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# Human Resource Management in Health and Performance of Work Process in the Primary Health Care—An Efficiency Analysis in a Brazilian Municipality

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## Abstract

The objective of this study was to analyze how management practices of human resources in health can be associated with efficiency in fulfilling the work process of family health teams in primary health care (PHC) strategy adopted in a Brazilian municipality. To do so, were analyzed indicators of human resources vis-à-vis an efficiency score obtained from data envelopment analysis (DEA). The analysis model used was based on the dimensions of structure, process as sources of information about the quality of care delivery actions, considering Donabedian's model of evaluation of health services. The results indicate that investment in training of professionals and fixation of doctors can contribute significantly to improve the efficiency indices obtained by the teams of the city. Despite the advances made in terms of human resource management (HRM) in health, still weigh several challenges for this strategy to be consolidated as a tool to make the Family Health Strategy (FHS) more effectively.

## Keywords

Evaluation of human resources in health, primary health care, human resources management in health, organizational efficiency

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## Introduction

The Unified Health System (SUS in Portuguese) was implemented with the goal of universalizing the access to health services, as well as reorganize how these services were offered in Brazil. It was organized in a hierarchical and decentralized way within the administrative and operational fields. The SUS tried, and still tries to find a way to surpass the challenges to guarantee the goals it sets itself. Therefore, several strategies have been used in highlighting the importance of the Family Health Strategy (FHS).

The FHS was established in 1994 and reflects the model of primary health care (PHC) adopted by Brazil. Based on this initiative, it extended to the whole country, reaching in 2013 over 42.000 health teams spread throughout the national territory. Starfield (2002) argues that health systems that are organized by a structuring axis focused on PHC, have greater efficiency, quality and equity. Besides that, these systems are linked to lower costs, improved health care levels, greater personal satisfaction and a smaller use of medicaments (Starfield 2002).

Despite being a national policy and seeking the solution of Brazilian health care problems, the FHS has many obstacles and challenges to overcome. In a major part, these obstacles and challenges are linked to work's organization and a differentiated logic of provision of services, what brings emphasis to managers and health professionals, since health care services use intensive manpower. Based on this perspective, the human resource management (HRM) plays a significant role, since we can define with their practices a better alignment between the goals of health care professionals and those of FHS as a whole.

The management of health care services has always been surrounded by challenges. The solutions proposal that could enable improved efficiency motivated peremptory reforms in many countries. These reforms pursued: cost containment in health care services, restructuring public/private share from the decentering of activities and responsibilities, the increase of the coparticipation of users in services that they use and reducing the fiscal imbalance in the management of health services (Viacava 2004). The changes that took place pursued how to redirect the focus to what was worshiped by consumers of health services in results terms, which emphasized the importance of evaluation procedures (Macinko and Almeida 2006).

Naylor (2002) notes that the debate over health evaluation through the last 30 years leaned primarily on the analysis of cost effectiveness. The author emphasizes the need to consider health systems more broadly, since they are affected by economic, educational and social inequalities. Besides that, the importance of acknowledging the current bonds, existing in relation to the actions proposal to promote improvements, has contributed to other elements of the assessment to gain strength as, for example, evaluations of efficiency, management and outcome evaluations.

Among the initiatives that pursued modifying the existing framework in relation to evaluation studies in health, project called Consolidation and Expansion for Family Health (CEFH) can be considered the first step in the search for a broader comprehension of the health care system and a Brazilian initiative focusing quality improvement. Initiatives like this, which emphasized the monitoring and evaluation of Brazilian PHC have contributed fundamentally to inculcate in the public health sector an results and evidence-based management orientation.

Considering the actions taken in this context, we can highlight the intense discussion about the need to institutionalize evaluation practices in health. The debates about the need to consider more carefully the extent of human resources (HR), in both its practical perspective and in terms of evaluation, were important points addressed by CEFH. The control by pacts, as well as the decentred nature of actions can be considered important goals in the quest for improved health care management actions. The fundamental point to be addressed now is: How to measure the performance in terms of quality, efficiency and

equity and organize systems of performance management from the perspective of promoting behavioural changes that enable better results? (Hurst 2002).

Despite the importance of all efforts developed in Brazil, investigations that shed light on how to relate different elements involved in the provision of care are scarce, although its relevance in terms of health services evaluation (Donabedian 1980; Macinko and Almeida 2006). Even with an interstice of 26 years of this debate, the question still remains relevant. There is a lack of studies that address the relationships among the dimensions of structure, process and outcome. The structure dimension, mostly composed by financial variables, human resources and physical infrastructure, as well as the process dimension which reflects the daily practice of care offer are important proxies for better understanding the impacts of provision care actions in health outcomes.

