

Allocation of public resources for Health in Macaé between 2014 and 2017: Reflections and Challenges

Alocação de recursos públicos para saúde em Macaé entre 2014 e 2017: Reflexões e Desafios

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ABSTRACT

Aim: To demonstrate the allocation of resources destined for the Health Financing Blocks transferred by the National Health Fund to the municipality of Macaé between 2014 and 2017. **Methods:** Descriptive quantitative study, based on the extraction and tabulation of available data of the Information System on Public Health Budgets (SIOPS), as well as publications including the Pluriannual Plan (2014-2017) of the municipality of Macaé. **Results:** The data extracted from the SIOPS, referring to FNS transfers, a total of R\$174,860,780.76 was found to be allocated to health in Macaé, of which R\$5,457,773.14 (3, 12%) directed to Pharmaceutical Assistance and R\$ 40,467,477.50 (23.14%) to Primary Care in the period between 2014 and 2017. The data analyzed demonstrate that Macaé implemented, in particular, in the years of 2015 and 2016 resources below than foreseen by the Pluriannual Plan (2014-2017), which may be associated with the oil crisis experienced by the municipality. It should be noted that the loss in tax collection can directly impact the feasibility of offering health services, which can be considered critical and fragile since many individuals are dependent on the SUS. **Conclusion:** It is important to understand the real demands and the rational planning of health needs by local managers, so that even in times of budgetary crisis they can organize themselves to better promote and offer the services considered essential to their population.

Keywords: Financing; Unified Health System; Management; Macaé

RESUMO

Objetivos: Demonstrar a alocação de recursos repassados pelo Fundo Nacional de Saúde para cada Bloco de Financiamento da Saúde do município de Macaé entre 2014 e 2017. **Métodos:** Estudo quantitativo descritivo, a partir da extração e tabulação de dados disponíveis do Sistema de Informação sobre Orçamentos Públicos em Saúde (SIOPS), bem como de publicações como o Plano Plurianual (2014-2017) do município. **Resultados:** A partir dos dados extraídos do SIOPS, referente aos repasses do FNS, verificou-se um total de R\$174.860.780,76 destinados para saúde de Macaé, sendo destes R\$5.457.773,14 (3,12%) direcionados à Assistência Farmacêutica e R\$ 40.467.477,50 (23,14%) para a Atenção Básica no período entre 2014 e 2017. Os dados analisados demonstram que Macaé executou, em especial, nos anos de 2015 e 2016, recursos abaixo do previsto pelo Plano Plurianual 2014-2017, o que pode estar associado com a crise do petróleo vivenciada pelo município. Ressalta-se que a redução da arrecadação de impostos pode impactar diretamente na viabilidade da oferta de serviços em saúde, sendo considerado como crítico e delicado para gestores e comunidade, uma vez que muitos indivíduos são dependentes do SUS. **Conclusão:** Reforça-se a relevância da compreensão das reais demandas e o planejamento racional das necessidades em saúde pelos gestores locais, para que mesmo em momentos de crise orçamentária estes possam se organizar para melhor promover e ofertar os serviços considerados essenciais à sua população.

Palavras chaves: Financiamento; Sistema Único de Saúde; Gestão; Macaé

Introduction

Since the Federal Constitution of 1988, the Brazilian State has been responsible for guaranteeing universal and equal access to health services for its population¹. With the institutionalization of the Unified Health System (SUS), particularly through the Organic Health Laws of 1990^{2,3}, actions at different levels of care began to be planned and promoted in a country with approximately 200 million inhabitants⁴. This process required the planning, organization, and participation of managers, the population, and health professionals, not only to build but, more importantly, to consolidate this complex public health system.

The SUS is guided by doctrinal principles such as universality, equity, and comprehensiveness, as well as organizational principles including regionalization, hierarchy, decentralization, and social participation^{5,6}. Established by Article 196 of the 1988 Federal Constitution¹ and regulated in particular by Law No. 8,080 of September 19, 1990² and Law No. 8,142 of December 28, 1990³, the SUS encompasses a wide range of health services, such as vaccination, the dispensing of medicines, and organ transplants⁷. The National Immunization Program (PNI) is one of the many initiatives developed and financed by the Ministry of Health, standing out nationally and internationally for its achievements and advances, such as reducing morbidity and mortality, especially evident during the COVID-19 pandemic. For the implementation of such activities, rational and efficient allocation of public health resources is indispensable⁸.

