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# The Rio de Janeiro Municipality's Services Portfolio and Health Actions in Primary Care in Brazil

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**Abstract** *This study aimed to identify the provision of actions and procedures by family health teams (FHSt), based on Rio de Janeiro Municipality's (MRJ) Health Services Portfolio (HSP) and the main factors associated with this provision, in the different population strata. Data from the National Program for Improving Access and Quality of Primary Healthcare were used and implemented at the national level into 17,202 FHSts from June to September 2012. Outcome variables were "FHSt belonging to MRJ" and "FHSt providing all nine CS-MRJ procedures". Uni-, bi- and multivariate analysis were performed. A better performance of the MRJ in relation to other major urban centers (EP6#) (p<5%) was noted in 10 of the 14 health actions analyzed. The electronic medical record showed a level of deployment in MRJ's FHSts of 96%, contrasting with 34% in the EP6# and 14% in Brazil. Both the MRJ and EP6# evidenced low supply of mental health services (about 56%). While the supply of low-complexity procedures was a major problem in large cities, the supply of health actions in the different health care lines was a larger problem in small municipalities. Overall, the MRJ showed better performance when compared to the average of large municipalities. The health service portfolio appeared to be an important management tool.*

**Key words** *Primary Health Care, Health evaluation, Family health*

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## Introduction

The expansion of primary health care (PHC) through municipalization was a priority of the Brazilian Ministry of Health (MoH). However, the implementation of new practices to ensure the principles of the Primary Health Care National Policy[1] (PNAB) – universal access to services at all levels of care, comprehensive care, with a network of resolutive services, equity and community participation – is a challenge for many Brazilian municipalities.

The expression "basic care" is still used in initiatives of the Brazilian government, and appears in widely used abbreviations, such as PMAQ-AB, PNAB, SIAB, which would otherwise be incomprehensible. However, we prefer to use, as much as possible, the term "Primary Health Care", considering its comprehensive use in international literature[2] and authors' choice to represent what was proposed by the Municipal Health Secretariat of Rio de Janeiro (MHS-RJ) for a strong and comprehensive primary health care.

Since the end of 1990, the Family Health Strategy (FHS) and its financing policy have been assumed by the MoH as the main strategy to reorganize PHC, generating major changes in the care model[3].

After two decades of FHS implementation, improving the quality of care provided to the population is still a challenge for its sustainability. Thus, it is necessary to develop and implement tools that allow their continuous evaluation, enabling timely decision-making toward desired results.

Thus, the National Program for Improving Access and Quality of Basic Care (PMAQ-AB) is a current MoH initiative that aims to encourage managers and local staff of the Brazilian Unified Health System (SUS) to improve the standard of care provided to users in primary health care facilities (PHCF) through a process of self-assessment, development of improvements and external certification[4].

Converging with PMAQ-AB's principles, an important movement of FHS expansion throughout the municipality of Rio de Janeiro (MRJ) has taken place since 2009. The situation evolved from January 2009 to June 2016, from 124 to 945 teams deployed, corresponding an expanded FHS coverage from 7% to 51%[5].

As part of these efforts, the Rio de Janeiro Municipal Health Secretariat (MHS-RJ) published, in August 2010, a quick reference guide called "Health Services Portfolio – List of Services Provided in Primary Health Care" – HSP-MRJ[6]. This document targeted health managers and professionals and was intended to be a managerial innovation, aiming at guiding and capitalizing on PHC's actions provided to the population of MRJ. Its construction was participative and involved managers of MHS-RJ, as well as mid-level coordinators. In this tool, health actions are organized by lines of care and their implementation is encouraged by a pay-for-performance system.

The HSP is a tool that defines the list of services and making explicit to managers and health professionals, as well as to users, the list of available services, clarifying commitments and expectations[7]. It also seeks to guide, qualify and standardize the provision of PHC services, adopting not only a healthcare viewpoint, but also a comprehensive care viewpoint.

Among the problems the HSP-MRJ has sought to address are the concentration of patients at the secondary and tertiary levels of care seeking low complexity procedures, such as ear washing or nail extraction. This makes it difficult to organize the health system, overburdening emergencies and hospitalization services, reducing the quality of care for the actions that actually are inherent to their mission.

To date, no studies have been found that addressed the results and impacts of this HSP. PMAQ data, with national representativeness, offer an excellent opportunity for this type of study.

Thus, this study aims to identify the provision of actions and procedures by family health teams, based on the classification proposed by the Health Services Portfolio of Rio de Janeiro city and the main factors associated with this provision, in the different population strata.

## Methods

The secondary database from the first cycle of PMAQ external evaluation phase implemented at the national level from June to September 2012 was used as the source of information.

The field collection tools used in the PMAQ-AB were divided into three modules. The first one, applied as a census in 38,812 PHC facilities (PHCF) and addressed aspects referring mainly to infrastructure (such as accessibility, external signaling, equipment, materials and supplies for healthcare). The second one was directed to the interview with higher-level health professionals of the family health strategy team (FHSt) and document verification, focusing on the evalua-

tion of the work process. Finally, the third module included an interview with 65,391 users, in order to obtain information about satisfaction.

