

User satisfaction with primary health care by region in Brazil: 1st cycle of external evaluation from PMAQ-AB

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Abstract *The National Program for Access and Quality Improvement in Primary Care (Programa Nacional de Melhoria do Acesso e da Qualidade da Atenção Básica, PMAQ-AB) aimed to improve healthcare public service quality and satisfaction of health service users. This study's objective was to identify the main factors influencing user satisfaction with primary care (PC) services by region in Brazil. Using secondary data from the 1st Cycle of PMAQ-AB, logistic regression models were developed by region, with user satisfaction as the dependent variable, as defined by cluster analysis. Based on the obtained models, the health unit's ability to solve users' problems and feeling respected by the health providers were the most important factors for user satisfaction in all regions in Brazil. However, other important factors by region included the following: the health unit's hours of operation meeting the user's needs (Northeast); providers asking about family members (North); providers asking about other health needs (Midwest); users being seen without an appointment (South); and users asking questions after the appointment (Southeast). In conclusion, the factors influencing user satisfaction with PC vary according to region and are mainly associated with access quality, meeting users' needs, and work process organization.*

Key words *Primary health care, Health evaluation, User satisfaction*

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Introduction

There is clear evidence that national health systems that prioritize primary actions as the organizing axis of health practices achieve better health indicators, lower costs, and greater user satisfaction¹. Therefore, the institutionalization of primary care (PC) assessment in Brazil has gained momentum with the new National Primary Care Assessment Policy in the country.

The most recent health assessment program conducted in Brazil is the *National Program for Access and Quality Improvement in Primary Care* (Programa Nacional de Melhoria do Acesso e da Qualidade da Atenção Básica, PMAQ-AB), which aims, among other things, to improve healthcare services according to user need and satisfaction. PMAQ-AB has a phase called External Evaluation that evaluates the access to and quality of the health services in the municipalities and in the teams registered in the program through monitoring of contracted indicators and assessment of the teams' quality standards. In this evaluation, one of the questions raised was user satisfaction and perception of the Primary Health Care (PHC) services in regard to access and usage².

User satisfaction evaluation is included in studies of interpersonal relationships in health services, strengthening community participation in the planning and evaluation processes³. Moreover, the importance of users in this evaluation process makes them real evaluators, amplifies their rights as citizens, and establishes shared accountability for health care production, which may influence the way care is provided and enable improved quality and effectiveness⁴. Consequently, obtaining a statistically based evaluation of the interaction between health services and their users may contribute to the development of joint alternatives for more adequate interventions to solve daily routine problems with the services, favoring advances in health service production and management⁵.

It is worth noting that the interventions must thoroughly consider the large geographic, environmental, social, cultural, and economic diversity of the five macro regions of Brazil, whose disparities are reflected in unequal access to basic life conditions, availability of public services, life expectancy at birth, institutional capacity of the state governments, and development opportunities, all of which cause an unequal geographic distribution of work and income and, consequently, unequal living and health conditions⁶⁻⁸. At the macro regional scale, the socio-economic

indicators for the North and Northeast regions are considerably below the national average, where the living conditions are far different from those found in the Midwest and especially from those in the South and Southeast⁹. Given these inequalities, which are the target of public policies, the regions in Brazil have very different epidemiologic and health service access profiles in regard to both geographic characteristics and health services organization¹⁰. Thus, the different regions have different needs that must be met to achieve health equality in Brazil.

In this context and using the data obtained in the 1st external evaluation cycle from the PMAQ-AB as the basis of this study, this article primarily aimed to identify the main factors influencing user satisfaction with Primary Care Services (US-at-PC), taking into account Brazilian regional inequalities.

Methods

In this study, secondary data were obtained with the External Evaluation Tool "Health Closer to You," which was implemented by the Ministry of Health in Brazil in the 1st of External Evaluation of the PMAQ-AB conducted between 2012 and 2013 in 17,203 contracted Primary Health Care Teams referring to 3,944 Brazilian municipalities. In particular, the answers of 65,392 users interviewed in Brazil during Module III – Interview with the User at the Health Unit were analyzed; the interview aimed to assess user satisfaction with access to and usage of health services. For a better analysis of the data, two criteria were used: 1 - Variable selection criteria: the variables with a maximum of 10% of absent data were included; and 2 - Case inclusion criteria: users who had complete data for the variables selected by criterion 1 were included.

Therefore, from the 91 pre-selected variables, the study analyzed 39 variables. Of the 65,392 users interviewed, 46,991 were included in the study, of whom 15,324 (of 21,556) were from the Northeast, 2,941 (of 4,337) from the Midwest, 18,511 (of 25,406) from the Southeast, 7,671 (of 10,364) from the South, and 2,544 (of 3,728) from the North.

Logistic regression models were fitted for each region in Brazil. All models used the same independent variables and outcomes: satisfaction ($Y = 1$) and dissatisfaction ($Y = 0$). To obtain the dichotomized dependent variable "user satisfaction," the multivariate technique Two-Step Clus-

ter Analysis was used, and the variables about user satisfaction that met the variable selection criteria were reclassified as satisfied and dissatisfied. The quality of the clustering obtained was analyzed with the Silhouette coefficient (SC). The pre-selected variable set is described in Chart 1.

