REVISTA BRASILEIRA DE MEDICINA DE FAMÍLIA E COMUNIDADE
RBMFC

www.rbmfc.org.br
ISSN 2197-7994

Research Article

Impact of the More Doctors Program on hospitalizations due to conditions seen in primary care

Impacto do Programa Mais Médicos nas internações por condições sensíveis na Atenção Primária

Impacto del programa más médicos en las admisiones por condiciones sensibles en Atención Primaria

Adenísio Vicente Martins[1], Ludmila Grego Maia[1], Priscila Nunes Pereira[1], Sérgio Valverde Marques dos Santos[1], Luiz Almeida da Silva[2]

[1]Universidade Federal de Goiás – Goiânia (GO), Brazil.
[2]Universidade Federal de Catalão – Catalão (GO), Brazil.

Abstract

Introduction: In Brazil, one of the main challenges that Family Health Strategy (ESF) has been facing is the high turnover of professionals, especially family and community doctors. Thus, the More Doctors Program (MDP) emerged to meet the shortage of medical professionals in Brazilian regions, to ensure quality care in primary health care. **Objective:** To analyze the effectiveness of the More Doctors Program (MDP) based on hospitalizations for conditions seen in primary care before and after implementation. **Methods:** Ecological time series study, with data from 2010 to 2016, a period of three years before and after the implementation of MDP in Southwest Goiás, extracted from the hospital information system. Data tabulation was performed using TabWin3.2 and later analyzed using the Stata 15.0 program, with trend analysis using linear regression. **Results:** The mean hospitalization rate was statistically higher than that for primary care conditions ($p<0.001$). The latter was statistically higher in men ($p<0.05$). There was a reduction in the overall hospitalization rate for primary care-treated conditions ($p<0.001$) after the implementation of MDP ($p<0.001$). **Conclusions:** The results of this study suggest that the inclusion of physicians in primary health care services after the implementation of the program contributed to access to health services, by showing a tendency of the Program's actions to reduce the most significant ICSAP.

Keywords: Hospitalization; Health consortia; Primary health care.

Corresponding author:
Luiz Almeida da Silva
E-mail: enfer_luiz@ufcat.edu.br
Funding:
No external funding.
Ethical approval:
Not applicable.
Provenance:
Not commissioned.
Peer review:
External.
Received on: 09/17/2021.
Approved on: 07/22/2022.
Associate Editor:
Adelson Jantsch

How to cite: Martins AV, Maia LG, Pereira PN, Santos SVM, Silva LA. Impact of the More Doctors Program on admissions due to conditions seen in primary care. Rev Bras Med Fam Comunidade. 2022;17(44):3215. https://doi.org/10.5712/rbmfc17(44)3215

Resumo

Introdução: No Brasil, um dos principais desafios que a Estratégia Saúde da Família (ESF) tem enfrentado é a alta rotatividade de profissionais, principalmente médicos de família e comunidade. Assim, o Programa Mais Médicos (PMM) surgiu para suprir a carência de profissionais médicos nas regiões brasileiras, garantindo assistência de qualidade na Atenção Primária à Saúde (APS). **Objetivo:** Analisar a efetividade do Programa Mais Médicos no Brasil com base nas internações por condições sensíveis à Atenção Primária (ICSAP) antes e depois da implementação. **Métodos:** Estudo ecológico de séries temporais, com dados dos anos de 2010 a 2016 — período de três anos antes e depois da implantação do PMM no sudoeste de Goiás — extraídos do Sistema de Informações Hospitalares. A tabulação dos dados foi realizada pelo TabWin3.2, e posteriormente eles foram analisados no programa Stata 15.0, com análise da tendência por meio da regressão linear. **Resultados:** A taxa média de internação foi estatisticamente maior que a taxa média de ICSAP (p<0,001). A taxa média de ICSAP nos homens foi estatisticamente maior que a taxa média de ICSAP (p<0,05). Verificou-se redução da taxa de incidência global de ICSAP (p<0,001) após a implantação do PMM (p<0,001). **Conclusões:** Os resultados deste estudo sugerem que a inclusão de médicos nos serviços de APS após a implantação do PMM contribuiu para o acesso aos serviços de saúde, ao mostrar tendência de redução das ICSAP mais significativas em decorrência das ações do Programa.

Palavras-chave: Hospitalização; Consórcios de saúde; Atenção primária à saúde.

Resumen

Introducción: En Brasil, uno de los principales desafíos que la ESF viene enfrentando es la alta rotación de profesionales, especialmente médicos de familia y comunitarios. Así, el PMM surgió para suplir la escasez de profesionales médicos en las regiones brasileñas, para garantizar una atención de calidad en la APS. **Objetivo:** Analizar la efectividad del Programa Más Médicos en Brasil de Hospitalizaciones por Condiciones Sensibles en Atención Primaria antes y después de la implementación. **Métodos:** Estudio ecológico de series de tiempo, con datos de 2010 a 2016, un período de tres años antes y después de la implementación del Programa Más Médicos (PMM) en el Suroeste de Goiás, extraídos del Sistema de Información Hospitalaria. La tabulación de datos se realizó usando TabWin3.2 y luego se analizó usando el programa Stata 15.0, con análisis de tendencias usando regresión lineal. **Resultados:** La tasa promedio de hospitalización fue estadísticamente superior a la tasa promedio de Hospitalizaciones por Condiciones Sensibles en Atención Primaria (ACSC) (p<0,001). La tasa media de ACSC en los hombres fue estadísticamente más alta que la tasa media de ACSC (p<0,05). Hubo una reducción en la tasa de incidencia global de ACSC (p<0,001) después de la implementación del PMM (p<0,001). Para hombres y mujeres, después de la implementación del PMM, hubo una reducción, además de la tasa de incidencia general de ACSC (p<0.05). **Conclusiones:** Los resultados de este estudio sugieren que la inclusión de médicos en los servicios de APS después de la implementación del PMM contribuyó al acceso a los servicios de salud, al mostrar una tendencia a la reducción de los ICSAP más significativos de las acciones del Programa.