The financing of the SUS is tripartite: the federal government, states, and municipalities are all responsible for ensuring access to health services. Under Complementary Law No. 141 of January 2012, it was established that the federal government must allocate at least the same amount as the previous year, adjusted by the nominal variation of the Gross Domestic Product (GDP), while states and municipalities must allocate a minimum of 12% and 15%, respectively, of their net revenue from taxes^{9,10}. However, with the approval of Constitutional Amendment (EC) No. 95 in 2016¹¹, resources

for health and education were frozen for 20 years. This has resulted in significant losses, estimated at approximately 113 billion reais by 2036¹². Evaluations by the National Health Council estimated that around 42 billion reais were withdrawn from the SUS in 2018 and 2019 (before the COVID-19 pandemic) and again in 2022 following the approval of this amendment¹³.

The original format for transferring federal resources to health actions, regulated by Ordinance No. 204 of January 29, 2007, considered disbursement through financing blocks, namely Primary Care, Medium and High Complexity Care, Health Surveillance, Pharmaceutical Assistance, SUS Management, and Health Services Network Investments¹⁴. However, in 2018, with Ordinance No. 3,992 of December 28, 2017, resources from the National Health Fund began to be allocated to states, the Federal District, and municipalities under only two financing blocks costs and investments¹⁵ aiming to provide greater flexibility to managers in allocating public funds across different areas such as Primary Care, Pharmaceutical Assistance, and Medium and High Complexity Care.

Since public health actions and services are promoted and financed through tax collection at the federal, state, and municipal levels, it is essential to develop instruments that ensure the traceability and transparency of data regarding expenditures and resources allocated to health, both for managers and for citizens (social control)¹⁶. Within this context, the Health Budget Information System (SIOPS), created in 1999, stands out. Operated by the Ministry of Health, SIOPS is a publicly accessible system responsible for collecting, storing, and providing information regarding total revenues and health expenditures of the federal government, states, Federal District, and municipalities^{16,17}. SIOPS serves as a valuable source for research by making data on revenues and expenditures available¹⁶, which is crucial for managers and health councils, as it facilitates monitoring and oversight of the allocation of public resources¹⁷⁻¹⁰.

Additionally, the regulatory instrument known as the Multi-Year Plan (Plano Plurianual – PPA) plays an important role. It is prepared and disclosed

to provide information at the municipal, state, and federal levels on actions and services, such as health, funded with public resources². The PPA is a medium-term government planning tool that establishes goals, priorities, and objectives for public administration, essential for planning the social demands of the population²¹.

Over the years, discussions and reflections have intensified regarding the need to evaluate the format, amount, and criteria used for allocating resources across the various areas of health in Brazil. Moreover, despite the creation of SIOPS in 1999, which allowed access to important economic data for health management^{18,19} there are still few publications showing applications or experiences using this system²²⁻²⁵, especially with detailed breakdowns by financing block across different levels of management (national, state, or municipal). Within this context, the present study aims to present an overview of the transfer of public resources from the National Health Fund (FNS) to different areas of health in the municipality of Macaé, located in the State of Rio de Janeiro, from 2014 to 2017, including Pharmaceutical Assistance, and to contribute to discussions and reflections on the challenges faced by the municipality.

Methodology

To understand and analyze public resources allocated to health actions in the municipality of Macaé from the perspective of the SUS, a descriptive quantitative study was conducted between July 2022 and July 2023 using SIOPS¹⁷ and data from the Macaé City Hall Transparency Portal²⁶ regarding the allocation and transfer of health resources from the National Health Fund (FNS), covering the period from 2014 to 2017.

Macaé is located in the state of Rio de Janeiro, about 190 kilometers northeast of the state capital, with an estimated population of 266,136 inhabitants in 2021 and a total area of 1,216.989 km²⁴. Known as the National Petroleum Capital⁴, Macaé stands out for its petroleum activities, gas processing, and agriculture, being the largest producer of black beans in the state. Additionally, it has gained prominence

in livestock, holding the third-largest herd in Rio de Janeiro, and maintains a strong fishing tradition, exporting fish to countries such as the United States and Switzerland²⁷. In terms of public health services, Macaé has 42 Family Health Strategy teams, ten Municipal Pharmacies, nine Basic Health Units, six hospitals, two Emergency Care Units, and two Mixed Health Units, according to data published by the local government²⁸.