Once the variables used to obtain the dependent variable were removed, the variables from Module III, which met the selection criteria and could influence USat-PC, were pre-selected to be the explanatory or independent variables. The pre-selected variable set is described in Chart 2.

In the development of each logistic model, the steps described below were taken for each region. Initially, bivariate analyses (each independent variable and the outcome) were conducted using the chi-square test and adopting a significance level of 20%. Next, the model was fitted with the Stepwise Forward method, using the Bayesian Information Criterion (BIC), and the final model was obtained assuming a statistical significance level of 5%. The goodness of fit of the final model was analyzed through deviance analysis and the receiver operating characteristic (ROC) curve, and cross validation was used for analyzing the predictive power of the resulting models.

The statistical analyses were performed using R software, except for the Two-Step Cluster analysis, which was performed with the statistical

software SPSS version 20.0 (IBM). The study was submitted to and approved by the research ethics committee of Federal University of Rio Grande do Sul (Universidade Federal do Rio Grande do Sul, UFRGS).

Results

The cluster analysis used to obtain the variable user satisfaction had a Silhouette coefficient of 0.5, indicating a good result¹¹. This analysis enabled identifying two groups in regard to perceived satisfaction with care: 36,027 (76.7%) users classified as satisfied and 10,964 (23.3%) users classified as dissatisfied in Brazil. The results by region were as follows: Midwest, 661/22.5% dissatisfied and 2,280/77.5% satisfied; Northeast, 4,374/28.5% dissatisfied and 10,950/71.5% satisfied; North, 936/36.8% dissatisfied and 1,608/63.2% satisfied; Southeast, 3,679/19.9% dissatisfied and 14,832/80.1% satisfied; and South, 1,314/17.1% dissatisfied and 6,357/82.9% satisfied.

Table 1 shows the logistic model fitted for each region in Brazil, including the significant variables, p-value, odds ratio (OR), and confidence interval at 95%.

Table 2 shows the data obtained in the quality assessment of the model generated.

Chart 1. Variables Used in the Two-Step Cluster Analysis.

Variables	Reclassification (1 = satisfied and 2 = dissatisfied)
If, when the user seeks assistance at this unit, lack of materials or equipment usually hinders care delivery	1 (Never) 2 (Yes, Always; Yes, Sometimes)
If, when a health provider prescribes a drug, the medication is available at this health unit	1 (Yes, Always; Yes, Sometimes) 2 (This unit does not provide drugs; Never)
Opinion of the user on the care he/she receives from the health team	1 (Very Good; Good) 2 (Fair; Poor; Very poor)
Opinion of the user on the care his/her relatives receive from the health team	1 (Very Good; Good) 2 (Fair; Poor; Very poor)
If the user would change teams or health units if he/she had that option	1 (No) 2 (Yes)
If the user would recommend this health unit to a friend or relative	1 (Yes) 2 (No)
Score from zero to ten that the user assigns to his/her satisfaction with the care received at the unit	Not dichotomized

Chart 2. Independent Variables Used in the Study.

Independent Variables	
1.	Gender
2.	Age
3.	If the user can read and write
4.	If the user is retired
5.	Currently a paid worker
6.	Opinion in regard to distance from user's home to this health unit
7.	If the user thinks the signs identifying different areas within the unit make it easier to find them (office rooms, restrooms, vaccination room, etc.)
8.	If the health unit operates five days a week
9.	Operation time and days of the health unit
10.	If the hours of operation of this health unit meet the user's needs
11.	Method for making an appointment at the health unit
12.	Schedule for making appointments at the health unit
13.	If the user is able to make an appointment for the same day
14.	How the appointment is made (scheduled for a specific time, at defined times or periods of the day, on a first-come, first-served basis, seen between appointments, other(s))
15.	The user is seen to solve any problem
16.	If the user feels he/she is respected by the health professionals in regard to his/her cultural customs, practices, religion
17.	If when the user is seen at this health unit, he/she thinks that the team makes an effort to solve his/her needs/problems
18.	If the office room provides privacy
19.	If the health providers ask questions about other health needs that the user has or may have besides those related to the reason for the appointment
20.	Opinion of the user if, during the appointment, the team's providers suggest solutions adequate to his/her reality
21.	If, during the appointment at the health unit, the doctor allows enough time for the user to talk about his/her concerns or problems
22.	If the user is seen by the same doctor at the health unit
23.	If the health providers of this unit usually ask about the users' relatives
24.	If the health providers recall what happened in the last user's appointments
25.	If, when the user has questions after the appointments, it is easy for him/her to talk with the providers who assisted him/her
26.	If, when the user interrupts treatment for some reason or misses her/his appointment at the health unit, the providers try to find out what happened and resume care
27.	If the user is comfortable talking with the team about his/her concerns, social problems, relatives, or other questions
28.	If, when the user needs it, the team providers are able to make an appointment with other providers or specialists
29.	If it is easy for the user to obtain information about his/her test results at the health unit
30.	If the user's health community agent (HCA) visits his/her home
31.	If other health provider teams visit the user's home
32.	If the user can make a complaint or suggestion at the health unit

Discussion

In this study, being a female user in the Northeast increased the likelihood of achieving USat-PC by

1.27-fold over males. This result corroborates the findings of Nigenda-López *et al.*¹², who found an association between satisfaction with geriatric care and female gender in Mexico (OR = 2.86).