Modules 2 and 3 were implemented to FHSts that adhered to the PMAQ, corresponding to 35.7% of the PHCFs visited. FHSts' adherence to PMAQ implied an agreement between each municipal health secretariat and the MoH, which included the agreement of monitoring indicators. Based on these criteria, the initial list provided by the MoH totaled 17,304 teams adhering to the program (approximately 51% of the existing national FHSts in 2012); however, the external evaluation was performed on 17,202 FHSts (99.4%)[8].

### Operational aspects

The unit of analysis adopted was the FHSt, whose data derived from the second PMAQ module. Initially, low-complexity actions available in the PMAQ-AB instrument were mapped according to the HSP-MRJ's lines of care[6]. Next, the variables of interest were selected based on the identification of the health actions listed in the HSP-MRJ and performed by FHSts. To select the type of action, we presumed the categorization of access and quality standards according to the level of priority as Essential or Strategic[9] for each line of care.

As exposure variables, services/actions were compiled by line of care, as follows: Service Organization, Outpatient Procedures/Surgeries, Adult- and Elderly-Centered Care, Mental Health, Child-Centered Care and Characterization. In addition, FHSts were analyzed according to population strata (municipalities with up to 20,000 inhabitants (EP1), from 10,001 to 20,000 (EP2), from 20,001 to 50,000 (EP3), from 50,001 to 100,000 (EP4), 100,001 to 500,000 (EP5), 500,001 and over (EP6) and the stratum EP6#, corresponding to EP6, excluding MRJ)). These population strata were based on the classification adopted in studies with a similar focus[8], in addition to following the population distribution as adopted by PMAQ-AB.

We considered two outcome variables: 1) FHSt belonging to the municipality of Rio de Janeiro; and, 2) FHSt offering all nine HSP-MRJ procedures.

### Data analysis

We performed uni-, bi- and multivariate analyzes using the SPSS V.17.0 program. The analysis of the set of exposure variables called "Lines of care by population stratum" had its association tested through tabulation and Pearson's chi-square test ($\chi^2$). The second set "Lines of care by MRJ" had its association verified for "FHSt is from MRJ or not" using the Pearson's chi-square test ($\chi^2$), as well as the "gross" odds ratio (OR) with their respective confidence intervals (CI). Finally, the analysis of the indicator "FHSt offering all the procedures of the Service Portfolio" according to "Lines of care" also counted on chi-square test ($\chi^2$) and odds ratio "gross" (OR) with respective CI. All tests were performed at a significance level of 5% and their respective p-values are shown.

In the multivariate approach, the independent variables (related to the characterization and lines of care) statistically associated with the outcome "FHSt provides all HSP-MRJ procedures" and with OR> = 2 in each line of care gave rise to a multivariate logistic regression model. This model was performed to identify FHSts most likely to perform all HSP procedures for adjusted odds ratios (ORadj)[10].

Stepwise backward was the selection method used, and variables with $p < 0.10$ were included in the model and, after the iterations, variables with $p > 0.05$ were eliminated, determining the logistic regression coefficients, the ORadj and their respective CI 95%. The predicted probabilities for the outcome (FHSt provides all procedures = YES) were calculated by "population stratum" exposure in the final model. The cutoff point used in the outcome ratio was 17% (proportion of FHSts that performed all procedures). The proportion of correct classification between positive (CR+) and negative (CR-) scores for the outcome and the total classification ratio (PCT-Overall) were also determined.

Data from the public domain were used, thus, this study was exempted from ethical evaluation by the Research Ethics Committee of the Sergio Arouca National School of Public Health (ENSP / Fiocruz). The source study (PMAQ) was submitted to the Human Research Ethics Committee of ENSP / Fiocruz and approved.

## Results

About 27% of FHSts that adhered to the PMAQ had no dental surgeon and 28.7% had no nursing technician. In EP6, 8.2% had no doctor. On the other hand, 99.6% of FHSts had at least one nurse and all had community health workers (CHW).

Regarding teams regional distribution, 70% were located in the northeast (32.2%) and southeast (38.2%) regions, with the lowest proportion recorded in the northern region, with 6.1%. FHSts' adherence to PMAQ achieved 51% nationwide and 55% in the MRJ.

The characterization of FHSts that adhered to the PMAQ is shown in Table 1. With the exception of the provision of mental health services, with a national average of 44.3%, there was generally a good supply of health actions performed by the FHSts in all population strata, reaching 97% (collection of Pap smear). There were significant variations in the services provided in the various population strata, with a greater supply in the large urban centers regarding the existence of electronic records (40% in EP6 and 14% in the country), use of a therapeutic guideline protocol for hypertension, diabetes, tuberculosis, Leprosy (about 90% in EP6 and 70% nationwide) and mental health actions, including the provision of this service (56% in EP6 and 44% nationwide) and mental health professional care (77% in EP6 and 59% nationwide).