A search was conducted in SIOPS (Access: http://siops.datasus.gov.br/filtro_rel_ges_asps_municipal.php), using data available in the section “Calculation of % Applied in Health – according to LC141/2012,” referring to SUS FNS resource transfers/allocations. This included updated targets/estimates and realized revenues/allocated amounts for each health financing block in Macaé (Primary Care, Medium and High Complexity Care, Health Surveillance, Pharmaceutical Assistance, SUS Management, and Health Network Investments) for the period from 2014 to 2017.

After extracting SIOPS data on FNS resources allocated to each health financing block in the municipality, the data were tabulated for analysis to better demonstrate the panorama, percentages, and distribution of public health resources allocated in Macaé. The analysis was conducted using Microsoft Excel 2007.

Results

Based on the data extracted from SIOPS, a budget forecast of BRL 173,253,716.73 and a total of BRL 174,860,780.76 in executed healthcare expenditures were identified for the municipality of Macaé between 2014 and 2017, as presented in Framework 1 and Table 1. Notably, BRL 5,457,773.14 (3.12%) was allocated to Pharmaceutical Assistance initiatives, and BRL 40,467,477.50 (23.14%) was directed toward Primary Care during this period.

As shown in Table 1, with the exception of 2014 and 2017, the years 2015 and 2016 experienced a reduction in the resources actually executed compared to the projected targets for healthcare actions and services.

Table 1. Executed and Projected Public Health Expenditures in Macaé, 2014–2017

Year	Executes (BRL)	Projected(BRL)	Difference (BRL) (Executed – Projected)	Difference (%)
2014	45,298,726.67	37,887,716.73	+ 7,411,009.94	+19.56
2015	41,351,469.48	45,285,000.00	- 3,933,530.52	-8.69
2016	41,972,351.17	49,220,000.00	- 7,247,648.83	-14.73
2017	46,238,233.44	4,861,000.00	+ 5,377,233.44	+13.15
Total	174,860,780.76	173,253,716.73	+ 1,607,064.03	0.92

Source: SIOPS¹⁷ – Author's own elaboration

Framework 1. Transfers from the National Health Fund Allocated to Each Health Financing Block in the Municipality of Macaé (2014–2017)

Financing Block in the Municipality of Macaé (2014–2017)						
Year	SUS Management (BRL)	Pharmaceutical Assistance (BRL)	Primary Care (BRL)	Health Surveillance (BRL)	Medium and High Complexity Care (BRL)	Health Network Investments (BRL))
2014	20,000.00	1,607,984.07	11,217,013.45	2,132,285.60	29,608,526.89	712,916.66
%	0.04%	3.54%	24.77%	4.70%	65.37%	1.58%
2015	NA	1,143,124.33	11,110,925.62	1,908,524.90	26,135,151.95	1,053,742.68
%	0%	2.76%	26.87%	4.62%	63.20%	2.55%
2016	57,000.00	1,413,976.42	9,430,966.89	1,761,591.18	25,920,988.36	3,387,828.32
%	0.14%	3.37%	22.46%	4.19%	61.76%	8.08%
2017	30,000.00	1,292,688.32	8,708,571.54	2,981,706.05	33,225,267.53	NA
%	0.06%	2.79%	18.84%	6.45%	71.86%	0%
Total	107,000.00	5,457,773.14	40,467,477.50	8,784,107.73	114,889,934.73	5,154,487,66
%	0.06%	3.12%	23.14%	5.03%	65.70%	2.95%

