

Diabetes Mellitus macro-regional inequalities in PHC: comparing the three PMAQ-AB cycles

Desigualdades macrorregionais na atenção primária ao Diabetes Mellitus: comparação dos três ciclos do PMAQ-AB

Clarissa Galvão da Silva Lopes¹, Thiago Augusto Hernandez Rocha², Érika Bárbara Abreu Fonseca Thomaz³, Aline Sampieri Tonello³, Núbia Cristina da Silva Rocha², Karlinne Maria Martins Duarte³, Rejane Christine de Sousa Queiroz³

DOI: 10.1590/0103-11042022133091

ABSTRACT This study aimed to identify macro-regional structure and work process inequalities for Diabetes Mellitus (DM) treatment in Primary Health Care (PHC) throughout the three cycles of the National Program for Access and Quality Improvement of Primary Care (PMAQ-AB) in Brazil. This ecological, longitudinal, nationwide study employed secondary data from the three PMAQ-AB cycles. The data were compared between the Brazilian macro-regions using the t-test with Bonferroni correction. The North and Northeast had the lowest percentages of adequacy in the structure items: unit premises (<74%), wheelchair user accessibility (<63%), special opening hours (<16%), expanded teams (<12%), and supplies (<89%) in all PMAQ-AB cycles when compared to other regions. The items related to the work process barely varied between regions, and those with mean adequacy percentages $\leq 75\%$ were specialized agenda (41%, 33%, 41%), matrix support (58%, 72%, 70%), offer and resolution of actions (62%, 64%, 75%) and continuing education (35%, 42%, 58%). Investments are still required in the structure and improvement in the teams' work process, especially in the North and Northeast macro-regions.

KEYWORDS Diabetes Mellitus. Health evaluation. Structure of services. Primary Health Care.

RESUMO O objetivo do estudo foi identificar desigualdades macrorregionais relacionadas à estrutura e ao processo de trabalho para o atendimento do Diabetes Mellitus (DM) na Atenção Primária à Saúde (APS) ao longo dos três ciclos do Programa Nacional de Melhoria do Acesso e da Qualidade da Atenção Básica (PMAQ-AB) no Brasil. Trata-se de um estudo ecológico, longitudinal, de abrangência nacional, com dados secundários dos três ciclos do PMAQ-AB. Os dados foram comparados entre as macrorregiões brasileiras utilizando o teste t com a correção de Bonferroni. As regiões Norte e Nordeste apresentaram os menores percentuais de adequação nos itens de estrutura: dependências da unidade (<74%), acessibilidade ao cadeirante (<63%), horário especial de funcionamento (<16%), equipe ampliada (<12%) e insumos (<89%) em todos os ciclos do PMAQ-AB, quando comparadas às demais regiões. Já os itens relacionados ao processo de trabalho apresentaram pouca variação entre as regiões, e os que apresentaram percentuais médios $\leq 75\%$ de adequação foram: agenda especializada (41%, 33%, 41%), apoio matricial (58%, 72%, 70%), oferta e resolubilidade de ações (62%, 64%, 75%) e educação permanente (35%, 42%, 58%). Ainda existe a necessidade de investimentos na estrutura e em melhorias no processo de trabalho das equipes, principalmente nas macrorregiões Norte e Nordeste.

PALAVRAS-CHAVE Diabetes Mellitus. Avaliação em saúde. Estrutura dos serviços. Atenção Primária à Saúde.

¹Universidade Federal do Maranhão (UFMA) - São Luís (MA), Brasil.
lissa_galvao@hotmail.com

²Methods Analytics and Technology for Health (Math Consortium) - Belo Horizonte (MG), Brasil.

³Universidade Federal do Maranhão (UFMA) - São Luís (MA), Brasil.

Introduction

Diabetes Mellitus (DM) is a severe public health problem. Its prevalence has increased due to several factors, including lifestyle changes, with a predominance of high-calorie diets, and the accelerated aging process of the population, especially in developing countries¹. The growing morbidity and DM-related mortality rates included this Chronic Non-Communicable Disease (NCD) as one of the priority axes in Primary Health Care (PHC)².

PHC plays a crucial role in preventing acute and chronic complications caused by the disease and reduces the number of hospitalizations and deaths². Thus, the Unified Health System (SUS) should prioritize policies and guidelines aimed at the care and control of the disease, considering the country's regional characteristics and the health needs of its populations³. In this context, the Brazilian organization in health regions and networks has gained prominence before the complex provision of health services, given regional and social inequalities, federal, state, and municipal competencies, and the participation of private sectors and non-governmental organizations in the design and delivery of services to society⁴.

Thus, evaluating health services becomes essential for monitoring and organizing health policies. In this context, the Ministry of Health implemented, in 2011, the National Program for the Improvement of Access and Quality of Primary Care (PMAQ-AB) to monitor and evaluate the results achieved by PHC in the Brazilian territory, aiming to improve access and quality of these services⁵. So far, three program cycles have been conducted. The first cycle in 2011/12, the second cycle in 2013/14, and the third cycle in 2015/17.

Studies using PMAQ-AB data have been developed with topics such as cervical cancer screening⁶, the quality of prenatal care in the PHC network⁷, and related to health care organization for chronic conditions,

such as diabetes, hypertension, tuberculosis, and leprosy⁸. Specifically regarding DM, we highlight the study by Neves et al.⁹, which described the necessary structure for people with DM treated in PHC with data from the first two cycles of the PMAQ-AB, and that by Tomasi et al.¹⁰, which aimed to describe the adequacy of the PHC structure and the work process, and the care aspects perceived by users with DM. Regarding the third cycle of the PMAQ-AB, no study has yet been conducted with data referring to the evaluation of the structure and work process to cope with DM within the PHC.

Regional health inequalities may become even more evident, knowing that PHC funding was modified by Ordinance No. 2.979/2019¹¹ and that Constitutional Amendment (EC) 95/2016¹² reduced health funding. The North and Northeast regions are the most affected in PHC care, given the substantial regional inequalities in living conditions and the supply of health services, such as the high concentration of professionals and health actions in urban spaces; insufficient resources, geographic barriers, and difficulty in integrating services^{3,13}.

In this context, recognizing that the Brazilian territory has deep regional inequalities resulting from historical heritage and political and economic structure³, it is necessary to conduct longitudinal and national studies to analyze the trend of the PHC situation in the care of patients with DM in the Brazilian geopolitical macro-regions. Thus, this study aimed to identify macro-regional inequalities related to the structure and work process for DM care in PHC throughout the three cycles of the PMAQ-AB in Brazil.

Material and methods

This national, ecological, longitudinal study is based on secondary data from the external evaluation of the three cycles of the PMAQ-AB

(2012, 2014, and 2017)¹⁴ related to the structure of PHC Units (UBS) and the work process of PHC teams (eAB). The data were retrieved from the Ministry of Health database, with the microdata of each evaluation cycle available free of charge electronically at the address: <http://aps.saude.gov.br/ape/pmaq>.