MRJ evidenced a better performance vis-à-vis other large urban centers (EP6#), with a statistically significant difference (p <5%) in 10 of the 14 health actions (Table 2). It is worth highlighting the existence of electronic medical records, with a level of implantation of 96% in MRJ's FHSts, contrasting with 34% in the FHSts of the EP6# and 14% in Brazil. However, there is a low supply of mental health services in both MRJ and EP6#, at around 56%.

Another relevant aspect of this study refers to procedures / minor surgeries by HSP-MRJ. A low percentage of procedures offered in the national territory were observed, with the highest mean still lower than 63% for the removal of stitches, dressings and intramuscular injection (Table 3). There was a significant variation among the different population groups, mainly for abscess drainage (52% in EP1 and 26% in EP6), wound suture (56% in EP1 and 19% in EP6), ear washing (57% in the EP1 and 24% in EP6) and nail extraction (50% in EP1 and 13% in EP6). An expressive inversely proportional gradient of procedures supply in relation to population size was also noted (Table 3). Likewise, when MRJ is compared to EP6#, greater results were found for MRJ, thus pointing to a more consistent implementation of these activities in the MRJ.

In the bivariate analysis of the associations between health actions against the outcome "FHSt provides all nine procedures of the HSP-MRJ", it was found that FHSts that perform these procedures had a better performance in all listed health actions. The health action that evidenced the smallest difference was the performance of Pap smears (less than 1%), provided by almost all of the FHSts (Table 4). On the other hand, that with the greatest difference (gross OR = 4.4) was "FHSt performs urgent and emergency care"; this means about 4 times greater likelihood of being an FHSt that performs all the procedures if it is an FHSt that also performs urgent and emergency care.

The multivariate analysis (Table 5) showed gross and adjusted ORs with close values, ranging from 1.1 to 1.4, except for the "existence of electronic medical records" and "FHSt performs urgency and emergency care", with ORadj of 2.5 and 4.6, respectively (p<5%). In addition, when evaluating population strata, an inverse gradient was noted in ORadj, ranging from 2.2 for EP5 to 17.3 for EP1, compared to the reference category (EP6).

## Discussion

This study allowed, with the use of a national level secondary database, to analyze the supply of PHC services in Brazil against the HSP-MRJ. With the exception of the provision of mental health services, there was good distribution in the supply of other health services analyzed in all population strata, although with important variation among them. The provision of health actions in the MRJ was always greater when compared to other large centers (EP6#).

Regarding the provision of procedures / small surgeries listed the HSP-MRJ, there was a supply inversely proportional to the population size of the municipalities, with the exception of MRJ when compared to EP6#. The existence of electronic medical records and urgent / emergency care were the variables that best explained the outcome "FHS provides all HSP-MRJ procedures."

Although we have worked with the PMAQ information block referring only to the teams that joined the program, the distribution is equivalent to that shown in official data[5], that indicate a larger number of teams in the Northeast and Southeast regions, and fewer in the North.

Mental health services presented low supply in all population strata when compared to other health actions surveyed. Mental health is not considered among the ten strategic areas (elim-

**Table 1.** Characteristics of health teams of the family (FHSts) who responded to PMAQ* by lines of healthcare of the Rio de Janeiro municipality health services portfolio and by population strata. Brazil, 2012.

| Selected variables | Population strata(%)& | | | | | | |
|---|---|---|---|---|---|---|---|
| | Up to 10.000 | 10.001-20.000 | 20.001-50.000 | 50.001-100.000 | 100.001-500.000 | 500.001 ou mais | Total |
| N total da amostra por estrato populacional | 2585 | 2877 | 3620 | 1854 | 3169 | 3095 | 17200 |
| General characteristics | | | | | | | |
| Electronic medical records in place | 11,6 | 7,0 | 6,1 | 5,3 | 10,7 | 40,5 | 14,0 |
| FHSt offers urgent and emergency care | 73,1 | 63,6 | 67,0 | 67,9 | 79,2 | 85,2 | 73,0 |
| FHSt exchange patients' information with specialists | 71,3 | 64,8 | 69,4 | 66,3 | 64,2 | 65,1 | 66,8 |
| Women's health | | | | | | | |
| FHSt performs collection for Pap smear test | 96,0 | 96,2 | 96,9 | 97,9 | 98,0 | 98,8 | 97,3 |
| Family planning | | | | | | | |
| FHSt develops family planning actions | 88,3 | 91,3 | 92,3 | 92,7 | 90,5 | 96,3 | 92,0 |
| Prenatal | | | | | | | |
| Pregnant women followed by FHSt have a predefined maternity for delivery | 86,0 | 77,1 | 82,3 | 86,3 | 81,5 | 85,0 | 82,8 |
| Noncommunicable chronic diseases | | | | | | | |
| Follows the standard treatment guideline for hypertension | 63,1 | 60,3 | 64,3 | 65,8 | 76,3 | 89,7 | 70,4 |
| Follows the standard treatment guideline for Diabetes Mellitus. | 63,6 | 60,3 | 64,8 | 65,5 | 76,1 | 89,6 | 70,5 |
| Communicable chronic diseases | | | | | | | |
| Follows the standard treatment guideline for Tuberculosis | 64,0 | 61,8 | 64,9 | 66,3 | 77,2 | 91,8 | 71,5 |
| Follows the standard treatment guideline for Leprosy | 62,9 | 59,9 | 63,0 | 64,1 | 72,2 | 86,7 | 68,6 |
| Mental health | | | | | | | |
| Service supply | 42,7 | 39,0 | 39,2 | 37,9 | 48,7 | 55,8 | 44,3 |
| Care with mental health professionals | 58,9 | 48,7 | 50,8 | 51,2 | 63,1 | 76,8 | 58,7 |
| Children's health | | | | | | | |
| Vaccination records are available | 91,2 | 91,1 | 92,5 | 94,4 | 96,6 | 98,4 | 94,1 |
| Neonatal heel-prick blood test records are available | 75,5 | 70,8 | 73,6 | 76,9 | 82,2 | 91,1 | 78,5 |