Note: NA = Not Available

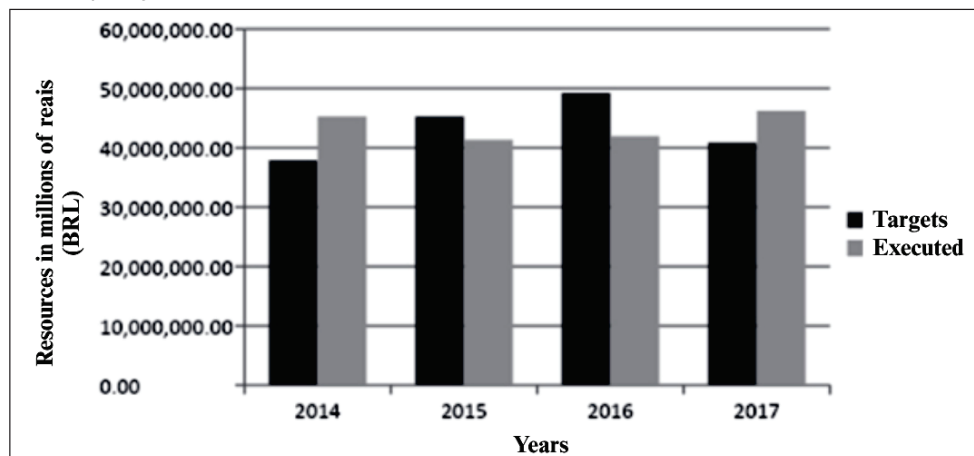
Source: SIOPS¹⁷ – Author's own elaboration

Table 1 presents an overview of the resources related to the projected and executed amounts allocated to healthcare actions and services for each year between 2014 and 2017. It can be observed that in the years 2015 and 2016, the amounts actually executed were lower than initially projected representing a reduction of 8.69% and 14.73%, respectively, compared to the forecasted figures.

For the Pharmaceutical Assistance financing block, as shown in Table 2, a reduction in the executed public resources compared to the projected amounts can be observed, particularly in the years

2015 and 2016. In this context, the executed resources amounted to over BRL 830,000 less than what was forecasted funds that could have been allocated to numerous actions and services within this critical area of healthcare, such as the procurement of medicines. Even when considering the process of economic “recovery” observed in the municipality in 2017 which involved increased funding and investments promoted by the local government, these efforts still did not offset the budgetary losses in the healthcare sector recorded in 2014 and 2017, as illustrated in Table 2 and Figure 2.

Figure 1. Projected Targets and Executed Health Expenditures from the National Health Fund in the Municipality of Macaé



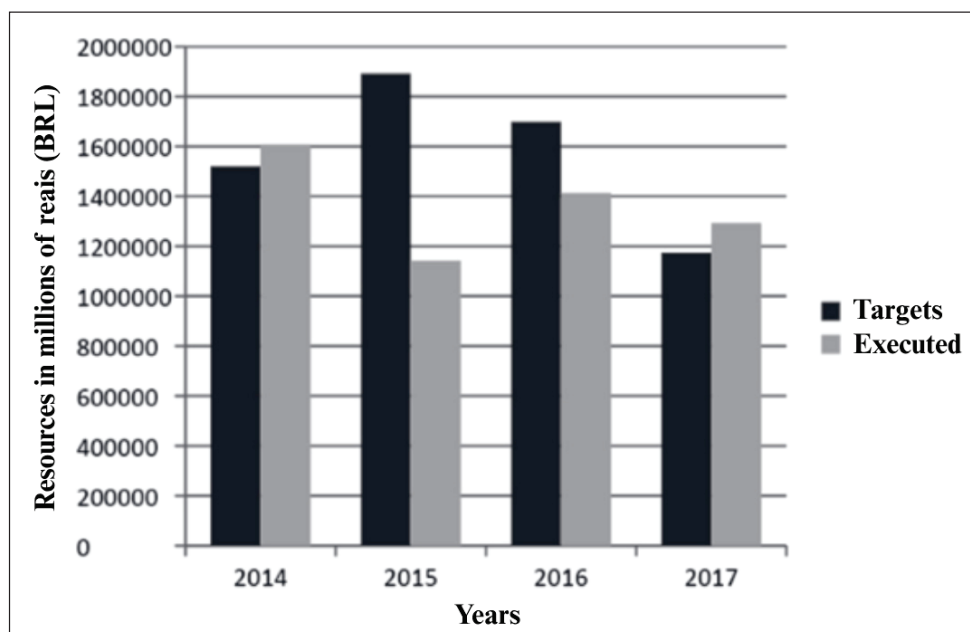
Source: SIOPS¹⁷ – Author’s own elaboration

Table 2. Executed and Projected Public Expenditures by the National Health Fund for Pharmaceutical Assistance in Macaé (2014–2017)