This study is nested in the research ‘External evaluation and census of PHC Units – PMAQ-AB’ [Our translation from the Portuguese] conducted by the Ministry of Health under the coordination of the following institutional consortia: The Federal University of Bahia (UFBA), the Federal University of Minas Gerais (UFMG), the Federal University of Pelotas (UFPel), the Federal University of Piau  (UFPI), the Federal University of Rio Grande do Sul (UFRGS), the Federal University of Rio Grande do Norte (UFRN), and the Federal University of Sergipe (UFS).

The data employed referred to the two modules of the external evaluation of the PMAQ-AB: module I, with data on the UBS structure, and module II, related to the work process of the eABs. The information was

collected by trained interviewers through interviews, with tablets for data storage, on a visit to the UBS, accompanied by an eAB professional for on-site observation of the availability of several items in the UBS. Questions related to the work process were answered by a professional from the teams that adhered to the PMAQ-AB¹⁴.

The first cycle of the external evaluation was held from May 2012 to April 2013, with data obtained from 13,919 UBS and 17,202 eABs. The second cycle was held from December 2013 to March 2014, with data from 24,055 UBS and 29,778 eABs. Finally, the third cycle, held from May to September 2018, with 38,865 eABs distributed in 30,346 UBS.

For this study, the variables were selected because of their relationship with the care of people with DM collected in the three evaluation cycles. Subsequently, the variables were aggregated for the construction of each indicator, summarized in *box 1*, referring to the structure of the UBS and the work process of the eABs.

Box 1. UBS structure and eAB work process for DM care in PHC variables

Indicator (%)	Description
Unit premises	Proportion of UBS with a clinical office, dental office, dressing room, pharmacy, medication storage room, sterilization room and storage of sterilized material, washing/decontamination room, procedure room, meeting and educational activities room.
Wheelchair user accessibility	Proportion of UBS with wheelchairs and structural conditions available for user mobility.
Actions and services signage	Proportion of UBS with the dissemination of actions and services signage in the unit.
Operational days	Proportion of UBS operating at least 5 days a week.
Special opening hours	Proportion of UBS operating during special hours (weekends and lunch).
Opening hours	Proportion of UBS with daily 8-hour service or more.

Box 1. (cont.)

Indicator (%)	Description
Equipment and materials	Proportion of UBS that had the following variables available for DM care: anthropometer, adult blood pressure device, autoclave, 150 kg anthropometric scale, 200 kg anthropometric scale, anthropometric ruler, adult stethoscope, pharmacy refrigerator, glucometer, ophthalmoscope and monofilament kit for sensitivity testing (esthesiometer).
Supplies	Proportion of UBS that presented the following variables for the care of the DM available: disposable needles of different sizes, bandages, tape measure, PPE - gloves, glasses, masks, aprons, caps, macrodrops and microdrops serum equipment, adhesive plaster/micropore tape and others, gauzes, capillary blood glucose measurement reagent strips; disposable syringes of various sizes, disposable syringes with attached needle and hard sharps disposal containers.
Community Health Worker (ACS*) available	Proportion of UBS with at least one Community Health Worker (ACS) available in the team.
Expanded team	Proportion of UBS with the following professionals who are not part of the minimum available team: expert physician, psychologist, physiotherapist, nutritionist, social worker, pharmacist, occupational therapist, speech therapist, physical education professional and other higher education professionals.
Team planning	Mean percentage of UBS with teams that perform activity planning.
Institutional support	Mean percentage of UBS with teams that receive institutional support.
Matrix support	Mean percentage of UBS with teams that receive matrix support.
Organization of medical records	Mean percentage of UBS that organize the medical records of team users by family nuclei and in paper forms or electronic medical records.
Urgent care	Mean percentage of UBS where teams implemented urgent care.
Specialized agenda	Mean percentage of UBS with teams in which, when a user needs to be referred for a specialized appointment, this appointment is scheduled by the health unit and informed immediately to the user; the appointment is scheduled by the health unit, and the date is subsequently informed to the user; the appointment is scheduled by the user at the specialized appointment scheduling center; the user receives a referral/reference form and must go to a service indicated by his team; and the user receives a referral/reference form, but does not have a specific service or professional.
Offer and action resolution	Mean percentage of UBS with teams that collect tests at the unit, such as blood and urine tests, and perform wound suturing, dressings, intramuscular injectable medications, and intravenous injectable medications.
Care to people with DM	Mean percentage of UBS with teams that schedule appointments for people with DM, have a registration form or follow-up of these people, use protocols for risk stratification of users with diabetes, besides having the records and scheduling appointments and tests of people with DM, such as diabetic foot and eye fundus tests.
Educational actions	Mean percentage of UBS with teams that perform educational activities aimed at health promotion and self-care support actions.
Continuing education	Mean percentage of UBS with teams that participate in continuing education actions organized by municipal management, face-to-face courses, Telehealth, RUTE - University Telemedicine Network, UNASUS, experience exchange, tutoring/preceptorship and others, including the team demands and needs.

Source: Own elaboration.

*ACS = Agente Comunitário de Saúde.

The unit of analysis was the UBS. We adopted the mean percentage of the work process variables of all teams for those with more than one team. We used the IBM SPSS Statistics 21 software for statistical data analysis. In the analysis, for the UBS level, we aggregated the indicators of structure and work process of each cycle from the code of the National Registry of Health Establishments (CNES). Then, the data from the three cycles were stacked in a single database at the federation unit's level. We presented the means and standard deviations (SD) by geographic macro-regions of the country.

We used the t-test with Bonferroni's correction with a significance level of 5% to compare the means between the macro-regions over the three cycles. When interpreting the tables, we presented the differences between the proportions between the North (N), Northeast (NE), Midwest (MW), Southeast (SE), and South (S) Brazilian macro-regions adopting different superscript alphabetic letters right after each mean. Thus, equal letters indicated the absence of statistically significant difference between the means of the geographic macro-regions, and different letters indicated statistically significant differences between them¹⁵.

We used the software Quantum Gis version 3.10, made available free of charge by its servers, to elaborate the cartographic material. Data were spatially distributed by adapting the Hartz¹⁶ classification,

categorized as adequate when the availability of 80-100% of the items in the UBS is identified; partially adequate (60-79% of items); not very adequate (40-59% of the items); and inadequate (less than 40% of the items). The Brazilian macro-regions were presented per the UBS structure and eABs' work process variables in each PMAQ-AB cycle.

The Research Ethics Committee of the Federal University of Pelotas approved the research under Opinion No 38/12 on May 10, 2012, and wholly followed the ethical precepts recommended by Resolution 466/12 of the National Health Council.

Results

Of the ten items analyzed referring to the structure of the UBS, the offer of special hours and expanded staff indicators showed the lowest percentages of adequacy in the three cycles of the PMAQ-AB in all macro-regions.

We observed that 50% of the UBS in Brazil had adequate facilities in the first cycle, with the lowest proportions in the North (38%) and Northeast (42%) regions. In contrast, the South, Southeast, and Midwest regions were statistically similar (55%, 54%, 54%, respectively). In the second cycle, the Brazilian UBS reached 75% of adequacy, highlighting the South macro-region (82%), which also remained in the third cycle, with the highest percentage of adequacy (72%) among the macro-regions (*table 1*).