The health care system mostly counts with three main inputs: human resources, financial capital and consumer items (WHO 2000). The human resources function, meanwhile the input of care offer process, can be seen in different ways of clinical and non-clinical staff, responsible for health interventions whether collective or individual. The performance and the benefits promoted by the system of health care provision mostly depend from knowledge, skills and impulse of those responsible for providing care (Kabene et al. 2006).

Lerberghe (2002) notes that health managers indicate health problems linked to HRM as the main bottleneck faced in the attempt to improve their health care systems offer. Among the points that distinguish the inherent difficulties of HRM in health, these can be highlighted: low pay, low motivation of health workers, the inequality in the distribution of labour force, unsatisfactory performance, international migration, low binding capacity and training human resources, overload and high rate of absenteeism (Chen et al. 2004). The distance between the ideal FHS service model and the one that actually operates in daily life may be linked in part to a lack in terms of training of health professionals, as well as a lack in the efficiency of fulfilment of actions related to care offer.

Fritzen (2007) highlights that HRM is strategic in any kind of reform developed in a health care system, once the desired results are strongly dependent on the behaviour of the workforce. Understanding how health professionals will respond to new values, roles, responsibilities and resources is essential to ensure the viability of reform interventions. Despite its importance, HRM had been relegated to a secondary priority in the sphere of health management until recently (Buchan 2004). An appropriately skilled and well-distributed workforce is critical to the success of a care offer system. Therefore, the methods and techniques employed in health HRM can configure, or not, catalysts in the improvement of the performance of health systems (Buchan 2000).

Despite the importance of the performance evaluation in health issue, there is little evidence to investigate the relationship between HRM health practices and the outcomes of the offer services system, (Lerberghe 2002). The HR development necessarily involves knowledge of existing deficits with the current workforce. This fact, associated with the lack of studies focused on the evaluation of HRM health practices, defines a priority to reach a FHS aligned with the principles of SUS.

The existence of trained professionals, fulfilling the actions related to the work process in health, emerges as one of the aspects that can contribute to an improvement in the performance of actions related to the process dimension. The proper implementation of work aspects related to process dimensions is a first step in thinking about population health outcomes attributable to the primary care level.

The establishment of FHS in 1994, contributed to aggravating the problems related to work management. Decentralization was marked with FHS, emphasizing the transfer of responsibilities for operationalization of the health services system has not always been followed by an increase on the management

capacity of municipalities (Mendes 2002). The problems linked to worker training and education are, the professional bond, contractual arrangements and fixation of professional; those linked to the understanding of the new working process and those related to the need for information to support public policies exist since this period and still require solution.

The FHS still lacks a body of evidence to assist in surpassing relevant obstacles to the HR sphere. The FHS faces barriers linked to HRM in health that undermine the consolidation of the changing process imbricated in its adoption (Macinko and Almeida 2006). The promotion of more stable bonds by health professionals, better geographic distribution, smaller turnover, need to create pay incentives and improvements in training process, among others are examples of challenges to be surpassed. It is worth to mention the need to better understand the aspects of the link between HRM in health and outcomes, both in terms of population health indicators, as well as the management point of view. Despite these challenges, there were no initiatives that seek to investigate, with the view of management, the relationship between aspects of health HRM and the elements related to the work process, as well as the aspects linked to results dimensions by the ways of efficiency.

Specifically in relation to this last point fits the purpose of this study. Thus, the present study tried to identify how HRM practices are related to efficiency measures in fulfilling work process in health care considering the scope of FHS. For this purpose, HR indicators were developed adapted to the health context, as well as efficiency measures linked to the fulfilment of the work process tied to FHS. Once such measures were defined, the relationship between the aspects of structure and work process was analyzed with emphasis on the efficiency of actions for care offers and their relationships with the HR dimensions and physical structure.

It is in this context that the proposed study is explained, which aims to identify how different HRM practices relate to the efficiency in the fulfilment of work process in health, linked to the ordering principles of the FHS. The data for this study were collected in the study for *Monitoring Performance Results and Satisfaction of users of Family Health Strategy: A Study in Belo Horizonte*, which evaluated all teams of FHS in Belo Horizonte, state of Minas Gera is, Brazil.