* PMAQ = National Program for Improving Access and Quality of Basic Care. & Tests for all variables were statistically significant (c2 with p-value < 0.05%).

ination of leprosy, tuberculosis control, hypertension control, diabetes mellitus control, elimination of child malnutrition, child health, women's health, elderly health, oral health and health promotion) defined by PNAB[1]. In addition, there are scarce and lagged mental health indicators in the Basic Care Information System (SIAB). Thus, our findings may be reflecting the fact that mental health is still a neglected area of the PHC teams working process.

The organization of care in PHC by life cycles and by large groups of diseases can mask interfaces. For example, considering the lines of women's health care, chronic diseases and mental health (a NCD), despite advantages, it can be difficult to address users whose health needs are

**Table 2.** Characteristics of the health family teams (FHSt) who responded to PMAQ * by lines of healthcare of the Rio de Janeiro municipality health services portfolio and by location: Rio de Janeiro municipality (MRJ) and population strata above 500 thousand (EP6). Brazil, 2012.

| Variables selected | Survey locations[&] | | | | | |
|---|---|---|---|---|---|---|
| | MRJ (%) | EP6[#] (%) | p-value ($\chi^2$) | Gross OR | Confidence Interval (95%) | |
| | | | | | Lower | Sup |
| Total sample size | 324 | 2771 | | | | |
| General characteristics | | | | | | |
| Electronic medical records in place | 95,7 | 34,0 | 0,000 | 42,9 | 24,9 | 73,7 |
| FHSt offers urgent and emergency care | 96,6 | 83,8 | 0,000 | 5,4 | 2,9 | 10,0 |
| FHSt exchange patients' information with specialists | 65,1 | 65,1 | 0,984 | - | - | - |
| Women's health | | | | | | |
| FHSt performs collection for Pap smear test | 99,7 | 98,7 | 0,120 | 4,2 | 0,5 | 31,1 |
| Family planning | | | | | | |
| FHSt develops family planning actions | 95,1 | 96,4 | 0,233 | - | - | - |
| Prenatal | | | | | | |
| Pregnant women followed by FHSt have a predefined maternity for delivery | 99,7 | 83,3 | 0,000 | - | - | - |
| Noncommunicable chronic diseases | | | | | | |
| Follows the standard treatment guideline for hypertension | 94,7 | 89,1 | 0,002 | 2,1 | 1,3 | 3,6 |
| Follows the standard treatment guideline for Diabetes Mellitus. | 94,4 | 89,0 | 0,003 | 2,0 | 1,2 | 3,3 |
| Communicable chronic diseases | | | | | | |
| Follows the standard treatment guideline for Tuberculosis | 95,0 | 91,4 | 0,026 | 1,7 | 1,0 | 3,0 |
| Follows the standard treatment guideline for Leprosy | 92,5 | 86,0 | 0,001 | 2,0 | 1,3 | 3,0 |
| Mental health | | | | | | |
| Service supply | 55,6 | 55,8 | 0,935 | - | - | - |
| Care with mental health professionals | 82,6 | 76,2 | 0,011 | 1,4 | 1,0 | 2,0 |
| Children's health | | | | | | |
| Vaccination records are available | 99,7 | 98,2 | 0,049 | 5,8 | 0,8 | 42,2 |
| Neonatal heel-prick blood test records are available | 99,1 | 90,2 | 0,000 | 11,5 | 3,6 | 36,4 |

[*]PMAQ = National Program for Improving Access and Quality of Basic Care. [&] Gross OR reference category = "No" category for all exposure variables. EP6# - Municipalities with population stratum above 500 thousand inhabitants, excluding the municipality of Rio de Janeiro.

covered by different lines of care. Hence, different authors[11-13] point to hardships faced by teams in addressing mental health cases, which include diagnostic difficulties and insufficient training, highlighting the shortcomings in the understanding that mental health is a cross-cutting theme in all strategic areas, when understanding health in a comprehensive way.