Palabras clave: Hospitalización; Consorcios de salud; Atención primaria de salud.

INTRODUCTION

In Brazil, we have a health system designed to work at hierarchical levels, with primary health care (PHC) as the gateway. This is the first level of care, supported by the principles of universality, equity and comprehensiveness, in addition to guaranteeing popular participation.[1] As a way of strengthening PHC, in 1994 the Family Health Program was launched, now structured as the Family Health Strategy (ESF).

The aim of the ESF is to reorganize the care model, making it more humanized, redirecting attention and establishing strong ties with the community and families, in defined areas, with actions developed by multidisciplinary teams, which must have a family and community doctor.[2,3]

A challenge that the ESF has been facing for some years is the high turnover of professionals, mainly family and community doctors, driven by various phenomena. These are divided by Medeiros et al.[4] into external ones, such as the law of supply and demand in the labor market, the economic situation and job opportunities and internal ones, which include salary policy, benefits policy, type of supervision, opportunity for professional growth, interpersonal relationships in the work environment, organizational culture and disciplinary policy, performance evaluation criteria and flexibility of the institution's policies.

For some time now, managers, scholars, workers and users have been discussing the high turnover of physicians, the high density and concentration of these professionals and undergraduate vacancies

in richer and more developed areas. In an attempt to find a solution to such problems, which prevent the expansion of the ESF, in 2013, the National Front of Mayors launched a campaign called “Where is the doctor?”, which asked the government for measures to solve this difficulty. That same year, social movements took to the streets with different agendas, including dissatisfaction with the quality of the public health service, demanding “FIFA standard” health, as Brazil was preparing to host the soccer world cup.[5,6]

In July 2013, through Law No. 12,871, the More Doctors Program (MDP) was consolidated in Brazil,[7] which intervenes in the three dimensions considered necessary: provision of professionals — on an emergency basis for more vulnerable areas —, improvement of the infrastructure of basic health units (UBS) and reordering the distribution of undergraduate and medical residency vacancies, in addition to changing undergraduate curricular parameters.[5]

In the study municipality, the program was implemented in 2014, initially with three foreign doctors, distributed in three UBS. A little further on, still in 2014, as guaranteed by Ordinance No. 103, of April 29, 2014, five more doctors were included in the program, allocated in another five UBS in this municipality. We then reached a total of eight doctors, distributed in the municipality’s PHC network.[8]

One of the main bets of the MDP in filling the shortage of medical professionals in Brazilian regions is to guarantee quality care in PHC, expand and strengthen the ESF voicing the guidelines of the Unified Health System (SUS), especially with regard to universality.[6]

As a tool to measure the achievement of the MDP objectives and determine if there has been an improvement in the access and effectiveness of PHC, the Brazilian list of hospitalizations due to conditions seen in primary care (HCSPC) can be used.[9] This is a valuable indicator. for the monitoring and evaluation of the access and quality of PHC, based on the assumption that, when this level of care is accessed in a timely manner, it can reduce or prevent HCSPC.[10,11]

Accordingly, the aim of this study was to determine the effectiveness of the MDP based on the HCSPC, analyzing the impact of the program on this indicator through a historical series, before and after its implementation.

METHODS

This is an ecological time series study, with secondary data referring to HCSPC, which measured rates from 2010 to 2016 — a period from three years before to three years after the implementation of the PMM. Time series can be defined as models of organization of certain quantitative information in time.[12]

The study setting is a municipality with 99,674 inhabitants, located in the southwest of the state of Goiás and headquartered in the Southwest II health region. It is a referral center for ten other municipalities and has as its organization of the health care network (RAS) the actions and services of PHC, through the ESF, with 21 teams. Of these, 20 are from the urban area, distributed in nine UBS in the urban area and three in the rural area, with population coverage of 73.83%.[8] In the rural area, despite the existence of three UBS, at the time there was only one ESF implemented. The others did not respond based on the ESF.