Year	Executed (BRL)	Projected (BRL)	Difference (BRL) (Executed - Projected)	Difference (%)
2014	1,607,984.07	1,520,436.41	+ 87,547.66	+5.75
2015	1,143,124.33	1,893,000.00	- 749,875.67	-39.62
2016	1,413,976.42	1,700,000.00	- 286,023.58	-16.83
2017	1,292,688.32	1,175,000.00	+ 117,688.32	+10.01
Total	5,457,773.14	6,288,436.41	- 830,663.27	-13.21

Source: SIOPS¹⁷ – Author’s own elaboration

Figure 2. Budgeted targets and executed resources by the National Health Fund for Pharmaceutical Services in Macaé (2014–2017)



Source: SIOPS¹⁷ – Author’s own elaboration

Additionally, it was found that BRL114,889,934.73 was allocated to Primary Care in Macaé. As shown in Figure 3, the resources allocated were, for the most part, below the budget forecast for the period under study.

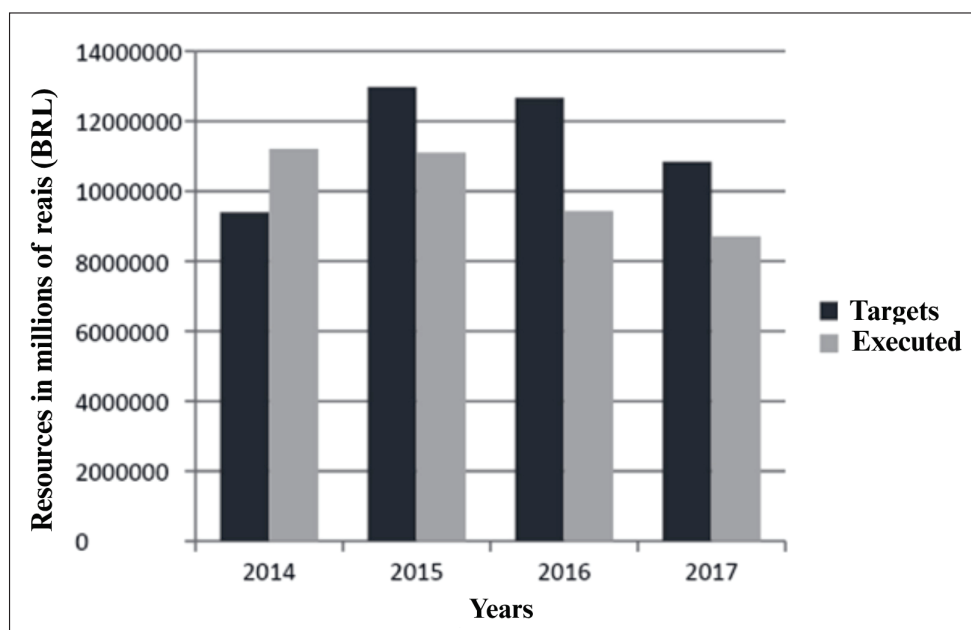
Discussion

Considering the extraction and analysis of data from SIOPS regarding public resource transfers from the FNS to the various health financing areas/blocks, it was found that approximately 175 million reais were allocated to different health actions and services in the municipality of Macaé, State of Rio de Janeiro, an amount above the projected values for the years 2014 to 2017. In the annual analysis of this period, it was identified that in 2015 and 2016 the amounts executed for health were below the planned budgetary targets. In this context, some potential factors can be considered, such as a reduction in tax revenue and, consequently, fewer public resources available to meet demands in areas such as health²⁹, as well as the possibility of increased demand in certain specific areas of the municipality and, as a result, the need to reduce resources initially allocated to other areas, such as health.

The economic and social impact experienced by municipalities like Macaé is noteworthy, particularly during the so-called “oil crisis” registered mainly in 2015, associated with the considerable drop in oil barrel prices. Known as the oil capital, the municipality is heavily dependent on revenue from oil royalties and faced numerous difficulties, especially in 2015 and 2016, such as rising unemployment, an immediate result of declining revenues, and reduced tax collection directly and indirectly linked to oil³⁰. It is also worth noting that, beyond the amounts transferred from the National Health Fund to Macaé, as presented in this study, the municipality allocated most of its health budget from its own resources²⁵.