Pap smear collection was the service with the highest supply in the country, achieving a national average of 97%. This is the primary method used for cervical cancer screening to detect precursor lesions. In Brazil, 16,340 new cases of cervical cancer, which is the fourth most frequent cause of cancer death among women[14], are expected in 2016. The high supply of the test is quite relevant. According to the World Health Organization (WHO), to achieve a significant impact on cervical cancer mortality, the screening coverage should reach 80% or more of the target population[15]. MoH actions for prevention and early detection of this cancer are long-standing and date back to 1984; they are currently planned for both under the Pact for Health, through the inclusion of indicators and targets to be achieved for cervical cancer control in states and municipalities[16] , and PNAB[1], illustrating the cross-cutting nature of this cancer's control actions.

Data from the National Household Sample Surveys (PNAD) report that the proportion of women in the target age submitted to Pap smear test at least once in their lifetime increased from

**Table 3.** Characteristics of the family health teams (FHSt) who responded to PMAQ* by procedures performed and by population strata. Brazil, 2012.

| Procedures performed | Population stratum (%)& | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Up to 10,000 | 10,001-20,000 | 20,001-50,000 | 50,001-100,000 | 100,001-500,000 | 500,001 and over | EP6# | MRJ | Total |
| Total sample size per population stratum | 2585 | 2877 | 3620 | 1854 | 3169 | 3095 | 2771 | 324 | 17200 |
| The FHSt performs procedures/ small surgeries. Which ones? | 73,2 | 66,4 | 64,1 | 59,2 | 57,2 | 57,3 | 53,3 | 91,7 | 62,8 |
| Abscess drainage | 52,5 | 35,9 | 32,4 | 27,3 | 28,2 | 26,3 | 20,2 | 78,4 | 33,6 |
| Suture of wounds | 55,7 | 35,7 | 28,4 | 23,9 | 23,6 | 18,9 | 12,8 | 71,3 | 30,7 |
| Removal of stiches | 70,8 | 64,1 | 62,9 | 57,3 | 55,9 | 55,6 | 51,6 | 89,8 | 61,1 |
| Ear washing | 57,1 | 40,3 | 35,7 | 27,9 | 25,4 | 24,2 | 20,4 | 56,5 | 34,9 |
| Nail extraction | 49,8 | 29,6 | 23,4 | 18,4 | 16,7 | 13,4 | 8,8 | 52,2 | 24,8 |
| Nebulization / inhalation | 68,0 | 60,1 | 59,3 | 54,3 | 51,7 | 54,0 | 49,8 | 89,5 | 57,8 |
| Dressings | 72,3 | 65,6 | 63,5 | 58,3 | 56,2 | 56,4 | 52,4 | 90,7 | 62,0 |
| Intramuscular injectable medications | 71,3 | 63,7 | 61,8 | 57,2 | 56,4 | 56,3 | 52,3 | 90,4 | 61,1 |
| Intravenous injectable medications | 65,2 | 51,6 | 49,4 | 44,2 | 46,7 | 51,7 | 47,5 | 88,0 | 51,5 |

* PMAQ = National Program for Improving Access and Quality of Basic Care. & Tests for all variables were statistically significant ($\chi^2$ with p-value < 0.05%). EP6# - Municipalities with population stratum above 500 thousand inhabitants, excluding the municipality of Rio de Janeiro.

82.6% in 2003 to 87.1% in 2008. In addition, data from the Cervical Cancer Control Information System (SISCOLO) also show an increase in the number of municipalities that performed Pap smear test from 89.5% (2004/2005) to 95% (2007/2008)[17]. The National Health Survey (PNS) conducted in 2013 revealed that, in Brazil, 79.4% of women aged 25-64 years underwent the preventive exam in the last three years prior to the survey. The Southeast (81.1%), South (83.0%) and Midwest (80.9%) had percentages above the national average (79%), while the North (75%) and Northeast (75%) were below this mean[18]. Among women aged 25-64 years who had never taken the preventive exam (17% of women in this range), 46% declared they did not find it necessary, 21% had never been told to do so, and 10% declared they were ashamed to do so[18]. These results indicate problems in the process for early detection and prevention actions, which also reveals the need for qualitative studies in this approach.

It should be emphasized that MRJ presented better performance of its FHSts versus EP6# regarding the supply of services, among them the use of electronic medical records.

It is widely known that printed or electronic medical records are a valuable tool that serves different purposes: consultation, evaluation, teaching, research, audit, statistics, ethical and legal processes, communication among team professionals, and depending on the system, integration with other levels of health care, although important barriers to its implementation and acceptance by professionals are documented[19].

Due to its importance for multiple purposes and mainly due to technological advances, the Federal Medical Council approved in 2007 the technical standards for digitalization and use of computerized systems for the safekeeping and handling of patient records, authorizing the elimination of papers records and the exchange of identified health information[20]. Corroborating this and aiming to restructure PHC information at the national level, in 2013, the Brazilian MoH launched the e-SUS Basic Care (e-SUS AB). It seeks an electronic SUS and a qualified computerization process, understanding that the qualification of information management is fundamental both to increase the quality of service to the population and to the public management in general[21].