Table 1. Mean (%) and Standard Deviation (SD) of the UBS structure variables for DM care, aggregated by macro-region. Brazil, 2012, 2014, and 2017

Variables	N	Ne	S	Se	MW	BR
	X (SD)	X (SD)	X (SD)	X (SD)	X (SD)	X (SD)
PMAQ-AB 2012						
Unit premises	38 ^a (23)	42 ^b (21)	55 ^c (24)	54 ^c (25)	54 ^c (26)	50(25)
Wheelchair user accessibility	18 ^a (25)	22 ^b (27)	43 ^d (34)	40 ^c (34)	31 ^e (31)	34(33)
Actions and services signage	29 ^a (35)	41 ^b (39)	43 ^b (39)	43 ^b (40)	31 ^a (37)	41(39)
Operating days	99 ^a (07)	89 ^b (31)	93 ^d (26)	97 ^c (18)	95 ^{c,d} (21)	95(22)
Special opening hours	23 ^a (42)	12 ^b (33)	15 ^{b,d} (35)	33 ^c (47)	17 ^d (38)	24(43)
Opening hours	62 ^a (34)	52 ^b (34)	58 ^d (33)	82 ^c (29)	63 ^a (31)	69(34)
Equipment and materials	40 ^a (18)	41 ^a (18)	46 ^b (15)	45 ^b (15)	46 ^b (17)	44(16)
Supplies	83 ^a (22)	84 ^a (25)	92 ^b (18)	92 ^b (18)	90 ^c (21)	90(20)
Community Health Worker (ACS) available	84 ^a (36)	88 ^b (32)	76 ^c (43)	75 ^c (43)	87 ^{a,b} (33)	79(40)
Expanded team	12 ^a (23)	10 ^a (23)	31 ^c (32)	29 ^b (31)	23 ^d (32)	23(30)
PMAQ-AB 2014						
Unit premises	69 ^a (20)	74 ^{b,d} (18)	82 ^c (16)	73 ^b (18)	75 ^d (17)	75(18)
Wheelchair user accessibility	41 ^a (38)	46 ^b (39)	71 ^d (35)	60 ^c (39)	52 ^e (39)	54(39)
Actions and services signage	55 ^a (37)	69 ^b (34)	71 ^c (36)	73 ^c (34)	58 ^a (39)	69(35)
Operating days	99 ^a (06)	98 ^b (09)	99 ^a (06)	99 ^a (06)	99 ^a (06)	99(07)
Special opening hours	15 ^a (19)	10 ^b (14)	12 ^d (19)	23 ^c (16)	11 ^b (17)	15(17)
Opening hours	73 ^a (26)	66 ^b (24)	66 ^b (24)	89 ^c (21)	65 ^b (24)	73(26)
Equipment and materials	62 ^a (13)	63 ^b (11)	70 ^c (11)	70 ^c (13)	68 ^d (12)	67(12)
Supplies	84 ^a (20)	89 ^b (16)	95 ^d (10)	91 ^c (14)	90 ^{b,c} (15)	90(15)
Community Health Worker (ACS) available	99 ^{a,b} (11)	99 ^a (09)	99 ^{a,b} (11)	98 ^b (12)	99 ^{a,b} (09)	99(11)
Expanded team	08 ^a (17)	07 ^a (18)	21 ^c (25)	24 ^b (27)	08 ^a (18)	14(24)
PMAQ-AB 2017						
Unit premises	68 ^a (11)	70 ^b (11)	72 ^c (11)	68 ^a (12)	68 ^a (11)	69(11)
Wheelchair user accessibility	53 ^a (37)	63 ^b (36)	81 ^d (29)	71 ^c (34)	72 ^c (34)	68(35)
Actions and services signage	72 ^a (34)	87 ^b (24)	83 ^d (28)	85 ^c (25)	81 ^e (31)	84(27)
Operating days	100 ^{a,b} (04)	99 ^a (05)	99 ^{a,b} (06)	100 ^b (05)	99 ^a (06)	99(05)
Special opening hours	16 ^a (19)	13 ^b (17)	11 ^d (17)	25 ^c (17)	09 ^e (17)	16(18)
Opening hours	95 ^a (23)	98(15)	99 ^c (11)	99 ^c (10)	97 ^b (17)	98(14)
Equipment and materials	70 ^a (12)	72 ^b (12)	81 ^d (12)	78 ^c (12)	77 ^e (13)	75(13)
Supplies	79 ^a (14)	83 ^b (11)	84 ^c (09)	84 ^{b,c} (12)	86 ^d (11)	84(12)
Community Health Worker (ACS) available	98 ^a (12)	97 ^{b,c} (15)	97 ^b (16)	98 ^a (13)	98 ^{a,c} (13)	98(14)
Expanded team	04 ^{a,d} (11)	04 ^a (11)	14 ^b (20)	12 ^c (18)	05 ^d (13)	08(16)

Source: Own elaboration.

N (North); NE (Northeast); SE (Southeast); S (South); MW (Midwest); BR (Brazil); X (Mean Percentage); SD (Standard Deviation).

Notes: Only teams with a work process evaluated in the PMAQ-AB.

The tests are adjusted for all comparisons between the regions of each cycle, using the Bonferroni correction.

When the superscript letters (a, b, c, d, e) are repeated, it means that there were no statistically significant differences between regions within that PMAQ-AB cycle.

In the first cycle of the PMAQ-AB, only a third (34%) of the UBS had an adequate structure for wheelchair user accessibility. However, this item showed better means in the two following cycles, reaching 68% adequacy of Brazilian UBS in the third cycle (table 1). When analyzed by macro-regions, the lowest percentages appear in the North (18%, 41%, and 53%) and the Northeast in the three cycles (22%, 46%, and 63%), respectively; while the South region had the highest percentages (43%; 71%, and 81%) (table 1).

The items with the lowest mean percentages in all PMAQ-AB cycles in Brazil were the offer of special hours, with statistically significant differences between all macro-regions, especially in the third cycle (SE, 25%; N, 16%; NE, 13%; S, 11% and MW, 9%), and an expanded team, which found, in the third cycle, similar means for the N and NE regions (4%), and statistically different for the MW regions (5%), SE (12%), and S (14%) (table 1).