## Methodology

With the purpose to collect data aligned to achieving the objectives of the proposed research, it was necessary to carry out a survey with all family health teams of Belo Horizonte. In order to obtain information about the practices of HR management within the family health teams, it was decided to carry out a descriptive–explanatory census. The considered universe for this study was all family health teams allocated in the city of Belo Horizonte that is home to 2,375,444 inhabitants (IBGE 2010). Belo Horizonte is Brazil's third largest city and the capital of the state of Minas Gerais. For planning and management purposes, the city is divided into nine regional administrative areas, which coincide with the nine health districts (PBH 2008) according to the distribution of Figure 1. Belo Horizonte had family health coverage in around 73 per cent, with about 512 health teams, divided into 144 basic health units, according to data from November 2009. The choice of this city was due to its importance for the FHS in the state of Minas Gerais, since approximately 18 per cent of the teams in the state are allocated in this city.

Two structured questionnaires were applied to collect information about the HRM along with all family health teams deployed in Belo Horizonte, in November 2010. One questionnaire was intended to the issues of physical infrastructure available to health care teams. The other instrument was intended to

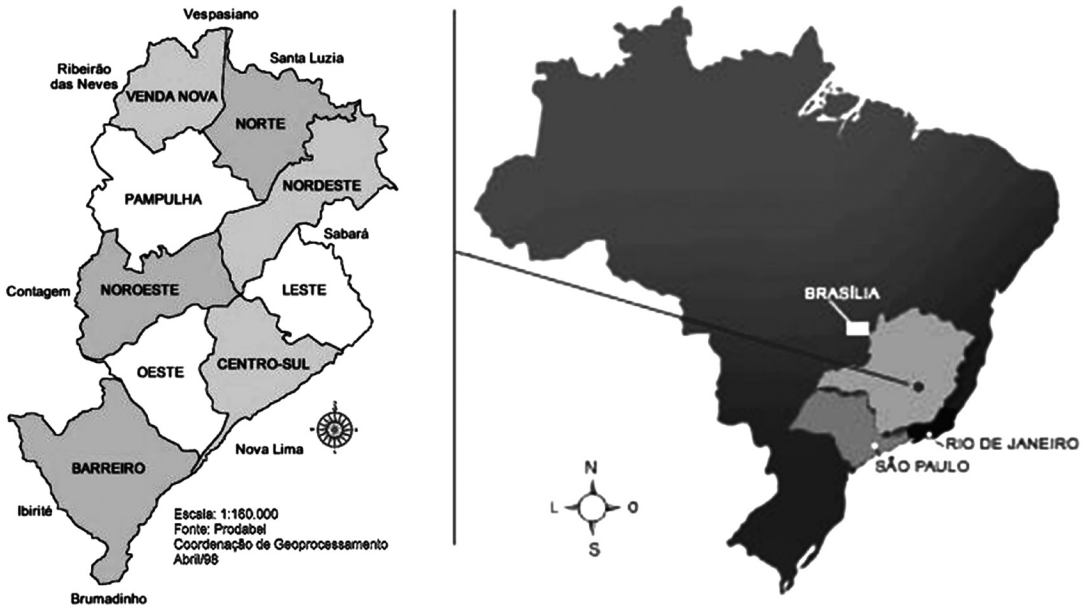



**Figure 1.** Health Districts of Belo Horizonte

**Source:** Company of informatics and information of Belo Horizonte municipality.

evaluate aspects related to HRM and work process. The process elements of care offering from health teams were sized by questions about the care offer for many diseases, as well as the medical appointments scheduled.

To proceed with the analysis of efficiency, we chose to use the theoretical model of evaluation of health services proposed by Donabedian, who considers dimensions of analysis as aspects related to the issue of the structure, processes and outcomes. Regarding FHS, the fulfilment of the ordering principles is a fundamental first step to think about results. Without an efficient work process performance inherent to ordering principles we cannot have effective actions from family health teams. When performing evaluation studies under the scope of the PHC, Starfield (1992) emphasizes that the approach of structural and procedural elements can overcome some of the obstacles inherent in assessment practices at this level of attention and suggest important results.

In this study it was decided, among the three dimensions of the evaluation model of health services proposed by Donabedian, only the use of the dimensions of process and structure. The reason to this fact is: since the very Donabedian argues that the dimension of results is governed by peculiarities that interfere with its proper evaluation. The results measured in terms of population health indicators are time dependent. So, the consequences of the care offer only manifest themselves after some time, which may negatively affect evaluations of outcome after a short time after the information collection on patterns of supply of services (Donabedian 1987).

Unlike what is observed in the results dimension, the dimension of process and structure are more susceptible to direct actions of management and may have their profiles altered in more controlled and

objective way by actions from health managers. Thus, it was designed for this study a matrix of indicators, which unfold aspects relating to the dimensions of structure and process in order to translate the most significant features, related to these two dimensions, expressed in Tables 1 and 2.