The outcome variable defined for the study was the HCSPC, adopted according to the classification of the Ministry of Health (Ordinance 221/2008). The list is composed of 19 groups of causes, with 74 diagnoses classified according to the Tenth Edition of the International Classification of Diseases (ICD-10). These are: vaccine-preventable diseases and sensitive conditions (A37; A36; A33 to A35; B26; B06; B05; A95;

B16; G00.0; A17.0 A19; A15.0 to A15.3; A16.0 to A16.2, A15.4 to A15.9, A16.3 to A16.9, A17.1 to A17.9; A18; I00 to I02; A51 to A53; B50 to B54); infectious gastroenteritis and complications (E86; A00 to A09); anemia (D50); nutritional deficiency (E40 to E46; E50 to E64); ear, nose and throat infections (H66; J00; J01; J02; J03; J06; J31); bacterial pneumonia (J13; J14; J15.3, J15.4; J15.8, J15.9; J18.1); asthma (J45, J46); respiratory disease (J20, J21; J40; J41; J42; J43; J47; J44); hypertension (I10; I11); angina (I20); heart failure (I50; J81); cerebrovascular disease (I63 to I67; I69, G45 to G46); diabetes mellitus (E10.0, E10.1, E11.0, E11.1, E12.0, E12.1; E13.0, E13.1; E14.0, E14.1; E10.2 to E10.8 , E11.2 to E11.8; E12.2 to E12.8; E13.2 to E13.8; E14.2 to E14.8; E10.9, E11.9; E12.9, E13.9; E14 .9); epilepsy (G40, G41); kidney and urinary tract infection (N10; N11; N12; N30; N34; N39.0); skin and subcutaneous tissue infection (A46; L01; L02; L03; L04; L08); inflammatory disease of female pelvic organs (N70; N71; N72; N73; N75; N76); gastrointestinal ulcer (K25 to K28, K92.0, K92.1, K92.2); diseases related to prenatal care and childbirth (O23; A50; P35).[9]

Data were extracted from a national database fed by the Hospital Information System (SIH), in which the records of inpatient care are processed. These records are the Hospital Admissions Authorizations (AIH), filled in with each patient admission. The data referring to the HCSPC in the municipality are in the public domain and were obtained from the Department of Informatics of the Unified Health System (DATASUS) using the TabWin3.2 program and analyzed using the Stata version 15.0program,. HCSPC rates were calculated by year and by sex.

Next, to determine the effect of the MDP on the incidence rates of HCSPC, an ex-ante and ex-post analysis of the implementation of the program was carried out. Mean incidence rates were compared in the periods before implementation (2010–2012) and after implementation (2014–2016). To avoid potential bias, 2013 was considered a transition year and excluded from this analysis. The incidence rate ratio (IRR) was calculated, together with its respective 95% confidence interval (95%CI), between the rates before and after the program. Statistical significance was verified by the Fisher exact test. This analysis was also performed for the overall rate and by sex. In all analyses, p values <0.05 were considered statistically significant.

As this was a study with secondary data, it was not sent for analysis by the Research Ethics Committee, but the authors strictly followed the ethical and legal precepts in the collection, interpretation and dissemination of data.

RESULTS

In the period studied, there was a total of 33,820 hospitalizations, excluding deliveries, in the study municipality, with 6,333 HCSPC (17.73%). The mean rate of overall hospitalization in the period was statistically higher than the mean rate of HCSPC (515.50 versus 96.53; IRR: 5.32; 95%CI: 5.19–5.49; p<0.001).

Of the total number of HCSPC, the majority (3,449; 54.46%) occurred in women, as can be seen in Figure 1. The mean rate of HCSPC in women during the study period was statistically higher than the global mean rate of HCSPC (97 versus 87.89; IRR: 1.18; 95%CI: 1.12–1.24; p<0.001).

Table 1 shows the trend in the HCSPC rate for the total population, and it is observed that there was no increase for any specific group, with a greater reduction for gastroenteritis and respiratory diseases, and ear, nose and throat infections, as well as hypertension and heart failure. However, some diseases were

stable, such as vaccine-preventable diseases, nutritional deficiency, angina, cerebrovascular disease, diabetes mellitus, skin infections and diseases related to childbirth and prenatal care.

Tables 2, 3 and 4 show the rates of HCSPC in the period before and after the implementation of the MDP, in general and according to males and females.