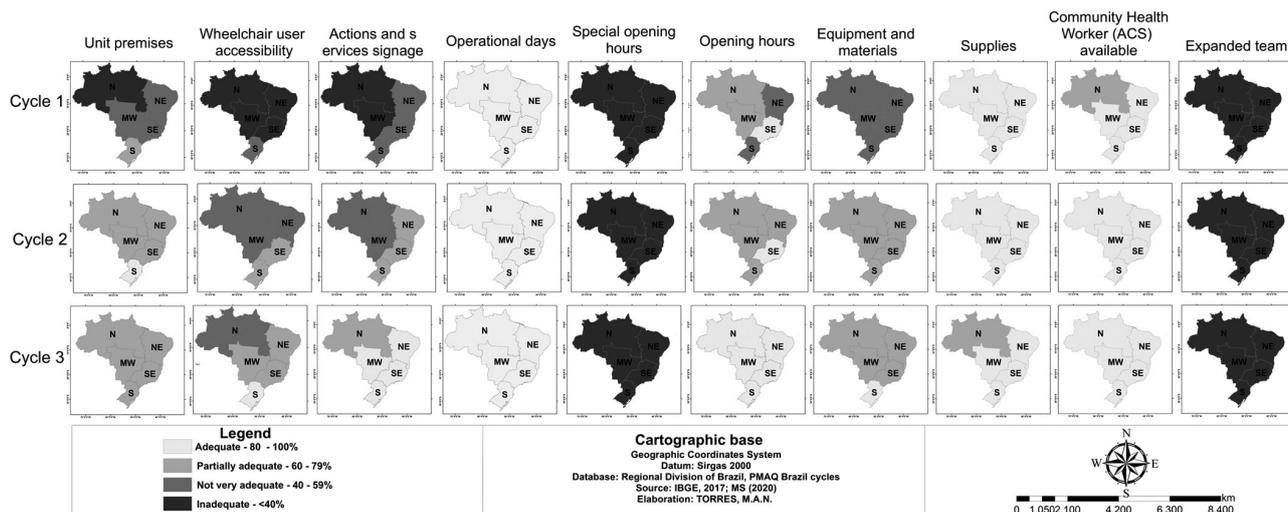
In the three PMAQ-AB cycles, the highest offer of UBS with eight operational hours per day was found in the Southeast region (82%, 89%, and 99%), similar only to the South region in the third cycle. Meanwhile, in the second cycle, the Northeast region had the lowest means (52%,

66%, and 98%), like the South and MW regions. Regarding supplies for the care of patients with DM, the S and SE regions stood out positively in the first cycle (92%), the South in the second cycle (95%), and the Midwest, with only 86% of adequacy, in the third cycle. The North region had the worst means (83%, 84%, and 79%) for this variable (table 1).

We observed an increase in the mean percentage over the three cycles (44%, 67%, and 75%) in the variable equipment and materials for the care of people with DM. However, the North (70%) and Northeast (72%) regions did not reach the national mean in the last cycle. The variable availability of Community Health Workers (ACS) showed high percentages in all macro-regions in the three cycles of the PMAQ-AB (table 1).

Figure 1 presents the spatial distribution of the UBS structure variables in the three cycles. Only the days of operation variable remained adequate for all cycles in all regions. On the other hand, the variables special hours and extended staff remained inadequate for all regions in all cycles. We should mention the improvement in the classification of the wheelchair user accessibility, signage of actions and services, and opening hours variables during the three cycles.

Figure 1. Spatial distribution of the structure variables of the PHC Units. Brazil, 2012, 2014, and 2017



The work process variables evaluated are shown in *table 2*. The team planning and offer and resolution of actions indicators barely varied in mean percentages between regions in the three cycles. Specialized agenda and continuing education indicators stood out, with percentages below 60% in all regions throughout the cycles.

Table 2. Mean (%) and Standard Deviation (SD) of eAB work process variables for DM care, aggregated by macro-region. Brazil, 2012, 2014, and 2017

Variables	N	Ne	S	Se	MW	BR
	X (SD)	X (SD)	X (SD)	X (SD)	X (SD)	X (SD)
PMAQ-AB 2012						
Team planning	85 ^a (20)	87 ^a (19)	87 ^a (19)	87 ^a (19)	87 ^a (19)	87(19)
Institutional support	64 ^a (22)	65 ^a (22)	63 ^a (22)	64 ^a (22)	63 ^a (22)	64(22)
Matrix support	60 ^a (28)	59 ^a (28)	58 ^{a,b} (29)	56 ^b (29)	60 ^a (27)	58(29)
Organization of medical records	88 ^a (32)	82 ^b (37)	79 ^c (40)	81 ^{b,c} (39)	73 ^d (43)	81(39)
Urgent care	75 ^{a,b} (32)	73 ^a (33)	75 ^{a,b} (32)	76 ^b (31)	77 ^{b,c} (31)	75(32)
Specialized agenda	42 ^a (19)	42 ^a (19)	38 ^c (19)	40 ^b (19)	41 ^{a,b} (18)	41(19)
Offer and resolution of actions	62 ^a (37)	62 ^a (37)	62 ^a (36)	63 ^a (38)	65 ^a (36)	62(37)
Care to people with DM	67 ^a (23)	66 ^{a,b} (23)	65 ^b (23)	65 ^{a,b} (23)	67 ^{a,b} (22)	66(23)
Educational actions	76 ^a (28)	74 ^{a,b} (28)	73 ^b (29)	74 ^{a,b} (28)	72 ^{b,c} (30)	74(29)
Continuing education	36 ^{a,c,e} (22)	37 ^{a,b} (21)	34 ^{c,d} (22)	35 ^{c,e} (22)	37 ^{b,e} (22)	35(22)
PMAQ-AB 2014						
Team planning	89 ^a (17)	89 ^a (17)	89 ^{a,b} (16)	89 ^{a,b} (17)	91 ^b (15)	89(17)
Institutional support	85 ^a (28)	88 ^b (26)	89 ^b (25)	88 ^b (26)	89 ^b (25)	88(26)
Matrix support	66 ^a (31)	72 ^{b,c} (26)	73 ^c (26)	72 ^b (27)	73 ^{b,c} (26)	72(27)
Organization of medical records	81 ^a (38)	83 ^a (37)	86 ^{b,c} (35)	84 ^{a,b} (37)	87 ^c (34)	84(37)
Urgent care	85 ^a (27)	92 ^b (20)	91 ^{b,c} (22)	90 ^c (22)	89 ^c (23)	90(22)
Specialized agenda	31 ^a (16)	32 ^{a,b} (16)	34 ^c (17)	33 ^{b,c,d} (17)	32 ^{a,d} (16)	33(16)
Offer and resolution of actions	63 ^a (22)	66 ^b (22)	64 ^a (22)	64 ^a (21)	61 ^c (21)	64(22)
Care to people with DM	74 ^a (24)	75 ^a (25)	75 ^a (24)	75 ^a (25)	75 ^a (23)	75(25)
Educational actions	69 ^{a,b} (30)	70 ^a (31)	71 ^a (30)	71 ^a (31)	67 ^b (32)	70(31)
Continuing education	40 ^{a,d} (19)	42 ^{b,c} (18)	43 ^c (18)	41 ^{a,b} (18)	40 ^d (18)	42(18)
PMAQ-AB 2017						
Team planning	91 ^a (15)	90 ^a (16)	89 ^b (17)	91 ^a (15)	91 ^a (15)	90(16)
Institutional support	93 ^a (21)	91 ^{b,c} (23)	90 ^c (24)	92 ^{a,b} (22)	91 ^{a,b,c} (23)	91(23)
Matrix support	72 ^a (23)	70 ^{b,c} (24)	69 ^c (25)	71 ^{a,b} (24)	69 ^{b,c} (24)	70(24)
Organization of medical records	71 ^{a,b} (19)	70 ^a (20)	70 ^{a,b} (21)	71 ^{a,b} (20)	72 ^b (20)	70(20)
Urgent care	94 ^a (18)	93 ^b (21)	92 ^c (22)	93 ^{a,b} (19)	94 ^{a,b} (19)	93(20)
Specialized agenda	41 ^a (21)	42 ^a (21)	41 ^a (21)	41 ^a (21)	42 ^a (20)	41(21)
Offer and resolution of actions	77 ^a (19)	75 ^b (21)	73 ^c (21)	75 ^{a,b} (20)	75 ^{a,b} (20)	75(20)
Care to people with DM	80 ^a (20)	78 ^b (22)	77 ^c (23)	78 ^b (21)	78 ^b (22)	78(22)
Educational actions	96 ^a (15)	95 ^b (19)	95 ^b (20)	96 ^a (17)	96 ^{a,b} (17)	95(18)
Continuing education	59 ^a (20)	58 ^{a,b} (21)	58 ^b (21)	59 ^{a,b} (20)	59 ^{a,b} (21)	58(20)