To evaluate the structure dimension (inputs), we chose to follow the guidelines of the study from Salinas-Jimenez and Smith (1996), which used structure indicators that cover the length, and quality of

**Table 1.** Matrix of Indicators Composition Related to the Dimension of Structure-Inputs

| Dimension Structure-Inputs | | | | |
|---|---|---|---|---|
| | Human Resources | | Physical Structure | |
| Ordering Principles | Parameters for Defining Human Resources Indicators | Human Resource Indicators | Parameters for Defining the Availability Structure Indicator | Structure Indicator |
| **First Contact** | • Minimum Team (doctor, nurse or technician and nursing assistant)<br>• Appropriate number of family health agents regarding current composition (one for following up to 750 people) | • Complete team | • Existence of physical facilities for care at minimal amount (offices, dressing room, etc.)<br>• Existence of materials and equipment for service (glucometer, speculums, balance, etc.).<br>• Existence of medicine in Basic Health Unit;<br>• Existence of vaccines from national vaccination plan;<br>• Availability of supplies (syringes, gloves, tape, gauze, etc.) | • Percentage of items available for each team |
| **Longitudinality** | • Professional with not precarious bond<br>• Residence time | • Percentage of not precarious bonds in the teams<br>• Time spent on the team, in months, for the doctor | | |
| **Integrality** | • Generalist practice conducting medical attention in four basic clinical (internal medicine, paediatrics, obstetrics and gynaecology)<br>• Population under the responsibility of team that is up to 3450 people | • Percentage of clinics in which graduated professionals meet (doctor and nurse)<br>• Proportion of population under the responsibility versus recommended | | |
| **Focus on the Family** | • Conducting introductory course in Family Health<br>• Training for attention to priority groups | • Proportion of professionals who took the introductory course in team | | |
| **Community guidance** | • Orientation of the work process-facing programming actions | • Total hours of team training | | |

**Source:** Elaborated by the authors.

**Table 2.** Matrix Composition of Indicators Related to the Dimension of Processes-outputs

| Process-Outputs | |
|---|---|
| Parameters for Setting the Process Indicator | Process Indicators |
| • Conducting scheduled consultation by professional of health team | • Percentage of scheduled consultations among all consultations undertaken by the team. |
| • Performance care initiatives focused on women's health;<br>• Performance care initiatives aimed at pregnant women;<br>• Performance care initiatives focused on children's health;<br>• Performance care initiatives focused on hypertension;<br>• Performance care initiatives aimed at diabetics;<br>• Performance care initiatives focused on hanseniasis;<br>• Performance care initiatives aimed at patients with tuberculosis;<br>• Performance care initiatives aimed at sexually transmitted diseases;<br>• Performance epidemiological surveillance;<br>• Performance care initiatives aimed at sufferers of mental disorders;<br>• Performance care initiatives focused on adolescent health and;<br>• Performance care initiatives aimed at elderly health. | • Percentage of actions developed for the groups considered |

**Source:** Elaborated by the authors.

practices performed by health professionals, regarding the basic clinical care. Due to this contribution, the indicator that refers to the percentage of basic clinics where health professionals play a role was considered relevant and inserted into the analysis model. Garcia et al. (1999) incorporated inputs of its study on the efficiency the number of professionals involved in care provision, which led to the inclusion of an indicator that assess the number of professionals working in health teams. Other indicators used here were incorporated to reflect aspects of HR dimension.

The selection of indicators was made in order to understand the most significant aspects linked to every aspect of the evaluation. Facing the impossibility of choosing them based on statistical methods of association, it was made the option of using indicators referenced in the literature. The number of queries is an indicator widely used as a proxy of planned care offer (Huang and McLaughlin 1989). Also in relation to process indicators (Table 2) we highlight the importance of the indicator which refers to the percentage of actions taken. Garcia et al. (1999) emphasize the need to adopt output indicators that consider the multiplicity of possible actions to be performed under the FHS, as well as the quality standards required in the performance of these actions. The listing of the relevant actions to each interest group in Table 2 was prepared with help of clinical protocols adopted in Belo Horizonte and clinicians specializing in the PHC, specifically in the FHS.

The survey and validation of HR indicators that maintain relations with the guiding principles allowed us to analyze their relative contribution to the efficiency of the fulfilment in teams work process. This study aimed to investigate the relationship of HRM health practices with the efficiency in fulfilment in the health work process using the technique of data envelopment analysis (DEA).

