As show in Table 3, most municipalities in Bahia (62.83%) had low MHDI indices. The federal transfers to this set of municipalities, which has 32.61% of the population in the state (4,570,803 inhab.), accounted for 23.22% (R$ 476.32 million) of the total, which resulted in a per capita transference of R$ 104.21.

Table 3 – Distribution of federal resources in Bahia state according to the number of municipalities, MHDI, population, and per capita, in 2010

	Municipal Human Development Index (MHDI)							
	Very low	%	Low	%	Medium	%	High	%
No. of municipalities	01	0,24	262	62,83	146	35,01	08	1,92
Federal transfers (in million R$)	2,30	0,11	476,32	23,22	890,74	43,42	682,17	33,25
Population (inhab.)	32.261	0,23	4.570.803	32,61	5.507.535	39,29	3.906.307	27,87
Per capita transferences (R$)	71,19	-	104,21	-	161,73	-	174,63	-

Source: Brazilian Information System on Public Health Budgets (SIOPS); United Nations Development Program (UNDP); Brazilian Institute of Geography and Statistics (IBGE)

We noted the existence of 146 municipalities (35.01%) with MHDI indices classified as medium (39.29% of the population), which received 43.42% (R$ 890.74 million) of the federal transfers, which corresponds to R$ 161.00 per capita. Only one municipality in the state had its MHDI index considered to be very low. This municipality was destined R$ 2.30 million (0.11%), or R$ 71.19 per inhabitant. On the other hand, only eight municipalities had high MHDI indices - they were destined 33.25% of the resources (R$ 682.17 million), which resulted in the average of R$ 174.63 for each of the 3,906,307 inhabitants.

Generally speaking, the federal transfers to SUS are concluded to follow the hierarchy of MHDI. The municipalities with high MHDI indices, albeit being numerically restricted, received a very considerable volume of funds and the highest per capita transference, whereas the municipalities with the lowest MHDI rates received less resources in proportion, even though they represent the majority, with the

exception of the very low MHDI classification, of which only one municipality was part.

The same Lorenz curve (Chart 2) graphically registers the strong concentration degree, when the distribution of federal resources as per ascending order of MHDI indices is considered. The curve was found to be very far from the 45° slope that represents the maximum distribution equality. Only 20% of the resources, around R$ 410.30 million, were transferred to the fifth decile, in which the 219 municipalities with the lowest human development indices are found. On the other hand, the last decile, which comprises the 37 municipalities with the best MHDI indices, received approximately 60% of the funds; that is, over R$ 1.23 billion. To have a more comprehensive idea of the degree of bias and iniquities, only around 0.40% of the resources - little over R$ 8.20 million - were destined to the first decile, which comprises the 46 municipalities with the worst MHDI indices in Bahia state.

Chart 2 – Distribution of federal resources through the municipalities in Bahia state by ascending order of MHDI indices, in 2010
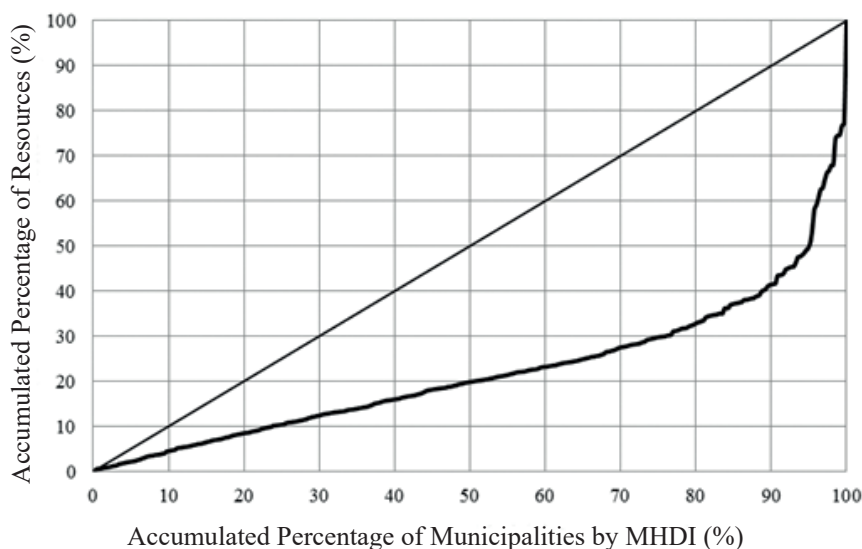
Pelegrini, Castro, and Drachler (2005) found different upon analyzing the distribution of resources as proposed by Rio Grande do Sul state's Solidary Health Care Municipalization (*Municipalização Solidária da Saúde*) policy in 2001. Unlike the findings in this study, these authors found a decentralization of resources that favored both the municipalities with the smallest populations and the ones with the lowest development indices. They even estimated that up to 50% of the transferences are destined to 34% of the population that lived in the municipalities with the lowest MHDI indices.