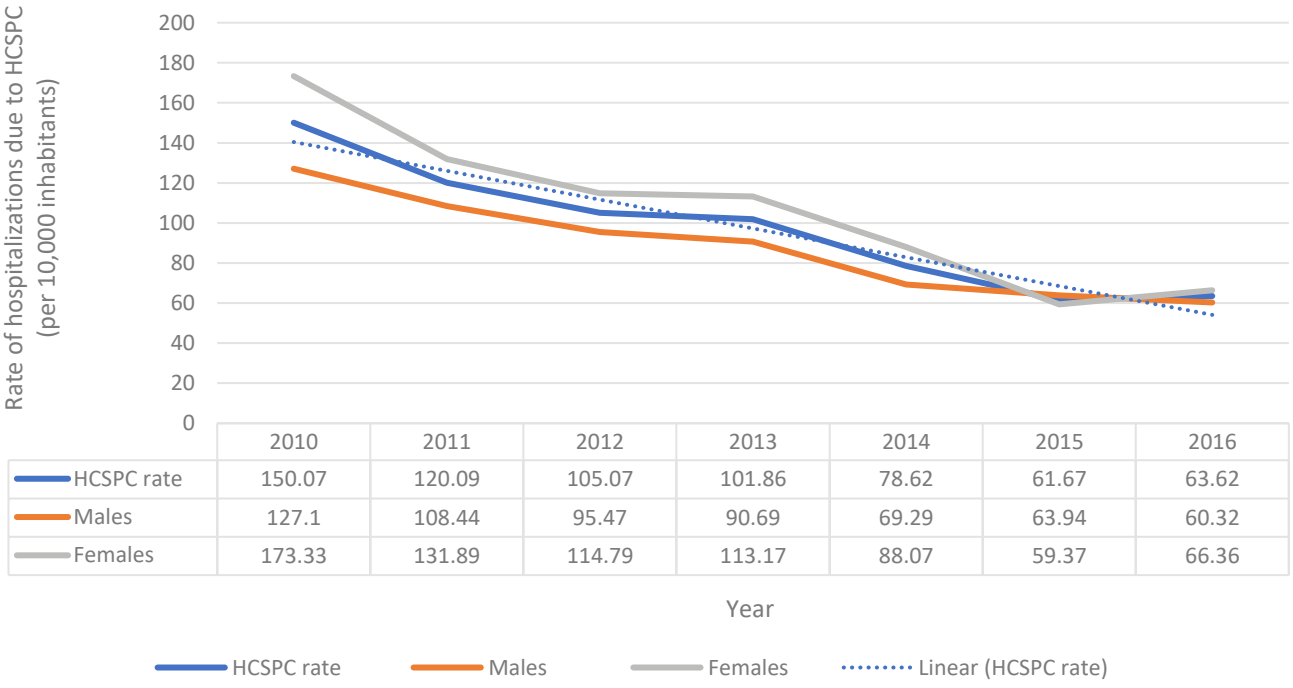
Table 2 shows a reduction in the overall incidence rate of HCSPC ($p<0.001$) and of gastroenteritis, ear, nose and throat infections, bacterial pneumonia, asthma, respiratory disease, hypertension, heart failure, diabetes, kidney infection and ulcers, after the implementation of the MDP ($p<0.001$).

For males, as shown in Table 3, after the implementation of the MDP, there was a reduction not only in the overall incidence rate of HCSPC, but also in gastroenteritis, ear, nose and throat infections, bacterial pneumonia, asthma, respiratory disease, hypertension, heart failure, epilepsy and gastrointestinal ulcer.

In Table 4, it can be seen that for females, there was also a reduction in the overall incidence rate of HCSPC, as well as that of gastroenteritis, asthma, respiratory diseases, hypertension, and heart failure — differing from males because females also showed decreased rates of diabetes and kidney and urinary tract infections — after the program was implemented.

DISCUSSION

This study made it possible to know the scenario in relation to the rates of general hospitalizations and HCSPC, according to sex, in the study municipality, between 2010 and 2016, according to the group of causes, before and after the implementation of the MDP. It was possible to observe, through the data, that



HCSPC: Hospitalizations for conditions seen in primary care.
Figure 1. Rate of hospitalization due to conditions seen in primary care, according to sex. Goiás, 2010–2016.

Table 1. Trend of hospitalization rate due to conditions seen in primary care according to cause group in the total population. Goiás, 2010–2016.

HCSPC	Total population			
	β (95%CI)	R^2	p-value	Interpretation
General	-14.296 (-17.442; -11.350)	0.963	<0.001	Reduced
Vaccine-preventable diseases	-0.138 (-0.365; 0.087)	0.382	0.176	Stable
Gastroenteritis	-3.367 (-5.578; -1.156)	0.826	0.011	Reduced
Anemia	-0.034 (-0.111; 0.043)	0.372	0.304	Stable
Nutritional deficiency	-0.025 (-0.070; 0.019)	0.218	0.204	Stable
Ear, nose and throat infections	-0.198 (-0.357; -0.038)	0.596	0.024	Reduced
Bacterial pneumonia	-0.801 (-1.399; -0.230)	0.767	0.016	Reduced
Asthma	-0.620 (-1.014; -0.226)	0.833	0.010	Reduced
Respiratory disease	-2.567 (-3.291; -1.844)	0.938	< 0.001	Reduced
Hypertension	-1.208 (-1.593; -0.822)	0.915	< 0.001	Reduced
Angina	-0.232 (-0.817; 0.351)	0.482	0.352	Stable
Heart failure	-2.525 (-3.317; -1.732)	0.921	< 0.001	Reduced
Cerebrovascular disease	0.034 (-1.148; 1.217)	-	0.944	Stable
Diabetes mellitus	-1.105 (-2.579; 0.369)	0.301	0.112	Stable
Epilepsy	-0.156; -0.337;.0.054)	0.601	0.116	Stable
Kidney and urinary tract infection	-1.355; -1.630; -1.079)	0.928	< 0.001	Reduced
Skin and subcutaneous tissue infection	0.098 (-0.089; 0.287)	0.852	0.236	Stable
Gastrintestinal ulcer	-0.359 (-0.547; -0.171)	0.819	0.004	Reduced
Related to prenatal and childbirth	0.094 (-0.060; 0.250)	0.265	0.177	Stable

HCSPC: hospitalizations due to conditions seen in primary care; β: regression coefficient; 95%CI: 95% confidence interval.

Table 2. Rate of hospitalizations due to conditions seen in primary care, according to cause group, before and after implementation of the More Doctors Program. Goiás, 2010–2016*.