Assessments based in this tool seek to realize a value judgment on one or more interventions, comparing the resources used and his organization (structure-inputs), the services or goods produced (process-output) (Contandriopoulos et al. 1997). In this sense, the efficiency evaluation allows comparisons to be made

**Table 3.** Matrix of Inputs and Outputs Used in the Analysis of Efficiency

| Structure Dimension Inputs | Outcomes Dimension Outputs |
|---|---|
| • Full team<br>• Percentage of no precarious bonds in the team<br>• Time spent on the team, in months for doctor<br>• Percentage of clinics in which graduated professionals meet (doctor and nurse).<br>• Proportion of population under the responsibility versus recommended<br>• Proportion of professionals who took the introductory course in team<br>• Total hours of team training<br>• Percentage of structure items available for each team | • Percentage of scheduled queries among the queries made by the team.<br>• Percentage of actions developed |

**Source:** Elaborated by the authors.

between the relationships of the elements produced compared to the resources used. DEA identifies, among the selected HRM practices, those that can be targets for improvements focused on increasing the efficiency of the fulfilment in the health work process (Amado and Dyson 2008).

Through DEA, multiple resources (inputs) and multiple outputs (outputs) can be analyzed together in order to determine rates of relative efficiency between decision making units (DMU). The relative efficiency score assigned to each DMU is through the comparison between the levels of outputs (outputs) that each DMU reaches, related to the maximum level of output obtained in the analysis.

Thus, the technical efficiency is measured by comparing the results obtained from each analyzed unit facing the best result reached by a unit in this group providing a measure of relative efficiency. Those units that present maximum efficiency—which means the best relationship between resources used compared to the results obtained—will compose the efficient frontier, which defines the reference levels to be achieved by other DMU so that they can become effective.

For comparison of full team variable, it were the disregarded teams that did not have both the doctor and the nurse figure. This was to distinguish the teams' efficiency based on the actions that these two professionals performed or failed to perform, and not based on the impossibility of actions realization in the absence of one or both professionals. DEA requires that each DMU operates under a similar basis and the teams that do not have a doctor or a nurse do not meet this requirement. After this consolidation, only 437 teams remained.

Table 3 shows the list of inputs and outputs used in this study to evaluate the effectiveness of family health teams. All analyses were conducted using software specifically dedicated to the analysis of DEA (Frontier Banxia Analyst) and for describing data (Statistical Package for Social Sciences [SPSS]). Teams that had a substantial amount of missing data in relation to the inputs and outputs selected were excluded from analyses, since DEA has restrictions as missing values or zero.

## Results

For data analysis, it was approached the raw data of efficiency scores earned by each family health team. This score provided an efficiency measure in the fulfilment of the care delivery process delivery that was listed in Table 2 and was considered the measure for assessing the **performance** of health teams in Belo

**Table 4.** Distribution of Efficiency Scores of Family Health Teams, Belo Horizonte, Minas Gerais, Brazil 2009

| Health Districts | Teams | Minimum (Efficiency) | Average (Efficiency) | Maximum (Efficiency) | Standard Deviation (Efficiency) |
|---|---|---|---|---|---|
| Barreiro | 66 | 51,32 | 77,26 | 100,00 | 11,2154 |
| Centro Sul | 25 | 73,60 | 89,42 | 100,00 | 9,9892 |
| Leste | 37 | 57,83 | 86,41 | 100,00 | 10,1435 |
| Nordeste | 63 | 54,84 | 83,01 | 100,00 | 12,1003 |
| Noroeste | 70 | 53,79 | 78,28 | 100,00 | 11,2262 |
| Norte | 41 | 57,22 | 81,25 | 100,00 | 12,7697 |
| Oeste | 51 | 59,65 | 89,41 | 100,00 | 11,3499 |
| Pampulha | 22 | 52,94 | 77,40 | 100,00 | 13,1162 |
| Venda Nova | 62 | 61,61 | 85,61 | 100,00 | 11,7889 |
| **Belo Horizonte** | **437** | **51,32** | **82,71** | **100,00** | **12,3639** |

**Source:** Elaborated by the authors.

Horizonte. Once the performance indicators were analyzed, there was an approach about indicators that make up the dimension of structure and process individually. The DEA efficiency scores refer to: how good the teams can articulate the many inputs relating to aspects of HR and structure to meet the items listed in the process dimension. The teams that are going to be considered efficient are those that will be able to obtain the best relations between inputs levels and outputs levels. Therefore, the efficiency score is an indicator of the performance related to the process dimension from Donabedian's model.

The observation of the efficiency scores of the teams shows that there are effective teams in all health districts of Belo Horizonte. This fact turns out to be important, since DEA allows identification of effective teams that can assume a position of reference unit for those inefficient. A DMU which is defined as a reference to another presents practices that are closer to those performed by the inefficient DMU. Thus, they may provide a route to promote improvements alongside with the inefficient DMU, so that it can improve the pattern of resource utilization.