In other regions, the variable gender was not significant in the models, corroborating several studies^{13,14}.

Age positively influenced user satisfaction in some regions in the country (Northeast, Southeast, Midwest). For each 10-year increase in age, there was an 11% increase in the likelihood of achieving USat-PC. Confirming this result, other studies have observed a statistically significant association between USat-PC and age¹⁵⁻¹⁹. However, neither Kamhawi et al.²⁰ in Jordan nor Gouveia et al.²¹ in Pernambuco (Brazil) observed this association, which is in agreement with the models for the South and North regions in this study.

Moreover, in this study, the distance from the user's home to the health units was an important factor to achieve USat-PC in the Northeast, Southeast, and South. This result corroborates the study by Perez et al.²² in Vespasiano in the state of Minas Gerais (Brazil), who observed that difficulty in accessing the Family Health Strategy (FES) services decreased the likelihood of achieving user satisfaction with the services by 80%. In the study by Santos et al.²³ in Santo Antônio do Monte in the state of Minas Gerais, the users indicated the following as reasons for their satisfaction: good location of the FES, short distance from home to the family health unit (FHU), short period of time spent travelling to the FHU, and the possibility to walk to the FHU. In Pernambuco, Albuquerque et al.²⁴ considered that the obstacles related to distance were associated with secondary care level because the FES must be located close to the users' homes.

With regard to signaling of different areas in the FHU in order for the user to feel comfortable with the environment, this aspect was important only in the Southeast; when the signs identifying different areas inside the unit did not facilitate the dynamics within the primary health unit (PHU), the likelihood of achieving USat-PC decreased 1.4-fold. Fixed work elements, such as signs, leaflets, regulations, routines, and instructions, must be taken into account because they are needed in the structuring of the care relationship. In addition, they must be easily visible, indicating the location of the different rooms and departments²⁵.

With regard to the hours of operation, the likelihood of achieving USat-PC decreased 1.4-fold in the Northeast if the unit did not operate five days a week. Furthermore, if the hours of operation did not meet the users' needs, USat-PC decreased in all regions, mainly in the South (2.5 times) and the North (2.4 times). Santos et al.²³

also observed that hours of operation is one of the organizational aspects that leads to dissatisfaction, impairing access to the service. These results may be explained by the fact that most users work during business hours and need extended hours of operation to facilitate their access to PC services, which is the gateway to the system. However, several studies with PMAQ data in Pernambuco and in Brazil revealed that most users considered the hours of operation to be satisfactory^{24,26}.

In the North, being unable to make an appointment every day of the week influenced USat-PC. In the South, it was important that appointments were not made at defined times or periods of the day. In the Southeast, not having to make appointments only at specific times increased the likelihood of achieving USat-PC. These results corroborate those by Bastos et al.¹³ in Porto Alegre in the state of Rio Grande do Sul (Brazil), who observed that the ease of making an appointment increased the likelihood of being satisfied with the last medical appointment by 40%. Moreover, scheduling appointments in advance organizes and humanizes care, effectively facilitates access, and enables prioritization of risk cases, altering the exclusive model of emergency care²⁷.

In the Northeast and Southeast, it was observed that the likelihood of achieving USat-PC decreased when the user was able to make an appointment but not for the same day. Moreover, when the user could not be seen at the health unit without an appointment, the likelihood of achieving USat-PC decreased in all regions. Never needing to go to the unit without an appointment, compared to those who were able to be seen most of the time, also influenced USat-PC in all regions, except in the South. It is possible that this aspect can be solved with a welcoming approach, valuing complaints and searching for possible solutions for the user's problem, even if they cannot receive care. To be welcoming does not mean that the users' demands are fully resolved but instead that attention is given to the professional-user relationship, which involves listening, valuing complaints, and identifying needs²⁸. A welcoming reception takes place with the involvement of all staff at the PHU in order to combine different approaches and explanations about the diseases, demands, and needs²⁴. Notably, when Alves et al.²⁹ analyzed access to HFS with PMAQ-AB data, they observed that the Southeast region showed greater access potential among the regions through the influence of in-

Table 1. Fit of the Logistic Regression Model for Each Region in Brazil.