HCSPC	2010–2012	2014–2016	IRR (95%CI)	p-value§
	Rate (95%CI)†	Rate (95%CI)‡		
General	124.90 (120.70; 129.10)	67.81 (64.83; 70.88)	0.543 (0.514; 0.574)	<0.001
Vaccine-preventable diseases	0.95 (0.62; 1.39)	0.56 (0.32; 0.90)	0.586 (-8.473; 0.623)	0.091
Gastroenteritis	18.30 (16.74; 19.98)	6.18 (5.31; 7.16)	0.338 (0.285; 0.401)	<0.001
Anemia	0.15 (0.04; 0.37)	0.03 (0.00; 0.19)	0.238 (0.027; 2.130)	0.200
Nutritional deficiency	0.33 (0.15; 0.62)	0.21 (0.08; 0.45)	0.635 (0.226; 1.783)	0.400
Ear, nose and throat infections	1.49 (1.07; 2.03)	0.32 (0.14; 0.59)	0.209 (0.102; 0.430)	<0.001
Bacterial pneumonia	8.53 (7.47; 6.70)	5.38 (4.57; 6.30)	0.631 (0.515; 0.773)	<0.001
Asthma	2.55 (1.99; 3.22)	0.20 (0.07; 0.45)	0.081 (0.035; 0.188)	<0.001
Respiratory disease	16.92 (15.41; 18.53)	6.11 (5.23; 7.08)	0.361 (0.304; 0.439)	<0.001
Hypertension	5.72 (4.86; 6.69)	1.08 (0.73; 1.53)	0.188 (0.128; 0.276)	<0.001
Angina	5.87 (4.99; 6.85)	5.07 (4.28; 5.96)	0.863 (0.690; 1.080)	0.200
Heart failure	13.18 (12.25; 14.16)	8.19 (7.18; 9.31)	0.445 (0.381; 0.519)	<0.001
Cerebrovascular disease	9.44 (8.32; 10.67)	8.26 (7.25; 9.38)	0.875 (0.774; 1.043)	0.137
Diabetes mellitus	10.46 (9.34; 11.75)	6.63 (5.72; 7.64)	0.634 (0.528; 0.761)	<0.001
Epilepsy	2.44 (1.89; 3.10)	1.87 (1.41; 2.45)	0.767 (0.536; 1.098)	0.148
Kidney and urinary tract infection	13.05 (11.74; 14.48)	8.02 (0.70; 0.91)	0.614 (0.521; 0.725)	<0.001
Skin and subcutaneous tissue infection	5.36 (4.53; 6.30)	5.56 (4.73; 6.45)	1.036 (0.828; 1.297)	0.755
Gastrintestinal ulcer	2.92 (2.32; 3.63)	1.35 (0.96; 1.85)	0.464 (0.317; 0.681)	<0.001
Related to prenatal and childbirth	0.95 (0.62; 1.39)	1.46 (1.05; 1.97)	1.538 (0.943; 2.509)	0.083

HCSPC: hospitalizations due to conditions seen in primary care; 95%CI: 95% confidence interval; IRR: incidence rate ratio. *2013 was considered the program introduction period, as the transition moment, and was excluded from analysis. †Refers to the mean rate of HCSPC between 2010 and 2012. ‡Refers to the mean rate of HCSPC between 2014 and 2016. §Fisher exact test.

Table 3. Rate of hospitalizations due to conditions seen in primary care, according to cause group, before and after implementation of More Doctors Program, in males. Goiás, 2010–2016*.

HCSPC	2010–2012	2014–2016	IRR (95%CI)	p-value§
	Rate (95%CI)†	Rate (95%CI)‡		
General	110.20 (104.70; 115.90)	64.48 (60.41; 68.75)	0.585 (0.539; 0.635)	0.001
Vaccine-preventable diseases	1.01 (0.55-1.70)	0.76 (0.38; 1.36)	0.748 (0.339; 1.657)	0.478
Gastroenteritis	15.43 (13.43; 17.65)	7.17 (5.86; 8.69)	0.464 (0.368; 0.587)	0.001
Anemia	0.00 (0.00; 0.00)	0.07 (0.00; 0.39)	Indefinido//	-
Nutritional deficiency	0.43 (0.16; 0.95)	0.21 (0.04; 0.60)	0.476 (0.119; 1.903)	0.308
Ear, nose and throat infections	1.59 (0.99; 2.41)	0.41 (0.15; 0.90)	0.259 (0.105; 0.640)	0.001
Bacterial pneumonia	7.77 (6.78; 8.87)	5.65 (4.49; 7.02)	0.566 (0.430; 0.743)	0.001
Asthma	1.88 (1.23; 2.76)	0.27 (0.07; 0.70)	0.146 (0.051; 0.419)	0.001
Respiratory disease	16.81 (14.72; 19.12)	6.76 (5.49; 8.24)	0.402 (0.317; 0.509)	0.001
Hypertension	3.98 (3.00; 5.19)	0.62 (0.28; 1.18)	0.156 (0.076; 0.315)	0.001
Angina	6.74 (5.44; 8.25)	6.69 (5.42; 8.16)	0.993 (0.747; 1.319)	0.956
Heart failure	16.23 (14.17; 18.50)	7.86 (6.48; 9.44)	0.484 (0.387; 0.607)	0.001
Cerebrovascular disease	9.13 (7.60; 10.87)	7.79 (6.42; 9.37)	0.854 (0.662; 1.100)	0.222
Diabetes mellitus	7.82 (6.42; 9.45)	6.34 (5.11; 7.78)	0.811 (0.614; 1.071)	0.140
Epilepsy	3.26 (2.38; 4.36)	1.24 (0.73; 1.96)	0.381 (0.220; 0.658)	0.001
Kidney and urinary tract infection	6.67 (5.37; 8.17)	5.17 (4.07; 6.48)	0.776 (0.572; 1.053)	0.103
Skin and subcutaneous tissue infection	5.43 (4.27; 6.81)	5.24 (4.13; 6.56)	0.964 (0.701; 1.327)	0.825
Gastrintestinal ulcer	2.48 (2.56; 4.61)	1.79 (1.17; 2.63)	0.516 (0.320; 0.831)	0.006
Related to prenatal and childbirth	0.29 (0.08; 0.74)	0.41 (0.15; 0.90)	1.428 (0.403; 5.059)	0.600