The executed amount of R\$ 1,607,064.03 above the projected target for the study period was obtained through local initiatives and health investments carried out in 2014 and 2017, years associated with expenditures exceeding projections. Local authorities during this period made numerous efforts to mitigate the economic and social impact of the oil crisis, investing in areas such as tourism³¹ in an attempt to increase tax revenues and promote the economic “recovery” of key sectors, such as services.

Figure 3. Budgeted targets and executed resources by the National Health Fund for Primary Health Care in Macaé (2014–2017)



Source: SIOPS17 – Author’s own elaboration

Local managers face many challenges in putting into practice the principle of comprehensiveness in health actions, as established in the SUS^{32,33}. The scarcity of resources and, unfortunately, the lack of criteria and rationality in the allocation of public health resources have been among the main management problems observed in some Brazilian municipalities^{34,35}. In this context, it is important to highlight the need to develop strategies that enable and support managers and communities in understanding, clarifying, and updating social health needs^{36,37}, and in accessing not only general data but also detailed information on demands, particularly those considered essential, together with the amounts allocated to each.

According to Teixeira & Teixeira (2003), SIOPS stands as an important data source for studies conducted by research institutions, especially for monitoring and oversight by control agencies, as well as for application in the management and evaluation of SUS actions. The authors further emphasize that this system makes it possible to obtain information that may support improved management and the dissemination of successful experiences among federative entities²². However, in a study conducted by Silva et al. (2010), which evaluated the regularity of SIOPS data entry, as well as the knowledge and use of the system across ten municipalities in the state of Pernambuco, it was found that there is a “gap” between municipal health secretariat managers and SIOPS. This is because data are usually entered by outsourced services, and are therefore mostly not explored in decision-making processes and/or as a management tool²³.

Many debates and discussions exist regarding the “desirable” percentages to be invested in areas such as health, particularly at the municipal level, where more than 15% of tax revenues are commonly allocated above the legally required minimum for this level of government⁸. According to the Macaé Transparency Portal, in 2014 alone, R\$ 5,709,655.33 was invested in a single municipal project, the construction of a commercial building to house MACAEPREV. This amount exceeded by R\$ 251,882.19 the total executed for Pharmaceutical Assistance over the 2014–2017 period. More recently, in 2023, a contract of R\$ 54,767,650.52 was signed for the

general renovation of Macaé’s convention center³⁸. Managers face many competing demands health, education, public transport, infrastructure works which reinforces the importance of assessing the complexity, necessity, and relevance of each action to be financed with public resources.

According to data from Macaé’s Multi-Year Plan (2014–2017), the Municipal Health Fund projected allocations of R\$ 28,629,717.78 for Pharmaceutical Assistance, R\$ 133,228,728.05 for Specialized Medium- and High-Complexity Care, R\$ 32,321,170.04 for Primary Health Care, and R\$ 21,023,101.43 for SUS Management. Additionally, R\$ 432,089,672.13 was allocated to the Infrastructure Modernization Program and R\$ 421,797,301.81 to the Urban and Rural Infrastructure Expansion, Improvement, and Modernization Program³⁹ amounts much higher than those recorded in this study regarding the FNS. Furthermore, according to the Annual Health Program (2014–2017), the following amounts were projected for Pharmaceutical Assistance: R\$ 12,348,000.00 in 2014, R\$ 14,323,680.00 in 2015, R\$ 16,615,468.80 in 2016, and R\$ 19,273,943.81 in 2017, totaling R\$ 62,561,092.61 well below the transfers from the National Health Fund⁴⁰. Many challenges and limitations are evident in public management, particularly in terms of the availability of resources for health, given a variety of factors. Among the findings of this study, it is worth highlighting that Pharmaceutical Assistance showed an approximately 14% reduction in executed amounts compared with the projected amounts transferred from the FNS to Macaé, not considering potential variations involving resources from the Municipal Health Fund.

Additionally, data from the Ministry of Health⁴¹ show that between 2014 and 2017, the Macaé municipal government allocated more than 15% of its net revenues to health the minimum required by Complementary Law No. 141 of January 13, 2012⁹ and Constitutional Amendment 29 of 2000¹⁰. On average, approximately 34% of the municipality’s own resources were executed annually for health during this period⁴¹. Moreover, Ministry of Health data also show variability in the percentage of own resources allocated to health in Macaé over the years. In 2020 and 2022, for example, the percentages were 39.31%

and 37.67%⁴¹, respectively, which may be associated with higher tax revenues from oil royalties an essential economic driver for the municipality.