Variable	NORTHEAST		NORTH	
	p-value	OR (95 % CI)	p-value	OR (95 % CI)
<i>Intercept</i>	< 0.0001*	13.67(10.63-17.63)	< 0.0001*	15.01(11.24-20.27)
III.4.6- Gender				
Male (reference)		1		
Female	0.0002*	1.27(1.12-1.44)		
III.4.7- How old are you?				
	< 0.0001*	1.01(1.01-1.01)		
III.5.2- What do you think about the distance from your home to this health unit?				
Close (reference)				
Reasonable	< 0.0001*	0.72(0.64-0.80)		
Far	0.1822	0.92(0.81-1.04)		
III.5.3- Do you think the signs identifying different areas within the unit make it easier to find them? (e.g., office rooms, restrooms, vaccination rooms, etc.).				
Yes (reference)				
No				
Yes, some signs				
I did not see or there are no signs in the unit				
III.5.4- Does the health unit operate five days a week?				
Yes (reference)				
No	< 0.0001*	0.70(0.59-0.83))		
III.5.7- Do the hours of operation of this unit meet your needs?				
Yes (reference)				
No	< 0.0001*	0.50(0.44-0.57)	< 0.0001*	0.42(0.32-0.55)
III.6.2- In general, can an appointment for this health unit can be made every day of the week?				
Yes (reference)				
No			0.0017*	0.73(0.60-0.89)
III.6.3- When you are able to make an appointment, is it for the same day?				
Yes (reference)				
No	< 0.0001*	0.81(0.74-0.88)		
III.6.4.2- When you are able to make an appointment, is your appointment at defined times or periods of the day?				
Yes (reference)				
No				
III.7.1- When you go to the health unit to solve a problem without a scheduled appointment, are you seen?				
Yes (reference)		1		
No	< 0.0001*	0.53(0.47-0.59)	< 0.0001*	0.47(0.37-0.60)
Never had to go to the health unit without an appointment	0.0185*	0.86(0.76-0.98)	0.0167*	0.71(0.53-0.94)
III.7.6- Do you feel that the providers respect your cultural customs, practices, and religion?				
Yes, always (reference)				
Yes, sometimes	< 0.0001*	0.41(0.35-0.48)	< 0.0001*	0.49(0.35-0.67)
No	< 0.0001*	0.46(0.35-0.62)	0.0011*	0.39(0.22-0.68)

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creased welcoming reception and resource availability at the contracted PHU. By contrast, the North region had a negative influence on access.

This study also showed that solving the users' needs/problems at the health unit itself was associated with USat-PC in all regions. The user,

Table 1. continuation

Variable	MIDWEST		SOUTH		SOUTHEAST	
	p-value	OR (95 % CI)	p-value	OR (95 % CI)	p-value	OR (95 % CI)
<i>Intercept</i>	< 0.0001*	9.69(6.52-14.57)	< 0.0001*	32.92(22.31-49.21)	< 0.0001*	18.65(15.21-22.92)
III.4.6- Gender						
Male (reference)						
Female						
III.4.7- How old are you?						
	0.0003*	1.01(1.01-1.02)			< 0.0001*	1.01(1.01-1.01)
III.5.2- What do you think about the distance from your home to this health unit?						
Close (reference)						1
Reasonable			< 0.0001*	0.64(0.54-0.76)	< 0.0001*	0.67(0.60-0.75)
Far			0.0041*	0.74(0.60-0.91)	< 0.0001*	0.71(0.62-0.80)
III.5.3- Do you think the signs identifying different areas within the unit make it easier to find them? (e.g., office rooms, restrooms, vaccination rooms, etc.).						
Yes (reference)						1
No					0.0001*	0.72(0.61-0.85)
Yes, some signs					0.6635	1.05(0.86-1.28)
I did not see or there are no signs in the unit					< 0.0001*	0.70(0.60-0.83)
III.5.4- Does the health unit operate five days a week?						
Yes (reference)						
No						
III.5.7- Do the hours of operation of this unit meet your needs?						
Yes (reference)						1
No	< 0.0001*	0.51(0.39-0.67)	< 0.0001*	0.40(0.34-0.48)	< 0.0001*	0.55(0.49-0.62)
III.6.2- In general, can an appointment for this health unit can be made every day of the week?						
Yes (reference)						1
No					0.0005*	1.19(1.08-1.31)
III.6.3- When you are able to make an appointment, is it for the same day?						
Yes (reference)						1
No					< 0.0001*	0.80(0.73-0.88)
III.6.4.2- When you are able to make an appointment, is your appointment at defined times or periods of the day?						
Yes (reference)				1		
No			0.0007*	1.52(1.19-1.93)		
III.7.1- When you go to the health unit to solve a problem without a scheduled appointment, are you seen?						
Yes (reference)		1		1		1
No	< 0.0001*	0.41(0.32-0.52)	< 0.0001*	0.48(0.40-0.58)	< 0.0001*	0.62(0.56-0.70)
Never had to go to the health unit without an appointment	0.0008*	0.63(0.48-0.83)	0.0731	0.81(0.64-1.02)	0.0278*	0.85(0.74-0.98)
III.7.6- Do you feel that the providers respect your cultural customs, practices, and religion?						
Yes, always (reference)				1		1
Yes, sometimes			< 0.0001*	0.43(0.33-0.57)	< 0.0001*	0.49(0.42-0.57)
No			< 0.0001*	0.38(0.24-0.60)	< 0.0001*	0.37(0.28-0.48)

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when he/she seeks the health unit, expects that his/her problem will be solved individually or collectively, that the set of health actions will be

beneficial, and that the actions will be effective and satisfactory²⁸. This result is in agreement with a study by Bernhart et al.³⁰ conducted in In-