HCSPC: hospitalizations due to conditions seen in primary care; 95%CI: 95% confidence interval; IRR: incidence rate ratio. *2013 was considered the program introduction period, as the transition moment, and was excluded from analysis. †Refers to the mean rate of HCSPC between 2010 and 2012. ‡Refers to the mean rate of HCSPC between 2014 and 2016. §Fisher exact test. // There were no hospitalizations for anemia in males in the period from 2010 to 2012.

the global incidence of HCSPC decreased after the implementation of the program in both sexes, with no increase in the tendency for any group of causes, with emphasis on a greater reduction of gastroenteritis and respiratory diseases, also in both sexes.

Other studies confirm this trend of reduction in the incidence rate of HCSPC and improvement in performance and attribute that to the greater problem-solving capacity of PHC guaranteed by the MDP. This, in essence, carries the intention of filling the need and promoting the establishment of the doctor in areas with a shortage of this professional, forming well-established bonds between professionals and the community, the main objective of the ESF.[11,13]

A study carried out in the northeastern hinterland corroborates this statement, which shows in its results, after evaluating the impact of the MDP in primary care, that more than 80% of the problems were resolved, that is, the reduction of hospitalizations for sensitive causes was shown to be significant.[14]

Despite presenting satisfactory results, Gonçalves et al.[11] made a pertinent observation: that the reality of PHC does not only need professionals, but investments in infrastructure. This was one of the points in the implementation of the MDP and is considered by scholars as a turnover factor (the issue of lack of infrastructure).

Another study that deserves to be highlighted is that of Carneiro et al.,[13] which evaluated the indicators of mortality and HCSPC in PHC in children under five years of age, since it is a priority group in the SUS. Conducted in the region with the highest mortality rates in the state of Pará, the study showed that from 2013 onwards, with the health actions of the MDP, through curative and preventive care, there

Table 4. Rate of hospitalizations due to conditions seen in primary care, according to cause group, before and after implementation of More Doctors Program, in females. Goiás, 2010–2016*.

HCSPC	2010–2012	2014–2016	IRR (95%CI)	p-value§
	Rate (95%CI)†	Rate (95%CI)‡		
General	139.80 (113.50; 146.20)	71.18 (66.88; 75.69)	0.509 (0.472; 0.549)	<0.001
Vaccine-preventable diseases	0.88 (0.45; 1.54)	0.35 (0.11; 0.81)	0.397 (0.134; 1.127)	0.078
Gastroenteritis	21.21 (18.84; 23.80)	5.17 (4.06; 6.45)	0.244 (0.189; 0.315)	<0.001
Anemia	0.29 (0.08; 0.75)	0.00 (0.00; 0.00)	Undefined//	-
Nutritional deficiency	0.20 (0.04; 0.64)	0.21 (0.04; 0.61)	0.953 (0.192; 4.720)	0.955
Ear, nose and throat infections	1.-07 (0.73; 1.53)	0.77 (0.38; 1.38)	0.551 (0.262; 1.159)	0.116
Bacterial pneumonia	6.05 (5.17; 7.04)	5.10 (4.00; 6.42)	0.724 (0.534; 0.982)	0.037
Asthma	3.23 (2.35; 4.34)	0.14 (0.01; 0.50)	0.043 (0.010; 0.179)	<0.001
Respiratory disease	17.03 (14.91; 19.37)	5.45 (4.31; 6.81)	0.320 (0.248; 0.414)	<0.001
Hypertension	7.49 (6.10; 9.09)	1.54 (0.96; 2.33)	0.206 (0.129; 0.326)	<0.001
Angina	4.99 (3.88; 6.33)	3.43 (2.53; 4.53)	0.686 (0.476; 0.991)	0.044
Heart failure	20.62 (18.28; 23.18)	8.53 (7.08; 10.19)	0.414 (0.334; 0.511)	<0.001
Cerebrovascular disease	9.76 (8.17; 11.57)	8.74 (7.27; 10.41)	0.895 (0.701; 1.143)	0.376
Diabetes mellitus	13.14 (11.28; 15.21)	6.92 (5.63; 8.43)	0.527 (0.412; 0.673)	<0.001
Epilepsy	1.61 (1.01; 2.44)	2.52 (1.76; 3.48)	1.559 (0.917; 2.649)	0.099
Kidneys and urinary tract infection	19.52 (17.25; 22.02)	10.91 (9.26; 12.76)	0.559 (0.458; 0.681)	<0.001
Skin and subcutaneous tissue infection	5.28 (4.14; 6.65)	5.87 (4.68; 7.27)	1.111 (0.811; 1.523)	0.512
Inflammatory disease in female pelvic organs	2.05 (1.36; 2.97)	2.09 (1.41; 2.99)	1.021 (0.601; 1.708)	0.939
Gastrointestinal ulcer	2.35 (1.60; 3.32)	0.91 (0.48; 1.55)	0.387 (0.203; 0.737)	0.003
Related to prenatal and childbirth	1.61 (1.01; 2.44)	2.52 (1.76; 3.48)	1.559 (0.917; 2.648)	0.099