Source: Own elaboration.

N (North); NE (Northeast); SE (Southeast); S (South); MW (Midwest); BR (Brazil); X (Mean); SD (Standard Deviation).

Notes: Only teams with a work process evaluated in the PMAQ-AB.

The tests are adjusted for all comparisons between the regions of each cycle, using the Bonferroni correction.

When the superscript letters (a, b, c, d, e) are repeated, it means that there were no statistically significant differences between regions within that PMAQ-AB cycle.

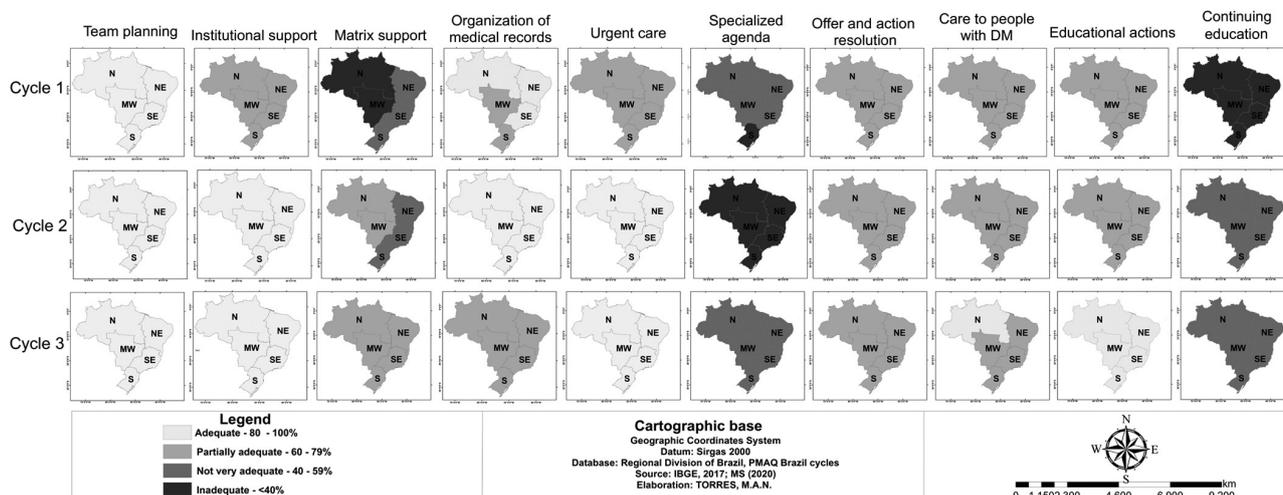
The planning and institutional support variables behaved very similarly in all Brazilian macro-regions, with no statistically significant differences in the three PMAQ-AB cycles (table 2), which can also be observed regarding the specialized agenda in the third cycle, offer and resolution of actions in the first cycle, and care to people with DM in the first and second cycles.

Regarding the educational actions' indicator, the North, Northeast, and Southeast regions had the highest percentage values (76%, 74%, and 74%, respectively) in the first cycle, with no statistical differences

between them. Similar values were observed among all regions in the third cycle, ranging from 95% to 96% (table 2).

This research showed that the team planning variable had the best performance in all regions in the three PMAQ-AB cycles, reaching the appropriate level. Institutional support and urgent care improved from being partially adequate in the first cycle throughout the country to adequate in the second cycle. They remained that way in the third cycle. Educational actions also evolved nationwide, reaching the appropriate level in the third cycle (figure 2).

Figura 2. Distribuição espacial das variáveis de processo de trabalho das Unidades Básicas de Saúde. Brasil, 2012, 2014 e 2017



The matrix support variable evolved from not very adequate or inadequate in the first cycle to partially adequate in the third cycle. The same did not happen with the continuing education and specialized agenda variables, which remained not very adequate in the third cycle (figure 2). It is also noteworthy that the variable organization of medical records was the only one that deteriorated over the three cycles, before, with the availability of 80%-100%, and then, in 2017, declining to 60%-79% of the items, in all regions (figure 2).

Discussion

The findings showed that the UBS structure indicators for the care of people with DM were heterogeneous throughout Brazilian macro-regions. The structure variables were more often inadequate or not very adequate, especially in the first cycle of the PMAQ-AB, compared to the work process. The 'special hours' and 'specialized team' variables remained inadequate throughout the three cycles across the national territory. In contrast,

the 'operational days' variable performed the best and remained adequate in all periods and regions. The 'opening hours' variable showed the most significant divergence in the first cycle of the PMAQ-AB, with statistically significant differences, but achieved adequacy in all regions in the third cycle.

Most of the variables related to the work process of the teams for the care of people with DM had mean percentages above 60%, mainly in the third cycle, with few differences between regions. Only 'matrix support', 'specialized agenda', and 'continuing education' showed inadequate or not very inadequate results over the cycles. It is also worth mentioning higher percentages of adequacy for the care of people with DM in the South or Southeast regions and lower in the North or Northeast regions.

These findings show that incorporating normative recommendations^{1,17}, whether associated with an inadequate structure or not, remains distant in the work of eABs. Similar findings were also found in a study with data from the PMAQ-AB between 2012 and 2018, which evaluated childcare structure and work process, indicating higher rates of adequacy to the work process and more significant structural deficiencies, with heterogeneity between regions¹⁸.

The strengths of the research included the large sample size, with great statistical power, since, at each cycle, there was greater adherence of eABs to the evaluation process and, consequently, a more significant number of UBS evaluated. It is also an ecological study involving the entire Brazilian territory, which allowed comparing structural conditions and the work process of UBS between Brazilian macro-regions and at different stages of Brazilian health conditions.

The study's limitations include the use of secondary data with possibly inadequate data recording in the several databases (measurement bias), changes in the wording of questions in the instruments throughout

the three PMAQ-AB cycles, team induction, and overestimated results since adherence to the PMAQ-AB was voluntary and may have been influenced by the selective adherence of better-organized health teams and units. Another limitation was the use of only structure and work process indicators without analyzing the result indicators, which reflect the evaluation of the care provided by PHC to users.