Table 1. continuation

Variable	NORTHEAST		NORTH	
	p-value	OR (95 % CI)	p-value	OR (95 % CI)
III.8.1- When you are seen at this health unit, do you think the team tries to solve your needs/problems at the health unit itself?				
Yes, always (reference)		1		
Yes, sometimes	< 0.0001*	0.54(0.48-0.59)	< 0.0001*	0.44(0.34-0.55)
No	< 0.0001*	0.39(0.32-0.47)	< 0.0001*	0.34(0.23-0.49)
III.8.2- Does the office room provides privacy?				
Yes (reference)		1		
No	< 0.0001*	0.57(0.48-0.68)	0.0001*	0.47(0.32-0.67)
III.8.7 – Do the health providers ask questions about other health needs that you may have besides those related to the reason for the appointment?				
Always (reference)				
Most of the time				
Almost never				
Never				
III_8_8- In your opinion, during the appointments, do the team's providers suggest solutions that are adequate when compared to your reality?				
Always (reference)				
Most of the time	0.0099*	0.85(0.76-0.96)		
Almost never	0.0001*	0.72(0.61-0.84)		
Never	< 0.0001*	0.64(0.57-0.71)		
III.9.1- During the appointments at this health unit, does the doctor allow enough time for you to talk about your concerns or problems?				
Yes (reference)				
Yes, sometimes	< 0.0001*	0.68(0.59-0.79)		
No	< 0.0001*	0.72(0.64-0.82)		
III.9.7- At this health unit, are you seen by the same doctor?				
Always (reference)				
Most of the time				
Almost never				
Never				
III.9.12- Do the providers of this unit usually ask about your relatives?				
Always (reference)		1		
Most of the time	0.5112	0.95(0.82-1.10)	0.4951	0.89(0.64-1.25)
Almost never	0.0002*	0.72(0.60-0.86)	0.234	0.79(0.54-1.17)
Never	< 0.0001*	0.56(0.50-0.63)	< 0.0001*	0.49(0.37-0.64)
III.9.13- Do the providers recall what happened in your last appointments?				
Yes (reference)		1		1
Yes, sometimes	0.0164*	0.86(0.76-0.97)	0.3173	0.85(0.63-1.16)
No	< 0.0001*	0.65(0.59-0.73)	0.0001*	0.64(0.51-0.80)
III.9.14- When you have questions after the appointments, is it easy for you to talk with the providers who assisted you?				
Always (reference)				
Most of the time				
Almost never				
You never had to ask questions				

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onesia, which found that the main determinant of satisfaction with the services is the user feeling that his/her problem was solved. From this per-

spective, the Ministry of Health claims that the FHS is a place for screening and referral as well as a place with capacity to solve approximately 80%

Table 1. continuation

Variable	MIDWEST		SOUTH		SOUTHEAST	
	p-value	OR (95 % CI)	p-value	OR (95 % CI)	p-value	OR (95 % CI)
III.8.1- When you are seen at this health unit, do you think the team tries to solve your needs/problems at the health unit itself?						
Yes, always (reference)		1		1		1
Yes, sometimes	< 0.0001*	0.56(.,44-0.72)	< 0.0001*	0.55(0.47-0.65)	0.0001*	0.52(0.46-0.57)
No	< 0.0001*	0.31(0.22-0.45)	< 0.0001*	0.39(0.28-0.54)	< 0.0001*	0.31(0.26-0.36)
III.8.2- Does the office room provides privacy?						
Yes (reference)						1
No			0.0016*	0.60(0.44-0.83)	< 0.0001*	0.58(0.48-0.70)
III.8.7 – Do the health providers ask questions about other health needs that you may have besides those related to the reason for the appointment?						
Always (reference)		1				1
Most of the time	0.0010*	0.59(0.43-0.81)	0.1915	0.86(0.69-1.08)	0.124	0.90(0.78-1.03)
Almost never	0.0001*	0.45(0.31-0.67)	0.0014*	0.65(0.50-0.85)	< 0.0001*	0.55(0.47-0.66)
Never	< 0.0001*	0.54(0.42-0.69)	< 0.0001*	0.60(0.51-0.72)	0.0001*	0.71(0.63-0.80)
III_8_8- In your opinion, during the appointments, do the team's providers suggest solutions that are adequate when compared to your reality?						
Always (reference)						1
Most of the time					0.9101	1.01(0.89-1.15)
Almost never					0.0583	0.85(0.72-1.01)
Never					< 0.0001*	0.73(0.65-0.82)
III.9.1- During the appointments at this health unit, does the doctor allow enough time for you to talk about your concerns or problems?						
Yes (reference)		1		1		
Yes, sometimes	0.6183	0.92(0.66-1.28)	0.0019*	0.71(0.57-0.88)		
No	< 0.0001*	0.50(0.37-0.68)	0.0004*	0.66(0.52-0.83)		
III.9.7- At this health unit, are you seen by the same doctor?						
Always (reference)						
Most of the time						
Almost never						
Never						
III.9.12- Do the providers of this unit usually ask about your relatives?						
Always (reference)						1
Most of the time	0.0507	1.49(1.00-2.24)	0.1632	1.21(0.93-1.57)	0.4159	1.07(0.92-1.24)
Almost never	0.0287*	0.60(0.39-0.95)	0.0197*	0.72(0.55-0.95)	0.0422*	0.83(0.70-0.99)
Never	0.0003*	0.59(0.45-0.79)	< 0.0001*	0.55(0.45-0.68)	< 0.0001*	0.71(0.63-0.80)
III.9.13- Do the providers recall what happened in your last appointments?						
Yes (reference)		1				1
Yes, sometimes	0.3293	0.85(0.62-1.18)			0.5603	0.96(0.84-1.10)
No	< 0.0001*	0.59(0.46-0.75)			0.0001*	0.70(0.63-0.78)
III.9.14- When you have questions after the appointments, is it easy for you to talk with the providers who assisted you?						
Always (reference)						1
Most of the time					0.0427*	0.86(0.75-0.99)
Almost never					< 0.0001*	0.66(0.55-0.79)
You never had to ask questions					0.0255*	0.87(0.77-0.98)