HCSPC: hospitalizations due to conditions seen in primary care; 95%CI: 95% confidence interval; IRR: incidence rate ratio. *2013 was considered the program introduction period, as the transition moment, and was excluded from analysis. †Refers to the mean rate of HCSPC between 2010 and 2012. ‡Refers to the mean rate of HCSPC between 2014 and 2016. §Fisher exact test. // There were no hospitalizations for anemia in females in the period of 2014 to 2016.

was a reduction in HCSPC and mortality. This success can be attributed to the expansion of ESF coverage stimulated by the MDP, which enabled planned actions, creation of a bond with the community, longitudinal monitoring and greater acceptance of treatment, in addition to having been a stimulus for professionals in continuing health education.

This research showed that there was a decrease in the rates of most groups of causes of HCSPC in the post-implementation period of the MDP, which leads us to believe that this is a consequence of the implementation of the program in the municipality of study. However, we cannot ignore the fact that, as Gonçalves et al.[11] state in their study, the maintenance of rates for some groups of HCSPC causes provides evidence that the improvement of PHC needs other adjustments.

Research conducted in Brazil has shown an important reduction in HCSPC, correlating them with factors such as the expansion and strengthening of PHC, especially after the implementation of the ESF and the MDP. As it is a relatively new indicator in the scenario of national research, studies that assess the trend of HCSPC indicate the absence of a pattern of more prevalent causes, with great heterogeneity in the ranking of these diseases.[15,16]

With regard to the group of causes of diseases related to prenatal care and childbirth, the stability in the series presented warns about the need for stronger investments in women's health, which make this line of care work, since congenital syphilis and congenital rubella syndrome are conditions that can be

diagnosed early when there is quality prenatal care. In this sense, Permanent Health Education appears as a potential to strengthen and permanently qualify the work process of PHC professionals.[17]

Limiting factors deserve to be highlighted in this study, such as the restricted scope of the HCSPC index (only hospitalizations through the SUS), the registration or under-registration of hospitalizations and possible failures in the diagnostic classification.

It is noteworthy that the occurrence of HCSPC is multifactorial and may have as confounding variables possible changes in the profile of social risk, vulnerability, as well as changes in the structural health network that were not controllable in the present study, which should be taken into consideration for future work on the topic under discussion.

It is worth mentioning that, in the time frame of this study, there was an increase from 68 to 87.44% in the implementation of ESF teams in the city, and there was no significant change in terms of the human development index. Also, as it was an ecological study, it is not possible to affirm the association between stability and reduction of HCSPCS and MDP, despite the impact on some groups of causes.

CONCLUSION

By showing a trend towards the reduction of the most significant HCSPC as a result of the actions of the MDP, the results of this study suggest that the inclusion of physicians in PHC services after the implementation of the program contributed to access to health services and reinforced the importance of these strategies.

The solutions are not simple, and it is necessary to develop other concomitant strategies. The passing and enforcement of laws can present promising results for the consolidation of PHC, but for this result to be achieved, it is necessary to explore this field of study further, using a quality indicator such as HCSPC.

CONFLICT OF INTERESTS

Nothing to declare.

AUTHORS' CONTRIBUTIONS

AVM: Project management, Formal analysis, Conceptualization, Writing – first draft, Investigation, Validation. LGM: Project management, Conceptualization, Writing – first draft, Validation. PNP: Formal analysis, Writing – review and editing, Research, Validation. SVMS: Formal analysis, Writing – review and editing, Supervision, Validation. LAS: Project management, Formal analysis, Data curation, Investigation, Validation.

REFERENCES

1. Brasil. Ministério da Saúde. Gabinete do Ministro. Portaria nº 2.436, de 21 de setembro de 2017. Aprova a Política Nacional de Atenção Básica, estabelecendo a revisão de diretrizes para a organização da Atenção Básica, no âmbito do Sistema Único de Saúde (SUS). Diário Oficial da União 2017; 21 set. [Internet]. 2017 [accessed on Jan 20, j2022]. Available at: https://bvsms.saude.gov.br/bvs/saudelegis/gm/2017/prt2436_22_09_2017.html
2. Kemper ES, Mendonça AVM, Sousa MF. Programa Mais Médicos: panorama da produção científica. Ciênc Saúde Colet 2016;21(9):2785-96. https://doi.org/10.1590/1413-81232015219.17842016
3. Ney MS, Rodrigues PHA. Fatores críticos para a fixação do médico na Estratégia de Saúde da Família. Physis Revista de Saúde Coletiva 2012;22(4):1293-311. https://doi.org/10.1590/S0103-73312012000400003