Hence, in MRJ, the process of implantation of the Electronic Patient Record (PEP) in the PHC facilities occurred in the first half of 2011, by decision of the municipal health manage-

**Table 4.** Characteristics of health teams of the family (FHSt) who responded to PMAQ * by lines of healthcare by FHSt that provides all procedures of the portfolio health services in the city of Rio de Janeiro (HSP-MRJ). Brazil, 2012.

| Variables selected | FHSt provides all procedures of the HSP-MRJ** | | | | | | |
|---|---|---|---|---|---|---|---|
| | Yes | No | Total | P-value ($\chi^2$) | Gross OR& | Confidence Interval (95%) | |
| | | | | | | Lower | Upper |
| Total sample size | 2951 | 14200 | 17151 | | | | |
| General characteristics | | | | | | | |
| Electronic medical records in place | 21,4 | 12,5 | 14,0 | 0,000 | 1,9 | 1,7 | 2,1 |
| FHSt offers urgent and emergency care | 90,8 | 69,3 | 73,0 | 0,000 | 4,4 | 3,8 | 5,0 |
| FHSt exchange patients' information with specialists | 76,7 | 64,8 | 66,8 | 0,000 | 1,8 | 1,6 | 2,0 |
| **Women's health** | | | | | | | |
| FHSt performs collection for Pap smear test | 98,0 | 97,2 | 97,3 | 0,009 | 1,4 | 1,1 | 1,9 |
| **Family planning** | | | | | | | |
| FHSt develops family planning actions | 93,8 | 91,6 | 92,0 | 0,000 | 1,3 | 1,1 | 1,6 |
| **Prenatal** | | | | | | | |
| Pregnant women followed by FHSt have a predefined maternity for delivery | 86,6 | 82,0 | 82,8 | 0,000 | 1,4 | 1,3 | 1,6 |
| **Noncommunicable chronic diseases** | | | | | | | |
| Follows the standard treatment guideline for hypertension | 73,9 | 69,7 | 70,4 | 0,000 | 1,2 | 1,1 | 1,3 |
| Follows the standard treatment guideline for *Diabetes Mellitus.* | 74,3 | 69,7 | 70,5 | 0,000 | 1,3 | 1,1 | 1,4 |
| **Communicable chronic diseases** | | | | | | | |
| Follows the standard treatment guideline for Tuberculosis | 73,3 | 71,2 | 71,5 | 0,021 | 1,1 | 1,0 | 1,2 |
| Follows the standard treatment guideline for Leprosy | 71,1 | 68,1 | 68,6 | 0,001 | 1,2 | 1,1 | 1,3 |
| **Mental health** | | | | | | | |
| Service supply | 52,2 | 42,6 | 44,3 | 0,000 | 1,5 | 1,4 | 1,6 |
| Care with mental health professionals | 66,0 | 57,1 | 58,7 | 0,000 | 1,5 | 1,3 | 1,6 |
| **Children's health** | | | | | | | |
| Vaccination records are available | 95,8 | 93,7 | 94,1 | 0,000 | 1,5 | 1,3 | 1,8 |
| Neonatal heel-prick blood test records are available | 84,1 | 77,4 | 78,5 | 0,000 | 1,5 | 1,4 | 1,7 |

* PMAQ = National Program for Improving Access and Quality of Basic Care. ** List of procedures / small surgeries: Abscess drainage, Suture of wounds, Removal of stiches, Ear washing, Nail extraction, Nebulization/inhalation, Dressings, Intramuscular injectable medications and Intravenous injectable medications. & Gross OR reference category = "No" category for all exposure variables.

ment[22]. From that moment, a framework was established for the consolidation of the process of computerization of health services and the work process of PHC professionals. All this development occurred through a management agreement between the MHS-RJ and the Social Health Organizations, and of these with PEP companies. These companies are periodically requested to make customizations of the PEP to the technical and care-related reality of health professionals.

However, it is necessary to consider that there are also weaknesses, such as the integration of this system among the different levels of care of health services, impairing the continuity of care with the user and intercommunication among health professionals[23]. Thus, PHC has undermined its role of communication center and care coordinator.