it continues

of the health problems of the population³¹. However, it requires structural resources and compatible equipment for enabling health providers

to make this commitment³². It is important to highlight that the high prevalence of resolved demands also contributes to building confidence

Table 1. continuation

Variable	NORTHEAST		NORTH	
	p-value	OR (95 % CI)	p-value	OR (95 % CI)
III.9.16- When you interrupt treatment for some reason or you miss an appointment at this health unit, do the providers seek you to find out what happened and resume care?				
Always (reference)		1		
Yes, sometimes	0.7799	0.97(0.77-1.22)	0.9357	1.02(0.61-1.76)
Almost never	< 0.0001*	0.70(0.61-0.80)	< 0.0001*	0.55(0.41-0.73)
Never interrupted treatment or missed an appointment	0.7911	1.02(0.90-1.16)	0.3757	0.88(0.66-1.17)
III.9.18- Do you feel comfortable talking with the team about your concerns, social problems, relatives or other questions?				
Always (reference)		1		
Most of the time	0.0031*	0.82(0.72-0.93)	0.9548	1.02(0.60-1.74)
Almost never	< 0.0001*	0.68(0.57-0.81)	< 0.0001*	0.55(0.41-0.72)
Never	< 0.0001*	0.61(0.55-0.68)	0.5974	0.93(0.70-1.23)
III.9.19- When you need it, are the team's providers able to make an appointment with other provides or specialists?				
Yes, always (reference)				
Yes, sometimes				
No				
Never needed it				
III.9.22- Is it easy for you to obtain information about the results of your tests at this health unit?				
Yes, always (reference)				
Yes, sometimes	0.0008*	0.82(0.73-0.92)		
No	< 0.0001*	0.77(0.69-0.85)		
III.9.23- Does your health community agent (HCA) visit you at home?				
Yes (reference)				
No	< 0.0001*	0.76(0.67-0.85)		
There is no HCA at this health unit or in the neighborhood	0.1223	0.71(0.46-1.10)		
III.9.24- Do other health providers visit you at home?				
Yes, always (reference)				
Yes, sometimes	0.9256	0.99(0.83-1.19)		
No	< 0.0001*	0.69(0.60-0.79)		
III.19.1- When you want to make a complaint or suggestion at the health units, are you able to?				
Yes (reference)		1		
Yes, but with difficulty	< 0.0001*	0.49(0.39-0.61)		
No	0.0024*	0.79(0.67-0.92)		
Never needed to	< 0.0001*	1.29(1.14-1.46)		

it continues

and increasing the relationship between users and services.

With regard to privacy, users from all regions mentioned that the lack of an office room that provided privacy decreased the likelihood of achieving USat-PC, confirming the work of Villadsen *et al.*³³ conducted in Ethiopia. This variable had the greatest influence in the North

(2.1-fold decrease in USat-PC). It is necessary to emphasize that the space for treatment must preserve privacy, promoting communication without interruptions, in addition to being the most comfortable place possible³⁴. Some authors have considered that the lack of adequate physical space at the PHU has led to lack of privacy during conversations with the users^{35,36}.