The average scores of efficiency to the city were relatively high. Only three districts did not reach an average score above 80, which indicates a good general standard for the performance of family health teams. Nevertheless, the DEA analysis can suggest improvements in the levels of both deliveries of outputs and inputs in order to promote increments in efficiency standards from family health teams.

Taking as reference the two considered output indicators, it was possible to observe the provision of scheduled queries is the indicator with the greatest probability to improve efficiency. These data reveal that there are many health teams that have an equivalent pattern in terms of physical infrastructure and human resources, but these elements have been poorly articulated for offering scheduled queries. The inability to schedule medical consultation for the population jeopardizes the achievement of actions dedicated to prevention of diseases and health promotion, which are so fundamental to operate the FHS properly. When considering aggregation values that reflect the needs of improvement regarding the whole city of Belo Horizonte, all of the city's teams should increase consultations scheduled at 40.77 per cent.

The regionalized distribution of improvement possibilities allows the definition of a DMU group to be a reference for others, in terms of an articulation of human and physical elements for improvements

in care provision, in a way that local specificities are respected. Therefore, improvements in actions of care provision that could project the family health teams in each region on the efficient frontier are given respecting the occurrences of actions in each health regional. The percentage of 24.32 per cent for the whole city highlights that there is health teams that have fewer resources, but they are still able to offer a large number of care provision actions. The analysis of the forms of work process organization of these teams allows the identification of strategies for the offering of successful actions, which can be replicated for other teams, promoting improvements in the provision of health care services to make a change in the way that teams are organized and without the requirement of increased financial support.

Besides the outputs orientation, DEA allows improvements that can also be suggested in inputs. The analysis of the difference between the current values and the values desirable, provides important information for health management, because it enables managers to identify inputs that can contribute significantly to the family health teams reaching the efficient status.

The focus of this paper is to examine which ways the aspects related with HR dimension can contribute to an improvement in efficiency of care provided by family health teams. Therefore, the analysis of potential improvements linked to inputs is an important tool to direct HRM efforts in such a way to seek the promotion of improvements alongside efficiency in the provision of health care aligned with the precepts of the FHS. Moreover, the HRM practices in health can be configured as a tool to promote effective actions with a focus on improving the team's performance.

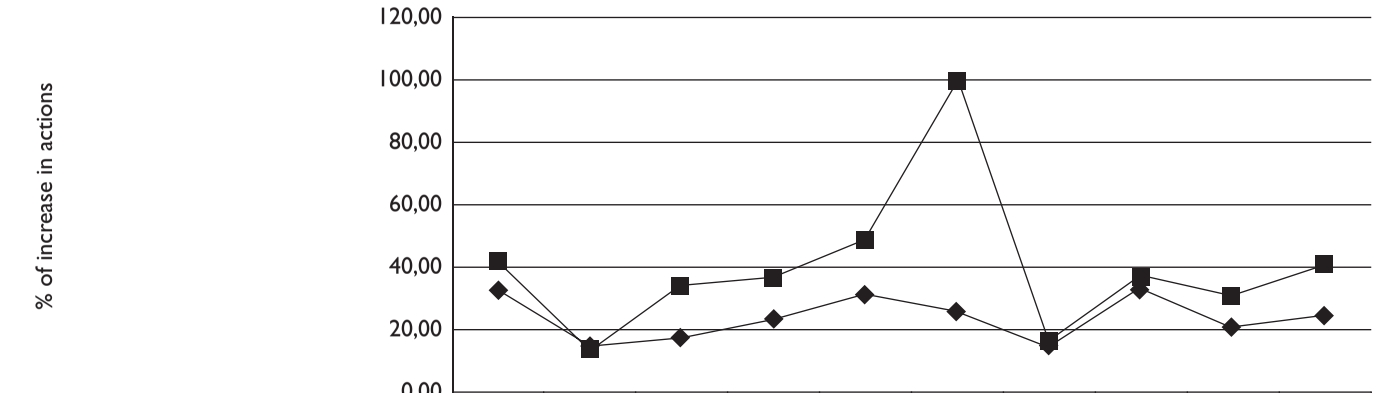
The structure input was inserted in reviews as control. Thus, teams without structural information could not be efficiently compared with others, once the care provision depends on medicines, facilities, equipment and supplies. The average regarding potential improvement in matters of structure was close to the 1.5 per cent, what sets this input on a secondary level among the improvement possibilities with a focus on efficiency.