In turn, the Brazilian Council of Health Care Officers (*Conselho Nacional de Secretários de Saúde*) (Brazil, 2006b), while studying the relationship between the HDI indices of federation states and the per capita transferences by the Ministry of Health, found that a distribution of resources that is close to the equality may imply iniquity. Rio Grande do Norte, for example, received R$ 125.91 per capita in 2005, and São Paulo, R$ 126.43. However, while the HDI index of the former was 0,705, the latter had one of the best HDI indices in the country - 0,820.

Regardless of how this is observed, the best services are found in the regions with the best MHDI indices; in contrast, the regions which need the services the most, as they go through worse health conditions, are nonetheless the ones which are covered the least (Coelho; Scatena, 2014).

Final remarks

Equity must be the guiding principle of health care policies, so it can promote the improvement of health care conditions and reduce inequalities in the ability from several locations to respond to the health care needs of their populations.

The findings in this study show that the distribution of federal resources for the municipalities in Bahia state was not egalitarian in 2010. On the contrary, a great concentration of resources was found to be destined to a few large-sized municipalities, which offered, in turn, the majority of the health care services, especially in their hospital networks. These findings indicate the insufficiency of distributive mechanisms in force in the health care funding policy, to reduce regional inequalities in a satisfactory way, even if those are within the same state.

If we considered the distribution of federal resources to Bahia State Health Care Secretariat,

whose data are only found in SIOPS in an aggregated way, it would be much easier to see the inequality, as the resources managed by the state entity strongly concentrate in the funding of large-sized hospital units that belong to their own networks, which are located in large municipalities. This situation reinforces the need for having a higher volume of federal resources towards BHC and policies for deconcentrating MHC.

We also noticed that the criteria that are nowadays used in the distribution of financial resources favor the municipalities with the highest MHDI indices by, supporting regions that are socioeconomically privileged, while the municipalities whose populations are under greater risks of falling ill and dying keep being destined volumes of resources that are proportionally smaller in regards to their health care needs.

Equity in funding is essential for the development of SUS. The distribution of resources that does not take equity into consideration jeopardizes the provision of health care to the populations with the worst health care and life conditions, which end up not being covered and prevented from exercising their constitutional rights.

We understand that significant advancements have taken place and that, in a big country such as Brazil, the peculiarities of its regions - which are represented by distinct historically-determined demographic, epidemiological, socioeconomic, assistance, management, and financial conditions - cannot be analyzed in other ways than through a long process, which should be negotiated and persistent in its principles. However, the distribution of funds needs to incorporate, in an even more consistent way, equity criteria that do not only take into consideration the existing accumulations, but also the needs for accumulation of conditions that are potentially capable of fixing the inequalities that jeopardize the comprehensiveness of SUS' principles and guidelines in a shorter time.

References

BAHIA. Secretaria de Saúde do Estado da Bahia. Plano Estadual de Saúde 2012-2015. *Revista Baiana Saúde Pública*, Salvador, v. 36, p. 1-166, 2012. Suplemento 1.