Table 1. continuation

Variable	MIDWEST		SOUTH		SOUTHEAST	
	p-value	OR (95 % CI)	p-value	OR (95 % CI)	p-value	OR (95 % CI)
III.9.16- When you interrupt treatment for some reason or you miss an appointment at this health unit, do the providers seek you to find out what happened and resume care?						
Always (reference)						1
Yes, sometimes			0.7744	1.08(0.66-1.83)	0.0385*	0.76(0.58-0.99)
Almost never			< 0.0001*	0.59(0.46-0.75)	< 0.0001*	0.64(0.56-0.73)
Never interrupted treatment or missed an appointment			0.8574	0.98(0.78-1.23)	0.0351*	0.87(0.76-0.99)
III.9.18- Do you feel comfortable talking with the team about your concerns, social problems, relatives or other questions?						
Always (reference)		1				1
Most of the time	0.0026*	0.61(0.44-0.84)	0.1937	0.87(0.70-1.08)	0.1348*	0.90(0.78-1.03)
Almost never	0.1367	0.76(0.53-1.10)	< 0.0001*	0.57(0.44-0.74)	0.0014*	0.76(0.65-0.90)
Never	< 0.0001*	0.54(0.42-0.69)	< 0.0001*	0.58(0.48-0.69)	< 0.0001*	0.64(0.57-0.72)
III.9.19- When you need it, are the team's providers able to make an appointment with other providers or specialists?						
Yes, always (reference)						1
Yes, sometimes					0.0001*	0.73(0.64-0.82)
No					0.0001*	0.65(0.56-0.76)
Never needed it					0.997	1.00(0.89-1.13)
III.9.22- Is it easy for you to obtain information about the results of your tests at this health unit?						
Yes, always (reference)						1
Yes, sometimes					< 0.0001*	0.76(0.67-0.86)
No					< 0.0001*	0.64(0.57-0.73)
III.9.23- Does your health community agent (HCA) visit you at home?						
Yes (reference)						1
No					< 0.0001*	0.64(0.56-0.72)
There is no HCA at this health unit or in the neighborhood					0.084	0.55(0.29-1.12)
III.9.24- Do other health providers visit you at home?						
Yes, always (reference)						
Yes, sometimes			0.7131	0.93(0.64-1.37)		
No			< 0.0001*	0.53(0.40-0.69)		
III.19.1- When you want to make a complaint or suggestion at the health units, are you able to?						
Yes (reference)		1		1		1
Yes, but with difficulty	0.0068*	0.45(0.25-0.80)	0.0001*	0.53(0.39-0.73)	0.0001*	0.64(0.51-0.80)
No	0.9527	1.01(0.71-1.44)	< 0.0001*	0.41(0.32-0.52)	0.0386*	0.86(0.75-0.99)
Never needed to	< 0.0001*	2.07(1.55-2.76)	0.0061*	1.29(1.07-1.54)	0.0001*	1.57(1.40-1.77)

The blank cells correspond to non-significant variables for the region. *Statistically significant category ($p < 0.05$).

In this study, in all regions except the Midwest, the likelihood of achieving satisfaction decreased more than 2-fold when the user did not feel that his/her cultural customs, practices, or religion were respected by the health providers, or were only respected sometimes, compared with users who always felt respected by the providers. Data from Southeast users stood out in this regard be-

cause feeling disrespected resulted in a 2.7-fold decrease in the likelihood of achieving USat-PC. This corroborates the work of Mendoza Aldana et al.³⁷ in Bangladesh, who observed that respect from providers towards users was the main factor influencing user satisfaction, followed by satisfaction with the providers, respect for privacy, waiting time, and duration of the appointment.

Table 2. Analysis of the Quality of the Logistic Regression Model.

Model quality	NORTHEAST	NORTH	MIDWEST	SOUTH	SOUTHEAST
Sample <i>n</i>	15324	2544	2941	7671	18511
Significant variables	20	10	10	15	21
Analysis of deviance	Accepted	Accepted	Accepted	Accepted	Accepted
AUC of ROC curve	0.845	0.820	0.823	0.847	0.856
Sensitivity	0.762	0.741	0.746	0.770	0.775
Specificity	0.761	0.736	0.746	0.767	0.775
Estimate of accuracy *	0.808	0.756	0.818	0.864	0.855
Risk estimate*	0.190	0.245	0.182	0.136	0.149

*The Cross-validation estimate of accuracy and risk estimate were obtained by cross validation.

In the Midwest and Southeast, there was an association between USat-PC and providers asking questions about other needs besides those related to the reason for the appointment. These results show a need for a more open communication between health providers and patients, allowing for shared health production, which enables inclusion of the individual in the therapeutic process and promotion of self-care³⁸.

Regarding the health provider/user relationship, the model developed for the Northeast and Southeast shows that providing solutions that are adequate to the users' reality influences USat-PC. It is important to highlight that knowing the users' reality, considering the cultural diversity of Brazil, is important for FHS professionals to establish the provider-user relationship. This diversity requires that health professionals be capable of learning new values and developing other health-disease perceptions³⁹, removing all their preconceptions, prejudices, and traditional knowledge, in order to recognize the limits of each family and provide treatment according to the reality of the user of the local health services, with the aim of ensuring treatment adherence⁴⁰.

In the Northeast, the likelihood of achieving USat-PC decreased when the doctor only sometimes allowed or did not allow, enough time for the user to talk about his/her concerns or problems during the appointment. Other studies have confirmed the existence of a significant association between appointment duration and user satisfaction^{13,37}. Caprara and Rodrigues³⁹ identified an association between a longer appointment and improved quality of care because it enables improved medical history taking, a better explanation of the problem and of the diagnostic and therapeutic procedures, as well as the verification

(by the doctor) of the patient's understanding and participation in the appointment.

Nevertheless, it is also necessary that the user feel comfortable to express himself/herself; when the user feels welcome by the team and finds openness to report his/her needs, there is a strengthening of the relationship and joint development of the therapeutic plan in accordance with the reality of the individuals, therefore increasing the chances of adherence to treatment. This aspect was important in all regions of Brazil because there was an association between the user feeling comfortable enough to talk with the team about his/her concerns, social problems, family problems, or other issues and USat-PC, mainly in the South and North regions.