4. Medeiros CRG, Junqueira AGW, Schwingel G, Carreno I, Jungles LAP, Saldanha OMFL. A rotatividade de enfermeiros e médicos : um impasse na implementação da Estratégia de Saúde da Família. Ciên Saúde Coletiva 2010;15(Supl. 1):1521-31. https://doi.org/10.1590/S1413-81232010000700064
5. Storti MMT, Oliveira FP, Xavier AL. A expansão de vagas de residência de Medicina de Família e Comunidade por municípios e o Programa Mais Médicos. Interface Comunicação, Saúde, Educação 2017;21(Supl. 1):1301–13. https://doi.org/10.1590/1807-57622016.0511
6. Gonçalves Junior O, Gava GB, Silva MS. Programa Mais Médicos, aperfeiçoando o SUS e democratizando a saúde: um balanço analítico do programa. Saude Soc 2017;26(4):872-87. https://doi.org/10.1590/S0104-12902017170224
7. Brasil. Casa Civil. Subchefia para Assuntos Jurídicos. Lei nº 12.871, de 22 de outubro de 2013. Institui o Programa Mais Médicos, altera as Leis nº 8.745, de 9 de dezembro de 1993 e nº 6.932, de 7 de julho de 1981, e dá outras providências. Diário Oficial da União 2013; 22 out. [Internet]. 2017 [accessed on Jan 20, 2022]. Available at: http://www.planalto.gov.br/ccivil_03/_ato2011-2014/2013/lei/l12871.htm
8. Brasil. Instituto Brasileiro de Geografia e Estatística. Cidades. Rio de Janeiro: IBGE; 2016 [Internet]. 2016 [accessed on Apr 25, 2017]. Available at: http://cidades.ibge.gov.br/xtras/uf.php?coduf=52
9. Brasil. Ministério da Saúde. Secretaria de Atenção à Saúde. Portaria nº 221, de 17 de abril de 2008. Publicar e definir que a Lista Brasileira de Internações por Condições Sensíveis à Atenção Primária será utilizada como instrumento de avaliação da Atenção Primária e/ou da utilização da atenção hospitalar, podendo ser aplicada para avaliar o desempenho do sistema de saúde nos âmbitos Nacional, Estadual e Municipal. Diário Oficial da União 2008; 17 abr.[Internet]. 2008 [accessed on Jan 20, 2022]. Available at: https://bvsms.saude.gov.br/bvs/saudelegis/sas/2008/prt0221_17_04_2008.html
10. Alfradique ME, Bonolo PF, Dourado I, Lima-Costa MF, Macinko J, Mendonça CS, et al. Internações por condições sensíveis à atenção primária: a construção da lista brasileira como ferramenta para medir o desempenho do sistema de saúde (Projeto HCSPC – Brasil). Cad Saúde Pública 2009;25(6):1337-49. https://doi.org/10.1590/S0102-311X2009000600016
11. Gonçalves RF, Sousa IMC, Tanaka OY, Santos CR, Brito-Silva K, Santos LX, et al. Programa Mais Médicos no Nordeste: avaliação das internações por condições sensíveis à Atenção Primária à Saúde. Ciênc Saúde Colet 2016;21(9):2815-24. https://doi.org/10.1590/1413-81232015219.15392016
12. Antunes JLF, Cardoso MRA. Uso da análise de séries temporais em estudos epidemiológicos. Epidemiol Serv Saúde 2015;24(3):565-76. https://doi.org/10.5123/S1679-49742015000300024
13. Carneiro VB, Oliveira PTR, Bastos MSCB, Alvarenga EC. Avaliação da mortalidade e internações por condição sensível à Atenção Primária em menores de 5 anos, antes e durante o Programa Mais Médicos, no Marajó-Pará-Brasil. Saúde em Redes 2016;2(4):360-71. https://doi.org/10.18310/2446-4813.2016v2n4p360-371
14. Alencar APA, Xavier S, Laurentino PAS, Lira PF, Nascimento VB, Carneiro Júnior N, et al. Impacto do Programa Mais Médicos na Atenção Básica de um município do Sertão Central Nordestino. Revista Eletrônica Gestão e Sociedade 2016;10(26):1290-301. https://doi.org/ 10.21171/ges.v10i26.2085
15. Boing AF, Vicenzi RB, Magajewski F, Boing AC, Moretti-Pires RO, Peres KG, et al. Reduction of ambulatory care sensitive conditions in Brazil between 1998 and 2009. Rev Saúde Pública 2012;46(2):359-66. https://doi.org/10.1590/S0034-89102012005000011
16. Ceccon RF, Meneghel SN, Viecili PRN. Hospitalization due to conditions sensitive to primary care and expansion of the Family Health Program in Brazil: an ecological study. Rev Bras Epidemiol 2014;17(4):968-77. https://doi.org/10.1590/1809-4503201400040014
17. Dias HSA, Lima LD, Teixeira M. A trajetória da política nacional de reorientação da formação profissional em saúde no SUS. Ciên Saúde Coletiva 2013;18(6):1613-24. https://doi.org/10.1590/S1413-81232013000600013