BARRETO, M. L.; CARMO, E. H. Padrões de adoecimento e de morte da população brasileira: os renovados desafios para o Sistema Único de Saúde. *Ciência e Saúde Coletiva*, Rio de Janeiro, v. 12, p. 1779-1790, 2007. Suplemento 0.

BRASIL. Ministério da Saúde. *Relatório final da 8ª Conferência Nacional de Saúde.* Brasília, DF, 1986.

BRASIL. Ministério da Saúde. Fundo Nacional de Saúde. *Gestão financeira do Sistema Único de Saúde*: manual básico. Brasília, DF, 2003.

BRASIL. Ministério da Fazenda. Secretaria do Tesouro Nacional. *Receitas públicas*: manual de procedimentos aplicado à União, Estados, Distrito Federal e Municípios. Brasília, DF, 2004.

BRASIL. Ministério da Saúde. Secretaria Executiva. Departamento de Apoio à Descentralização Coordenação de Integração Programática. *Regionalização solidária e cooperativa*: orientação para sua implementação no SUS. Brasília, DF, 2006a.

BRASIL. Ministério da Saúde. Conselho Nacional de Secretários de Saúde. *SUS*: avanços e desafios. Brasília: CONASS, 2006b.

BRASIL. Ministério da Saúde. Conselho Nacional de Secretários de Saúde. *Sistema Único de Saúde.* Brasília: CONASS, 2007.

BRASIL. Ministério da Saúde. Conselho Nacional de Secretários de Saúde. *O financiamento da saúde.* Brasília: CONASS, 2011.

BRASIL. Lei Complementar nº 141, de 13 de janeiro de 2012. Regulamenta o § 3º do art. 198 da Constituição Federal para dispor sobre os valores mínimos a serem aplicados anualmente pela União, Estados, Distrito Federal e Municípios em ações e serviços públicos de saúde. *Diário Oficial [da] República Federativa do Brasil*, Brasília, DF, 16 jan. 2012. Seção 1, p. 1.

BRASIL. Resolução da CIB nº 164, de 27 de maio de 2013. Aprova a transferência do município de Maraú, da região de saúde de Valença para a região de saúde de Itabuna. *Diário Oficial [da]*

República Federativa do Brasil, Brasília, DF, 28 mai. 2013. Seção 1, p. 29.

BRAVEMAN, P.; GRUSKIN, S. Defining equity in health. *Journal of Epidemiology & Community Health*, London, v. 57, n. 4, p. 254-58, 2003.

BUSS, P. M. et al. Saúde na agenda de desenvolvimento pós-2015 das Nações Unidas. *Cadernos de Saúde Pública*, Rio de Janeiro, v. 30, n. 12, p. 2555-2570, 2014.

CAMPOS, G. W. S. Reflexões temáticas sobre equidade e saúde: o caso do SUS. *Saúde e Sociedade*, São Paulo, v. 15, n. 2, p. 23-33, 2006.

COELHO, T. C. B.; SCATENA, J. H. G. Financiamento do SUS. In: PAIM, J. S.; ALMEIDA-FILHO, N. (Org.). *Saúde Coletiva*: teoria e prática. Rio de Janeiro: MedBook, 2014. p. 271-286.

HINO, P. et al. Necessidades em saúde e atenção básica: validação de instrumentos de captação. *Revista da Escola de Enfermagem da USP*, São Paulo, v. 43, n. spe2, p. 1156-1167, 2009.

HOFFMANN, R. *Estatísticas para economistas*. 3. ed. São Paulo: Thomson Pioneira, 2002.

MATOS, J. D. *Distribuição de renda*: fatores condicionantes e comparação entre as regiões metropolitanas pesquisadas pela PED. Porto Alegre: FEE, 2005.

MEDEIROS, M. *Princípios de justiça na alocação de recursos em saúde.* Texto para discussão nº 687. Rio de Janeiro: IPEA, 1999.

MEDEIROS, M. *Uma introdução às representações gráficas da desigualdade de renda.* Texto para discussão nº 1202. Brasília, DF: IPEA, 2006.