Evaluating the services becomes essential since the DM requires an organization of public policies that act effectively in the care of patients and their families and facilitate access to health services. Thus, the quality must be assessed with structure, process, and result indicators¹⁹, which is in line with the prerogatives of the PMAQ-AB. This program is one of the Federal Government's strategies for improving service to PHC users and an important management tool.

The most significant barriers for people with DM to accessing care are in the North and Northeast regions, as was observed for most structural indicators, except for the indicator 'operational days'. The study that aimed to analyze how socioeconomic transformations of offer and complexity of health services are expressed in the regions also highlighted the North and Northeast regions as the most affected, both due to huge inequalities in living conditions and the offer of health services³.

The UBS premises were 50% and 75% adequate in the first two cycles. In the same period, a study showed an increase in the proportion of UBS with adequate materials (3.9% to 7.8%) and physical structure (15.3% to 23.3%) for the care of people with diabetes; however, it was still insufficient¹⁰.

In general, the structure of the UBS and the work process are adequate in cities with large populations and more significant investments, resulting in a greater capacity for maintenance and sustainability²⁰. We are discussing here the need to analyze better the distribution of the set of public

resources invested in the SUS since the different states and municipalities have very distinct income levels and present quite different values in the per capita investments with their resources, which ends up influencing the distribution of federal transfers for health among the different Brazilian macro-regions²¹.

According to reports from the Institute of Applied Economic Research, in 2014, funds from transfers to PHC, whose North and Northeast regions account for 36.3% of the Brazilian population and received, in 2014, almost 46% of the transfers from MS to this block²¹. Despite this, the North region had the lowest mean percentages of supplies in all cycles, while the South and Southeast regions had the highest percentages. A similar result showed that only 9.4% of the UBS had an adequate structure for DM, with higher proportions also in the Southeast region (15.9%)¹⁰. In this analysis, the authors considered the following essential supplies in the care of people with DM: 150 kg scale; sphygmomanometer; adult stethoscope; measuring tape; glucometer; monofilament kit, ophthalmoscope, and capillary blood glucose strips.

On the other hand, in this study, adequacy percentages were higher than in the study by Neves et al.¹⁰. This difference can be attributed to the different composition of the 'supplies' indicator since the 150 kg anthropometric scale, sphygmomanometer, adult stethoscope, glucometer, monofilament kit, and ophthalmoscope were part of the 'equipment and materials' indicator, which showed lower percentages of adequacy than supplies.

Therefore, the availability of these supplies affects the care of people with DM. They help health professionals in physical examination, laboratory evaluation, and stratification of the patient's cardiovascular risk through anthropometric measurements, blood pressure measurement, and foot and eye fundus examinations¹⁷. Another finding

related to the care of patients with DM was found in a study by Muzy et al.²², according to which the incipient eye fundus examination had the lowest rates for the North region, which explains the high rates of retinopathy diabetes and blindness in Brazil.

A study carried out with data from the first cycle of the PMAQ-AB, also to analyze the structure of Brazilian UBS, showed the worst mean score (0.524) regarding the sub-dimension 'facilities and supplies', and the best score for 'working shifts', with 0.865²², using factor analysis and a standardized score calculated, with '1' as the best score. The best scores were also in the regions of more significant socioeconomic development (Southeast and South), especially the South region (9.3%). The Northeast region had the highest number of UBS (14,638) classified as regular (55.7 %) and only 2.8% fit the reference classification²².

Wheelchair user accessibility showed low proportions in the three cycles of the PMAQ-AB, a situation of concern since the DM can lead to limb amputations and even blindness, which requires adapted spaces for them within the UBS, such as, for example, adapted bathrooms, grab bars, handrails, ramps, door widths, signs, and non-slip flooring²³. The higher proportions in the three cycles in the South region can be explained by the Porto Alegre Accessibility Master Plan, which established general norms and fundamental criteria to promote accessibility for people with disabilities or reduced mobility in 2011²⁴.

In 2012, although the 'Visual Identity Manual'²⁵ was launched with applications in the SUS network, greater effectiveness was not observed for signage, especially in the North region. A study conducted in Paraná found that signage at the UBS to guide patients was insufficient, requiring more significant investments in hard technology: signs, posters, panels, newsletters, and the like, since they favor accessibility, especially with a language accessible to users²⁶.

The high proportions of operational days were per the current National Primary Care Policy (PNAB), which recommends the UBS to operate with a minimum workload of 40 hours/week, at least five days a week²⁷. A study using data from the second cycle of the PMAQ-AB found that 84.2% of professionals refer to care for five days or more a week, indicating that these UBS can be considered the most accessible, and 84.9% of respondents interviewed stated that these hours meet their health needs²⁸.

The Southeast and North regions had higher care percentages at special hours; however, they were still low in all cycles. A study that evaluated PHC from users' perspective revealed that they would like hours that facilitate their service, such as at night, on Saturdays, or weekends, mainly because they are part of the working-class population with the highest prevalence of DM²⁹. In 2019, the Ministry of Health launched the 'Saúde na Hora' (Health on the spot) program throughout the Brazilian territory to support the implementation of extended opening hours at the UBS, making funding available to municipalities and the Federal District to offer health actions in more flexible hours for the population³⁰.

The availability of at least one ACS in the UBS had high mean percentages in all regions (with values above 97%) in the last two cycles. ACS availability in the teams is essential for the continued care of users diagnosed with DM. They carry out home visits and inform users about the dates and times of appointments and scheduled tests, among other tasks. Also, under specific training from a professional with Health Higher Education and adequate equipment, they can measure blood pressure and capillary glycemia, perform clean dressing techniques, and refer the patient to the reference health unit whenever necessary³¹.

Thus, the Community Health Workers Strategy (EACS) and the Family Health Strategy were predominant in the

organization of health care, justifying the high percentages of ACS in all regions, especially in the North and Northeast regions, where the inclusion of ACS in health promotion and disease prevention practices were developed at home and local levels, given the vulnerability and risks of this population³².

Despite the relevance of ACS activities, with the changes established in the PNAB, this professional was considered expendable in the composition of the teams due to the non-compulsory coverage with ACS for 100% of the population, restricted to wide territorial dispersion, risk-prone, and socially vulnerable areas, with a maximum of 750 people per ACS, also considering epidemiological and socioeconomic criteria³¹.

The planning of activities showed satisfactory results in all regions and the three PMAQ-AB cycles, corroborating a study carried out in 2012, whose findings revealed that most of the teams evaluated in all regions of the country declared planning activities, highlighting the municipalities with more than 100,000 inhabitants, with 88.3% in the Midwest region and 95.8% in the South region³³. Thus, planning care for people with DM must include the programming of specific activities and their resolution vis-à-vis the health of these people and the impact of the planned actions on the health indicators of the population³⁴.