In a study conducted by Araújo et al. (2022), it was shown that recorded public health expenditures are lower compared to other countries with similar characteristics and grow at rates higher than per capita GDP growth, reinforcing the importance of rationality and efficiency in health spending. The authors also highlighted the relevance and expansion of Primary Health Care, including the increased coverage of the Family Health Strategy (ESF), reaching 63.6% of the Brazilian population in 2020 and more than 145 million people enrolled in ESF teams nationwide³⁸. Considering Primary Health Care as a strategic area within SUS actions, the present study verified that R\$ 5,426,844.88 were not invested in this important area in Macaé during 2014–2017 (Figure 3), potentially compromising services at this level of care. In this context, Souza & Andrade (2020), in a study evaluating the consistency of SIOPS records applied to Primary Health Care between 2002 and 2014, indicated that revenue and expenditure records for this area improved during this period. However, records of specific ESF expenditures showed a high level of underreporting in most Brazilian municipalities²⁴.

Few studies have been published providing detailed accounts of executed and projected health resources from the SUS perspective, whether locally, statewide, or nationally⁴²⁻⁴⁴. Notably, no studies on this topic have been published in the municipality of Macaé to date. Despite all the data, analyses, and contributions provided, the present study has some limitations, such as the lack of detailed data on executed and projected values within each health financing block (e.g., which activities/sectors were involved in Pharmaceutical Assistance expenditures, and how much was allocated to each). Such information would have enriched this study if made available by SIOPS.

Considering this limitation, since 2020 the Macaé City Hall has been publishing quarterly health reports to increase access and transparency of information, detailing health actions and expenditures. In this process, the SUS manager presents the report at the end of each four-month period in a pub-

lic hearing at the Legislative House, after which the document is posted on the city hall's website for citizen access. These reports include demographic data, financial accountability, specification of areas receiving funds, percentages of budgeted versus executed amounts, and details of completed tenders⁴⁵. Strategies and efforts like this enable further studies and evaluations on health resource allocation in the municipality.

Therefore, this study sought to contribute evidence on the panorama of public resource allocation for health in Macaé between 2014 and 2017, as well as the impact of tax revenue and its implications for the feasibility of providing health actions and services in the municipality. Finally, it reinforces the importance of developing studies that promote reflection not only on Pharmaceutical Assistance resource allocation but also on the broader health panorama in Brazil across its different levels of government.

Conclusion

This study highlights that the allocation of public health resources is a critical issue from a management perspective and requires strategic planning to better direct and enable the actions and services provided by the Unified Health System (SUS). Furthermore, it is important to note that a significant portion of the Brazilian population depends on SUS. Even during periods of economic crisis and potential reductions in public health funding, these users continue to require access to essential services such as the provision of medications and medical consultations emphasizing the need for responsibility and rationality in the decision-making process by local administrators.

The study demonstrates how Macaé was significantly affected by the so-called oil crisis, especially in 2015 and 2016, and the various consequences that followed, such as reductions in health spending, which may have resulted in the lack of service provision and other difficulties in the municipality during those years. The importance of conducting studies that promote an understanding of actual health expenditures and, more importantly, the demands that need to be evaluated by managers is

clear. Such understanding can better inform the needs of the population and support rational and efficient planning related to the allocation of public healthcare resources.

Based on the data collected and analyzed, it is evident that Pharmaceutical Assistance received resources below the amounts established in the 2014–2017 Multi-Year Plan (PPA), as well as those recorded in SIOPS for the years affected by the oil crisis (2015 and 2016). Unlike the overall health budget scenario, the years 2014 and 2017 did not compensate for the projected shortfalls in this area. In this context, it is essential to recognize the many responsibilities and roles of the pharmaceutical professional within Pharmaceutical Assistance, which require a responsible and ethical approach aimed at understanding and adequately meeting local needs in a context of limited resources. Moreover, it is vital to promote a continuous process of evaluation and monitoring of Pharmaceutical Assistance initiatives, to ensure that the budget projections for this area in future PPAs are truly aligned with the demands faced by the municipality.

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