Regarding low complexity procedures, these are simple ones and should be widely provided in

**Table 5**. Results of the multivariante logistic regression model (*stepwise backward*[*]) for the outcome "Family health team (FHSt) provides all the procedures of the services portfolio of the municipality of Rio de Janeiro (HSP-MRJ)[**]". Brazil, 2012.

| Logistic Regression Model [&] | Gross OR | Adjusted OR [*] | Confidence Interval (95%) | |
|---|---|---|---|---|
| | | | Lower | Upper |
| General characteristics | | | | |
| Electronic medical records in place in the PHCF | 1,9 | 2,5 | 2,2 | 2,8 |
| FHSt offers urgent and emergency care | 4,4 | 4,6 | 4,0 | 5,3 |
| FHSt exchange patients' information with specialists | 1,8 | 1,3 | 1,1 | 1,4 |
| Women's health | | | | |
| FHSt performs collection for Pap smear test in the PHCF | 1,4 | 1,3 | 1,0 | 1,8 |
| Family planning | | | | |
| FHSt develops family planning actions | 1,3 | 1,3 | 1,1 | 1,6 |
| Prenatal | | | | |
| Pregnant women followed by FHSt have a predefined maternity for delivery | 1,4 | 1,1 | 1,0 | 1,3 |
| Mental health | | | | |
| Service supply | 1,5 | 1,2 | 1,1 | 1,3 |
| Care with mental health professionals | 1,5 | 1,2 | 1,1 | 1,3 |
| Children's health | | | | |
| Neonatal heel-prick blood test records are available | 1,5 | 1,4 | 1,2 | 1,6 |
| Population stratum | | | | |
| Population stratum: up to 10.000 inhabitants (EP1) | 7,4 | 17,3 | 14,5 | 20,6 |
| Population stratum: 10.001 - 20.000 inhabitants (EP2) | 2,7 | 7,0 | 5,8 | 8,3 |
| Population stratum: 20.001 - 50.000 inhabitants (EP3) | 1,8 | 4,3 | 3,6 | 5,1 |
| Population stratum: 50.001 - 100.000 inhabitants (EP4) | 1,4 | 3,2 | 2,6 | 4 |
| Population stratum: 100.001 - 500.000 inhabitants (EP5) | 1,3 | 2,2 | 1,8 | 2,6 |
| Population stratum: above 500.001 inhabitants (EP6) {& - category of reference} | - | - | - | - |

[*] Result of the multivariante logistic regression model: Proportion of total classification – PCT = 69.5%; CP+ = 69.8% and CP- = 69.5%. [**]List of procedures / small surgeries: Abscess drainage, Suture of wounds, Removal of stiches, Ear washing, Nail extraction, Nebulization/inhalation, Dressings, Intramuscular injectable medications and Intravenous injectable medications. [&] Category of Reference of Odds Ratio relative to "No" answer.

PHC. However, the research showed a low supply, being the highest average of 63% for removal of stitches, dressings and intramuscular injections. Some reasons may be considered. As for human resources, there is the difficulty to maintain or increase the supply of some of these procedures due to the high turnover of personnel[24], especially the medical category, considering that the procedures with lowest supply are, in Brazil, exclusively medical. Ney and Rodrigues[25] point out the low capacity of the health professional training institutions to promote the adequacy of the training process compatible with the FHS model, which results in the technical and care-related unpreparedness to act as a general practitioner, increasing the number of referrals of users to upper health system levels. In addition to these, insufficient and/or lack of necessary equipment and resources and inadequate physical infrastructure may contribute to the difficulty of performing procedures.

This low supply of procedures evidenced in the study can generate discontinued coordination of care, causing health professionals to refer users to the more specialized levels of care or, in some cases, that users themselves seek urgent services, jeopardizing PHC basic attributes[2].

In order to improve the access and quality of actions in PHC, the MoH established, in 2011, the Requalifica UBS, which aims to secure resources for the expansion of the PHCF network, with the construction of new establishments, expansion and refurbishment of others, thus financing the building of procedure / observation rooms

in existing PHCFs and defined the standard for the new ones, all financed by MoH[26]. On the one hand, impact of the Requalifica UBS, created in the year prior to the collection of data used in this study, is probably not reflected in them.

Another information that deserves to be highlighted is the greater supply of these procedures in EP1 (53% of the FHSts), decreasing gradually with increased number of inhabitants. Although scarce, studies involving small municipalities, which are the majority in Brazil, indicate that, in general, these do not have a sufficient supply of health services of different levels of care in their territories[27,28].

An important feature of MRJ is the PHC reform, which began in 2009 and included new investments. FHS' policy decision to strengthen PHC and the restructure the Health Care Network marked a new stage in health care for the population of Rio de Janeiro. Therefore, under the justification that it was necessary to give agility and flexibility to a slow and inefficient administration considered, Municipal Law No. 5,026, dated May 19, 2009, was enacted and pointed to a new shared management model with Social Health Organizations (OSS).

The implementation of the Service Portfolio in PHC has also become central. Harzheim[29] says this is a powerful tool to adapt services to the PHC model, which MHS-RJ preferred. Significant adherence to this guideline intends to prevent PHC services from being characterized as offering a small proportion of health services, a common situation in the FHS scenario in the country.

Clavería et al.[30] argue that, although in Europe HSP has a wide, intra- and inter-country territorial variety, it is the result of a health model that varies according to the care model and the context in which it is implemented. This document is structured by organizational and management aspects, clinical protocols, attitudes of professionals and patients, with temporal differences in content as a result of technical innovations or social consensus. They believe that capillarity in access to HSP is a requirement for equity and conclude that it must be adequate to the needs of current society and legitimate progress of professionals, more effectively in PHC. Portugal[31], a country with a PH-oriented health system based on an expressive reform, similar to what happened in Brazil, is one of those who adopted this tool this level of care.