Overall the data show that a reduction in the size of the population under responsibility of each health teams would be a catalyst for better results in terms of efficiency in the provision of health actions. A population above the recommended contributes to increasing the spontaneous demand, which complicates the planning of activities and efforts towards disease prevention and health promotion. On average, it would be desirable for the city, shrinkage of 14.88 per cent in the amount of people under responsibility of each team, what would only be possible with the installation of more family health teams.

Regarding the mode of professional bond related to health professionals, increasing by 10 per cent the non-precarious linkages will contribute so that more teams were able to offer scheduled consultations and care actions more efficiently. Therefore, one aspect of HRM can contribute to improving the quality of the work process of family health teams. The stable bond makes the fulfilment of actions inherent to the FHS model easier, and allows health professionals to better know the community in which they operate.

Starfield (2002) pointed out that the longer the permanence of health professionals within the PHC better the performance shown by them. These research findings of this work confirmed this placement. The variable of permanency time was the most critical and most liable regarding the possibilities for improvement. Fixing professionals and the difficulties that FHS has faced to secure it are themes that have permeated the debate on health care management for several years. Despite the efforts over this time it is still the greatest focus of potential improvement in the analyzed municipality. In order that further teams were considered efficient, the permanency time of the medical professional should over double considering working teams in Belo Horizonte.

Considering the same perspective, an increased workload training of 23.44 per cent was associated with an improvement in efficiency ratios encompassed by the analysis model. The lack of training is one




| | Barreiro | Centor Sul | Leste | Nordeste | Noroeste | Norte | Oeste | Pampulha | Venda Nove | Belo Horizonte |
|---|---|---|---|---|---|---|---|---|---|---|
| % increase in actions of offering health care | 32,41 | 14,57 | 17,47 | 23,18 | 31,46 | 25,95 | 14,46 | 32,91 | 20,78 | 24,32 |
| % increase in scheduled medical consultation | 42,06 | 13,93 | 34,59 | 36,93 | 48,85 | 99,65 | 16,69 | 37,21 | 30,86 | 40,77 |

**Figure 2.** Potentials Improvements of Outputs to Increase the Amount of Effective Teams, by Health Districts, Belo Horizonte, Minas Gerais, Brazil 2009

**Source:** Elaborated by the authors.

**Table 5.** Percentage of Potential Improvements in Inputs for Increasing the Efficiency of Family Health Teams, Belo Horizonte, Minas Gerais, Brazil 2009

| Health Districts | Structure Average | SD | Average Population Under Responsibility | SD | Full Team Average | SD | Average No Precarious Bond | SD | Average Length to Permanency of Doctors | SD |
|---|---|---|---|---|---|---|---|---|---|---|
| Barreiro | 1,753 | 4,418 | −14,923 | 14,435 | 1,836 | 6,121 | 12,724 | 17,264 | 144,956 | 337,753 |
| Centro Sul | 2,820 | 3,928 | −0,972 | 5,416 | 6,500 | 15,547 | 3,932 | 9,574 | 251,016 | 1150,579 |
| Leste | 0,103 | 2,804 | −16,824 | 22,288 | 5,754 | 14,220 | 9,203 | 15,328 | 163,562 | 518,050 |
| Nordeste | 1,883 | 4,792 | −15,402 | 15,218 | 3,967 | 8,675 | 12,243 | 17,995 | 208,229 | 538,360 |
| Noroeste | 0,550 | 3,042 | −23,050 | 17,087 | 3,686 | 7,490 | 9,069 | 15,178 | 325,317 | 954,844 |
| Norte | 2,020 | 4,354 | −11,176 | 14,670 | 1,329 | 5,059 | 16,588 | 26,797 | 185,917 | 411,817 |
| Oeste | 2,094 | 5,023 | −9,500 | 14,949 | 2,863 | 13,240 | 2,435 | 5,323 | 72,896 | 195,852 |
| Pampulha | 0,227 | 2,123 | −21,232 | 22,310 | 4,014 | 10,211 | 6,695 | 10,266 | 225,300 | 461,051 |
| Venda Nova | 2,295 | 5,389 | −14,161 | 14,659 | 1,424 | 4,409 | 13,227 | 14,329 | 334,140 | 919,666 |
| **Belo Horizonte** | **1,565** | **4,327** | **−14,882** | **16,769** | **3,162** | **9,368** | **10,198** | **16,469** | **216,930** | **673,448** |