Municipal management is responsible for actions aimed at controlling DM in PHC. Thus, the structural and organizational aspects necessary for UBS operability and the assurance of adequate conditions for the provision of actions by health professionals should be a priority for DM prevention and control and reducing morbimortality and the costs associated with the disease³⁵.

The Institutional Support (IS) and Matrix Support (MS) proposal is based on continuing education and contributes to the exchange of knowledge and shared care between the different professionals of the eABs and experts, expanding people's access

to health care²⁰. Thus, they are fundamental strategies in caring for patients with DM, especially in the therapeutic process.

In this study, we observed that the percentages of IS and MS were extremely low, differing from a study also using data from the first cycle, in which information related to Brazilian teams that received some IS activity was analyzed, corresponding to 14,306 teams (84%), and MS activity, corresponding to 14,489 teams (85%)³⁶. In the second cycle, the North region received the least support, possibly because it is a region with great distances, difficult access to the several municipalities, a low Human Development Index (HDI), and an insufficient number of professionals, structure, and resources³⁷.

Problems related to the 'organization of medical records' were evident, especially in the third cycle, corroborating a study carried out in the Northeast region, showing that accumulation of medical records, loss, single medical records per patient, and difficulties for conservation may be associated with significant growth in the number of users served at UBS³⁸.

The 'urgent care' had percentages above 90% for all regions in the third cycle, suggesting adherence and consonance with the National Urgent Care Policy (PNAU), which highlights the first urgent and emergency care as one of PHC's objectives in an appropriate environment until transfer to other points of care when necessary³⁹.

Low percentages of 'specialized agenda' and 'offer and resolution of actions' were observed in the UBS in the three cycles and in all regions. In this sense, the user diagnosed with DM should be referred to different specialties when the professional deems it necessary due to the risk of developing chronic complications⁴⁰.

The variable 'care to people with DM' had better percentages in the last cycle, revealing improved registration and linkage of

users to the UBS. Moreover, we highlight the 2011-2022 Strategic Action Plan for Coping with Chronic Non-Communicable Diseases (NCDs) in Brazil, which may have improved the work process for users with DM for NCD prevention and control⁴¹.

In general, we observed an outlook of favorable advances in the care of people with DM during the three cycles of the PMAQ-AB. It is worth asking what the coming years will be like in the face of cost containment imposed by Constitutional Amendment No. 95¹², which may reduce access to health goods and services by the most impoverished populations and increase the regional disparities evidenced in this study.

Conclusions

The study showed differences in the structure and work process for the care of DM in PHC among the Brazilian macro-regions and that inequalities were persistently unfavorable in the North and Northeast macro-regions despite advances over the three PMAQ-AB cycles.

Collaborators

Lopes CGS (0000-0002-5561-8997)* contributed to drafting the paper, study design, and data analysis. Queiroz RCS (0000-0003-4019-2011)*, Rocha NCS (0000-0002-0809-2152)*, Rocha TAH (0000-0002-6262-3276)* and Thomaz EBAF (0000-0003-4156-4067)* contributed to the study planning and design, data acquisition and final approval of the published version. Tonello AS (0000-0002-8402-9112)* and Duarte KMM (0000-0002-2539-1189)* contributed to the critical review of the important intellectual content and the final approval of the published version. ■

*Orcid (Open Researcher and Contributor ID).

References

1. Sociedade Brasileira de Diabetes. Diretrizes da Sociedade Brasileira de Diabetes 2017-2018. São Paulo: Editora Clannad; 2017.
2. Arruda GO, Schmidt DB, Marcon SS. Internações por diabetes mellitus e a Estratégia Saúde da Família, Paraná, Brasil, 2000 a 2012. *Ciênc. Saúde Colet.* 2018; 23(2):543-55.
3. Albuquerque MV, Viana ALD, Lima LD, et al. Desigualdades regionais na saúde: mudanças observadas no Brasil de 2000 a 2016. *Ciênc. Saúde Colet.* 2017 [acesso em 2020 jul 27]; 22(4):1055-1064. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1413-81232017002401055&lng=en.
4. Bousquat A, Giovannella L, Campos EMS, et al. Primary health care and the coordination of care in health regions: Managers' and users' perspective. *Ciênc. Saúde Colet.* 2017; 22(4):1141-54.
5. Brasil. Ministério da Saúde, Departamento de Atenção Básica, Secretaria de Atenção à Saúde. Programa de Melhoria do Acesso e da Qualidade – PMAQ. Brasília, DF: MS; 2015.
6. Barcelos MRB, Lima RCD, Tomasi E, et al. Qualidade do rastreamento do câncer de colo uterino no Brasil: avaliação externa do PMAQ. *Rev. Saúde Pública.* 2017; (51):1-13.
7. Tomasi E, Fernandes PAA, Fischer T, et al. Qualidade da atenção pré-natal na rede básica de saúde do Brasil: Indicadores e desigualdades sociais. *Cad. Saúde Pública.* 2017. [acesso em 2020 nov 20]; 33(3):1-11. Disponível em: https://www.scielo.br/scielo.php?script=sci_arttext&pid=S0102-311X2017000305001&lng=es&nr=iso&tlng=pt.
8. Garnelo L, Lucas ACS, Parente RCP, et al. Organização do cuidado às condições crônicas por equipes de Saúde da Família na Amazônia. *Saúde debate.* 2014; 38(esp):158-72.
9. Neves RG, Duro SMS, Muñoz J, et al. Estrutura das unidades básicas de saúde para atenção às pessoas com diabetes: Ciclos I e II do programa nacional de melhoria do acesso e da qualidade. *Cad. Saúde Pública.* 2018 [acesso em 2020 set 20]; 34(4):e00072317. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0102-311X2018000405003&lng=pt.
10. Tomasi E, Cesar MADC, Neves RG, et al. Diabetes care in Brazil program to improve primary care access and quality-PMAQ. *J. ambul. care manage.* 2017; 40(2):S12-23.
11. Brasil. Ministério da Saúde. Portaria nº 2.979, de 12 de novembro de 2019. Institui o Programa Previne Brasil, que estabelece novo modelo de financiamento de custeio da Atenção Primária à Saúde no âmbito do Sistema Único de Saúde, por meio da alteração da Portaria de Consolidação no 6/GM/MS, de 28 de setembro de 2017. *Diário Oficial da União.* 12 Nov 2019.
12. Brasil. Constituição, 1988. Emenda Constitucional nº 95, de 15 de dezembro de 2016. Altera o Ato das Disposições Constitucionais Transitórias, para instituir o Novo Regime Fiscal, e dá outras providências. *Diário Oficial da União.* 15 Nov 2016.
13. Garnelo L, Lima JG, Rocha ESC, et al. Acesso e cobertura da Atenção Primária à Saúde para populações rurais e urbanas na região norte do Brasil. *Saúde debate.* 2018 [acesso em 2021 jan. 21]; 42(esp1):81-99. Disponível em: https://www.scielo.br/scielo.php?script=sci_arttext&pid=S0103-11042018000500081&lng=en&nr=iso&tlng=pt.
14. Brasil. Ministério da Saúde, Secretaria de Atenção à Saúde, Departamento de Atenção Básica. Programa Nacional de Melhoria do Acesso e da Qualidade da Atenção Básica (PMAQ): manual instrutivo. Brasília, DF: MS; 2012.
15. Rocha TAH. Gestão de recursos humanos e resultados em saúde: um estudo da atenção primária à saúde brasileira entre 2012-2014. [tese]. Belo Horizonte: Universidade Federal de Minas Gerais; 2019. 219 p.