In the Brazilian context, there were, until 2016, three more capitals (Florianópolis, Curitiba and Natal) that also implemented, in 2014, a portfolio of PHC services. Florianópolis' HSP, elaborated by PHC management and service professionals, was the pioneering capital.

Although PHC provides, even in different formats, in all Brazilian municipalities, competences about what types of services a municipality should perform, because of its economic, social and demographic size, are not clear or precise[32]. Increased PHC resolution capacity results in a further rationalization of the use of specialized services, such as emergency care and hospital beds.

The monitoring of services offered by HSP-RJ is done through the indicator "rate of items of the service portfolio implemented", planned in the management agreement. This indicator is evaluated quarterly in each programmatic area by a Technical Monitoring Committee (CTA) composed of members of MHS-RJ. This enables the identification and evaluation of possible problems and corrections necessary to ensure the services provided to the population through the document.

As a result of the multivariate analysis, there was an inverse gradient of the population stratum in relation to the reference category (EP6), that is, increased population reduces the FHSts likelihood of performing all the procedures listed.

This study is a pioneer in the field of knowledge, especially at the municipal level, based on a comparative analysis of the performance of MRJ's FHSts that responded to the PMAQ (year 2012), against FHSts of the other major centers.

In addition, we emphasize the strength of the study both in terms of its coverage, when analyzing several lines of health care, and the used national database's representativeness, with significant sampling. In addition, the use of PMAQ monitoring and evaluation tools as data source may allow for future comparative studies, based on their replications.

On the other hand, it is important to emphasize caution in the analysis and generalization of the results, since the data of module 2 refer only to the teams that voluntarily joined the program. It is reasonable to think of a selection bias for team volunteering and possible bias of the responses, which may mean that the actual scenario of information coming from this module is actually more unfavorable. There is usually an interest, both in teams and municipal managers, to show good results because of transfer of financial resources linked to the program[33].

It should also be noted that the results pointed for by findings of the MRJ versus EP6# refer to a comparison with an average of other large municipalities, which does not mean that specific municipalities in this stratum have lower results than MRJ, but rather that the aggregate of these municipalities is in worst case setting.

In addition, it was the first experience of PMAQ implementation, which had a broad and diversified approach to a comprehensive set of PHC-related issues, but not specific to cover HSP-MRJ issues. Thus, the inclusion criterion was strictly those of FHSt that adhered to the PMAQ and only the intersection between those surveyed in the PMAQ and those indicated in the MHS-RJ service portfolio were considered as "procedures performed in the Service Portfolio". The "Oral Health" and "Health Promotion" care line was excluded at the discretion of the leading researcher.

Finally, because this is a cross-sectional study, it is not possible to make causal inferences and it is also important to consider that the period of data collection occurred at the moment of PHC expansion in MRJ. Therefore, the results of this study reflect the setting of that moment (2012).

## Conclusions

Using PMAQ 2012 national database, this study sought to advance the analysis of low complexity procedures and actions/services provided by lines of care in the different population strata in Brazil, starting with HSP-MRJ.

Expanded FHS to large urban centers, combined with the extended coverage of services with the highest qualification of care and satisfaction of the health needs for the Brazilian population, unburdening service capacity for other levels of health care are the great challenges for strengthening national PHC. In the most densely populated areas, heterogeneous economic and social conditions are also reflected in inequality in the supply of health services.

Despite the increased number of FHSts in Brazil, results point to the disparity in the implementation of programs in large municipalities, with a systematic fragility in the provision of certain health actions and services, such as mental health services, use of electronic medical records and performing some procedures, such as wound suture, ear washing and abscess drainage. Such obstacles prevent PHC from fully achieving its objectives and underscore the fact that FHS is an ongoing process under construction.

This study showed the precarious nature of some common procedures, and no previous studies that addressed procedures/small surgeries in PHC by population size and that allow the discussion of the development of this setting were found.

It was observed from this study that while the offer of low complexity procedures was a bigger problem in large centers, the provision of health actions in the different lines of care was a greater problem in small municipalities. Thus, it is relevant to carry out studies that evaluate the organization and operation of the Healthcare Network in different population sizes.

It is believed that HSP-MRJ is an important management tool in the coordination of care and that it contributed satisfactorily to the results shown by MRJ in relation to the others, in the same population stratum. It is hoped, therefore, that this will reduce inequities in the supply of actions and services with the consequent improvement of access, with repercussions throughout the health care network. The portfolio of services was a virtuous management intervention, which can be adopted in the different management spheres, an effort that must be accompanied by its monitoring.

## Collaborations

BA Salazar, MR Campos and VL Luiza equally participated in the design, development and analysis of the study and also contributed to the writing of the text and approved its final version.

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