| Health Districts | Average of Clinics in Which Doctors Meet | SD | Average of Clinics in Which Nurses Meet | SD | Average of Professionals Who Took the Introductory Course in Team | SD | Average of Training Load of Team | SD |
|---|---|---|---|---|---|---|---|---|
| Barreiro | 7,348 | 14,872 | 4,950 | 16,629 | 9,024 | 19,331 | 13,479 | 17,800 |
| Centro Sul | 16,628 | 33,467 | 16,568 | 30,183 | 9,072 | 19,082 | 5,616 | 8,374 |
| Leste | 28,932 | 65,885 | 20,362 | 31,371 | 12,197 | 25,453 | 7,408 | 12,078 |
| Nordeste | 12,490 | 41,788 | 5,249 | 15,751 | 13,759 | 34,322 | 14,579 | 17,486 |
| Noroeste | 5,833 | 9,039 | 5,679 | 12,096 | 12,557 | 36,314 | 48,980 | 283,108 |
| Norte | 2,773 | 16,733 | 14,817 | 47,174 | 28,568 | 70,910 | 37,456 | 107,308 |
| Oeste | 15,147 | 45,607 | 13,724 | 26,091 | 8,073 | 21,592 | 16,616 | 58,694 |
| Pampulha | 5,755 | 11,209 | 3,414 | 7,828 | 34,077 | 61,453 | 41,332 | 91,053 |
| Venda Nova | 3,611 | 7,762 | 1,879 | 7,607 | 13,284 | 20,013 | 20,998 | 97,733 |
| **Belo Horizonte** | **10,076** | **32,333** | **8,516** | **23,648** | **14,132** | **36,171** | **23,445** | **127,240** |

**Source:** Authors.

of many challenges imposed for health care professionals who work in the FHS. Thus, the achievement of actions dedicated to disease prevention and health promotion is damaged, since no university training courses in Brazil have an emphasis on its importance.

The same possibility of improvement weighs against the introductory course of family health agent (FHA). Teams that have a larger number of agents who passed the introductory courses were more efficient than the others. Training with professionals working in the FHS emerges as another element linked to the HRM able to foster effective changes in work process developed by family health teams.

The amplitude of clinics covered by clinical professionals showed little potential for improvement in efficiency ratios observed along with the teams. These data reveal that the generalist profile necessary for the proper performance of activities related to the FHS, is consolidated. The variable related to the composition of the teams took a secondary role in terms of importance when considering more effective actions with a focus on efficiency. Part of the explanation for this question regards on the exclusion of analyses of teams who had no doctor, nurse or both, once DEA is sensitive to zero values.

## Discussion

The management guided by evidence contributes to results-oriented decisions to be implemented and, in a context of scarce resources, priorities are listed. The difficulty of investing more resources and the need to improve the delivery of health services impinges managers on a quest for efficiency improvements related to implementation of activities and, considering this the aim of this work, to provide a contribution to the issue. Furthermore, they also emphasized the importance of aspects related to HRM in achieving better efficiency rates in the fulfilment of the work process of family health teams, in primary health care.

The efficiency in the fulfilment of work process linked to the provision of health services can be configured as a proxy indicator of population health and thus guide actions with a focus on results. Regarding the association between HRM and performance, the procedural dimension can provide clues about practices that can contribute to a good or bad performance (Guest 2011). Davies and Crombie (1997) argue this same thought and emphasize the importance of using process measures to assess the performance of health services. Despite the importance of the issue of HRM for the health context, there are relatively few studies that have looked into how the elements of service provision relate to human aspect.

In the case of Belo Horizonte HRM practices can contribute significantly to an improvement in efficiency observed together family health teams. Among the priority actions to foster an increased performance in observed teams are the actions of fixation and development of the workforce, improvement in the percentage of skilled workforce through continuing education activities and actions to decrease the precarious professional bonds.

Some studies have highlighted the importance of effectively addressing the elements emphasized in this work as promoters of higher efficiency pattern. In this sense, the results obtained in this study were confirmatory regarding topics discussed in the literature. Nevertheless, the debate here points to a possibility to ponder how these different themes are articulated to promote an improvement in programming actions as well as in serving the population. The achievement of studies that link the elements of human resources and results, in terms of provision of health services, it is rarely reported in the literature. So, the present study attempted to contribute towards providing material evidence that HRM practices are capable to improve the services provision to the population.

Far from being the sole determinant in relation to quality in the provision of services, the human resources dimension is an important topic to be considered when the debate aims to improve the health system. It is important to highlight that it is much more sensitive to management actions than other determinants of the health–disease process; therefore many aspects capable of producing tangible results faster can be influenced by good human resource practices.

The challenge that weighs for researchers and health managers lies in the production of information able to refocus, in an effective way, management practices in health. In this sense the present work aimed to provide a small contribution to the analysis of elements linked to HRM that might interfere with aspects linked to efficiency in the delivery of care and allow a reorientation of practices with a focus on efficiency.

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