16. Hartz ZMA. Avaliação em Saúde: dos modelos conceituais à prática na análise da implantação de programas. Rio de Janeiro: Fiocruz; 1997.
17. Brasil. Ministério da Saúde, Secretaria de Atenção à Saúde, Departamento de Atenção Básica. Estratégias para o cuidado da pessoa com doença crônica: diabetes mellitus. v. 36. Brasília, DF: MS; 2013.
18. Santos DMAD, Alves CMC, Rocha TAH, et al. Estrutura e processo de trabalho referente ao cuidado à criança na Atenção Primária à Saúde no Brasil: estudo ecológico com dados do Programa de Melhoria do Acesso e Qualidade da Atenção Básica 2012-2018. *Epidemiol. Serv. Saúde.* 2021; 30(1).
19. Donabedian A. Basic approaches to assessment: structure, process and outcome. In: *Explorations in Quality Assessment and Monitoring*. Ann Arbor, Michigan: Health Administration Press. 1980; (1):77-125.
20. Machado PMDO, Lacerda JTD, Colussi CF, et al. Estrutura e processo de trabalho para as ações de alimentação e nutrição na Atenção Primária à Saúde no Brasil, 2014. *Epidemiol. Serv. Saúde.* 2021; 30(2): e2020635.
21. Piola SF. Transferências de Recursos Federais do Sistema Único de Saúde para Estados, Distrito Federal e Municípios: os desafios para a implementação dos critérios da Lei Complementar no 141/2012. Texto para Discussão. Brasília, DF: Ipea; 2017.
22. Muzy J, Campos MR, Emmerick I, et al. Prevalência de diabetes mellitus e suas complicações e caracterização das lacunas na atenção à saúde a partir da triangulação de pesquisas. *Cad. Saúde Pública.* 2021; 37(5):e00076120.
23. Bousquat A, Giovanella L, Fausto MCR, et al. Tipologia da estrutura das unidades básicas de saúde brasileiras: os 5 r. *Cad. Saúde Pública.* 2017; 33(8):1-15.
24. Brasil. Ministério da Saúde. Secretaria de Atenção à Saúde, Departamento de Atenção Básica. Manual de estrutura física das unidades básicas de saúde: saúde da família. 2. ed. Brasília, DF: MS, 2008.
25. Porto Alegre. Lei Complementar nº 678, de 22 de agosto de 2011. Institui o plano diretor de acessibilidade de Porto Alegre. Prefeitura municipal de Porto Alegre, 2011 ago 22; Seção 1:18.
26. Brasil. Ministério da Saúde, Força Nacional do SUS. Manual de Identidade Visual. versão 1.0. Brasília, DF: MS; 2012.
27. Rocha NB, Franchin AT, Gasparetto A, et al. Conhecimento sobre acolhimento com classificação de risco pela equipe da Atenção Básica. *Espaç. saúde.* 2017; 18(1):72.
28. Brasil. Ministério da Saúde, Secretaria de Atenção à Saúde, Departamento de Atenção Básica. Portaria nº 2.436, de 21 de setembro de 2017. Política Nacional de Atenção Básica. *Diário Oficial da União.* 21 Set 2017.
29. Silva LAN, Harayama RM, Fernandes FDP, et al. Acesso e acolhimento na Atenção Básica da região Oeste do Pará. *Saúde debate.* 2019; 43(122):742-54.
30. Figueiredo DCMM, Shimizu HE, Ramalho WM. A Acessibilidade da Atenção Básica no Brasil na avaliação dos usuários. *Cad. Saúde Coletiva.* 2020; 28(2):288-301.
31. Brasil. Ministério da Saúde. Portaria nº 930, de 15 de maio de 2019. Institui o Programa “Saúde na Hora”, que dispõe sobre o horário estendido de funcionamento das Unidades de Saúde da Família, altera a Portaria nº 2.436/GM/MS, de 2017, a Portaria de Consolidação no 2/GM/MS, de 2017. *Diário Oficial da União.* 15 Maio 2019.
32. Brasil. Ministério da Saúde. 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.* 21 Set 2017.
33. Brasil. Ministério da Saúde, Secretaria Executiva. Programa de Agentes Comunitário de Saúde (PACS). Brasília, DF: MS; 2001.

34. Cruz MM, Souza RBC, Torres RMC, et al. Usos do planejamento e autoavaliação nos processos de trabalho das equipes de Saúde da Família na Atenção Básica. *Saúde debate*. 2014; 38(esp):124-39.
35. Silocchi C, Junges JR. Equipes de atenção primária: dificuldades no cuidado de pessoas com doenças crônicas não transmissíveis. *Trab. Educ. Saúde*. 2017; 15(2):599-615.
36. Borges DDB, Lacerda JTD. Ações voltadas ao controle do Diabetes Mellitus na Atenção Básica: proposta de modelo avaliativo. *Saúde debate*. 2018; 42(116):162-178.
37. Santos AF, Machado ATGM, Reis CMR, et al. Institutional and matrix support and its relationship with primary healthcare. *Rev. Saúde Pública*. 2015. [acesso em 2020 abr 18]; 49:54. Disponível em: https://www.scielo.br/scielo.php?pid=S0034-89102015000100241&script=sci_Arttext.
38. Sobrinho DF, Machado ATGM, Lima AMLD, et al. Compreendendo o Apoio Matricial e o resultado da certificação de qualidade nas áreas de atenção à criança, mulher, diabetes/hipertensão e saúde mental. *Saúde debate*. 2014; 38(esp):83-93.
39. Mendes MAL, Santos ES. Organização dos prontuários dos pacientes em uma unidade básica de saúde de Maceió. *Rev. Portal Saúde e Soc*. 2018; 3(1):710-20.
40. Brasil. Ministério da Saúde. Portaria nº 1.600, de 7 de julho de 2011. Reformula a Política Nacional de Atenção às Urgências e institui a Rede de Atenção às Urgências no Sistema Único de Saúde (SUS). *Diário Oficial da União*. 7 Jul 2011.
41. Brasil. Ministério da Saúde, Secretaria de Atenção à Saúde, Departamento de Atenção Básica. *Estratégias para o cuidado da pessoa com doença crônica: diabetes mellitus*. v. 36. Brasília, DF: MS; 2013.
42. Brasil. Ministério da Saúde, Secretaria de Vigilância em Saúde, Departamento de Análise de Situação de Saúde. *Plano de ações estratégicas para o enfrentamento das Doenças Crônicas Não Transmissíveis (DCNT) no Brasil 2011-2022*. Brasília, DF: MS; 2011.

Received on 05/22/2021

Approved on 12/23/2021

Conflict of interests: non-existent

Financial support: non-existent