MENDES, A.; LEITE, M. G.; MARQUES, R. M. Discutindo uma metodologia para a alocação equitativa de recursos federais para o Sistema Único de Saúde. *Saúde e Sociedade*, São Paulo, v. 20, n. 3, p. 673-690, 2011.

NUNES, A. *A alocação equitativa inter-regional de recursos públicos federais do SUS*: a receita própria do município como variável moderadora. Relatório de Consultoria. Consolidação do Sistema de Informações sobre Orçamentos Públicos em Saúde – SIOPS. Brasília, DF: Ministério da Saúde, 2004.

NUNES, B. P. et al. Desigualdades socioeconômicas no acesso e qualidade da atenção nos serviços de saúde. *Revista de Saúde Pública*, São Paulo, v. 48, n. 6, p. 968-976, 2014.

PELEGRINI, M. L. M.; CASTRO, J. D.; DRACHLER, M. L. Equidade na alocação de recursos para a saúde: a experiência do estado do Rio Grande do Sul, Brasil. *Ciência e Saúde Coletiva*, Rio de Janeiro, v. 10, n. 2, p. 275-286, 2005.

PNUD – PROGRAMA DAS NAÇÕES UNIDAS PARA O DESENVOLVIMENTO. *Atlas do desenvolvimento humano no Brasil 2013.* Brasília, DF: PNUD, IPEA, FJP; 2013. Disponível em: <http://www.pnud.org.br/arquivos/idhm-brasileiro-atlas-2013.pdf>. Acesso em: 12 jan. 2015.

PORTO, S. et al. Alocação equitativa de recursos financeiros: uma alternativa para o caso brasileiro. *Saúde em Debate*, Rio de Janeiro, v. 27, n. 65, p. 376-388, 2003.

PORTO, S. et al. Avaliação de uma metodologia de alocação de recursos financeiros do setor saúde para aplicação no Brasil. *Cadernos de Saúde Pública*, Rio de Janeiro, v. 23, n. 6, p. 1393-1404, 2007.

ROSA, M. R. R.; COELHO T. C. B. O que dizem os gastos com o Programa Saúde da Família em um município da Bahia? *Ciência e Saúde Coletiva*, Rio de Janeiro, v. 16, n. 3, p. 1863-1873, 2011.

SCHNEIDER, M. C. et al. Métodos de mensuração das desigualdades em saúde. *Revista Panamericana de Salud Pública*, Washington, DC, v. 12, n. 3, p. 1-16, 2002.

SEN, A. *A ideia de Justiça.* São Paulo: Companhia das Letras, 2011.

TELES, A. S.; COELHO, T. C. B. Gasto público federal com medicamentos em uma macrorregião de saúde. *Cadernos de Saúde Coletiva*, Rio de Janeiro, v. 19, n. 3, p. 264-70, 2011.

UGÁ, M. A. D. et al. Descentralização e alocação de recursos no âmbito do Sistema Único de Saúde

(SUS). *Ciência e Saúde Coletiva*, Rio de Janeiro, v. 8, n. 2, p. 417-437, 2003.

UGÁ, M. A. D.; PORTO, S. M.; PIOLA, S. F. Financiamento e alocação de recursos em saúde no Brasil. In: GEOVANELLA, L. et al (org.). *Políticas e Sistemas de Saúde no Brasil.* 2. ed. Rio de Janeiro: FIOCRUZ, 2012. p. 395-425.

VAZQUEZ, D. A. Efeitos da regulação federal sobre o financiamento da saúde. *Cadernos de Saúde Pública,* Rio de Janeiro, v. 27, n. 6, p. 1201-1212, 2011.

VIANNA, S. M. et al. *Medindo as desigualdades em saúde no Brasil*: uma proposta de monitoramento. Brasília: Organização Pan-Americana da Saúde, Instituto de Pesquisa Econômica Aplicada, 2001.

WHITEHEAD, M. *The concepts and principles of equity and health.* Copenhagen: World Health Organization. 2000.

WHO. *Guide to producing national health accounts*: with special applications for low income e middle-income countries. Geneva: World Health Organization, 2003.