According to the study by Perez *et al.*²², those citing a good provider-patient relationship as beneficial showed a 4.8-fold higher likelihood of achieving satisfaction versus those who did not cite it. Moreover, health production shared between providers and users is necessary for achieving a welcoming reception, an important factor for strengthening the role of PC in health-care system³⁸.

It was also observed that the practice of asking about relatives of the users influenced user satisfaction in all regions, mainly in the North, South, and Northeast. This result shows the importance that the user attributes to the relationship between the providers and the family; this represents an active segment in the healthcare process, with its own representations and strategies that should not be disregarded by the providers. Moreover, the literature shows that medical knowledge of the patient, interpersonal communication, and valuing treatment continuity and care coordination affect the user's assessment of health services^{41,42}. This

humanization is as important or more important for user satisfaction than the technical skills of the provider or the final result of the treatment or procedure, such as relief of unpleasant or painful symptoms and cure⁴³.

Cunha and Giovanella⁴¹ consider that one of the essential aspects for the longitudinality and continuity of care is the information chain. In this context, this study found that providers recalling previous appointments influenced user satisfaction in all regions, except in the South. Moreover, to achieve USat-PC, it is important that the providers seek the user to learn what happened and resume care whenever treatment is interrupted or the user misses an appointment. This shows how much patients value care continuity, corroborating many authors who claim that care continuity is an essential aspect of primary care that must be ensured^{5,41,44}.

Importantly, another part of continued care is the provider answering questions from the user after the appointments using a welcoming approach, valuing complaints, and searching for potential solutions for the problem²⁸. In this study, answering questions from users after the appointments influenced USat-PC in the Northeast. These data show the importance assigned by users to having questions answered by health providers who assisted them, and the relationship established is thus essential.

In this aspect, home visits created an opportunity for dialogue between health providers and the individual under care as well as his/her family, favoring care production through a relationship of confidence and shared commitments⁴⁰. In the Southeast and Northeast, the home visits conducted by the health community agents influenced the USat-PC. Home visits by the health providers were an influencing factor in the Northeast and South regions. In agreement with this study, Perez et al.²² and Mues et al.⁴⁵ also observed that the users in the state of Minas Gerais considered home visits to be a satisfaction-influencing factor. Albuquerque and Bosi⁴⁶, in Fortaleza in the state of Ceará (Brazil), noted that from the user's point of view, home visits from the health providers were a way to ensure rights, such as comprehensiveness, humanization, and care centered in the user and his/her family.

With regard to access to secondary services, only the Southeast region associated the ability make an appointment with other professionals or specialists with USat-PC. Several other studies^{19,47-50} have also reported difficulty in accessing specialized services as the most frequent com-

plaint by users, which is in agreement with this study. These results can be attributed to the existence of flow problems in the services network due to the lack of planning and organization, which results in relatively high average waiting times for making an appointment for secondary services and, consequently, leads to user dissatisfaction⁵¹.

It was also observed that difficulty in obtaining test results at the health unit decreased the likelihood of achieving USat-PC in the Northeast and Southeast regions. In agreement with these results, Santiago et al.¹⁹ identified great dissatisfaction among FHS users with waiting times to be seen and to receive test results. These findings must be taken into consideration by the managers in these regions because the identification of a non-effective health network points to the need to review the organization strategies of the services. Moreover, it is important that the secondary healthcare level ensures access to appointments and specialized tests that are essential for the confirmation of diagnoses obtained in PHC⁵².

Another relevant aspect to achieve USat-PC in all regions, except the North, was to be able to make a complaint or suggestion at the health unit. Therefore, the ability to make a complaint is essential for the user because this is an essential factor in the process of evaluation of the services provided by the units¹⁹.

Using decision models, this study provides scientific support for health managers in planning and decision making for improving service quality from the perspective of user satisfaction. Moreover, a regional-level analysis may be an important tool to create policies considering the specificities of the health systems of each region.

Although the results of the models differed by region, the data suggest that it is necessary to improve access quality, effectiveness, the organizational aspects of the work process, and the strengthening of the relationship between users and health professionals. Most of these improvements are feasible for the managers because they do not require large financial investment but instead involve a reorganization of work processes and flow.

The study limitations include the use of secondary data and the fact that the results presented in this study came from a first application of the 1st cycle of external evaluation from PMAQ-AB, where team adherence was scarce and voluntary. However, because PMAQ-AB is a continuous and progressive process for the improvement of primary care access and quality, these data from

the 1st cycle may form the basis for the analysis of potential changes in the next evaluation cycle.

Conclusion

Using data obtained through the application of decision models described and developed for each region, it was possible to identify the main factors associated with user satisfaction with Primary Care services by region in Brazil. The user's ability to solve his/her problems at the health unit itself and feeling respected by the health providers were the most important factors for all the regions in regard to user satisfaction. However, there were several noteworthy regional factors, namely:

- Northeast: the hours of operation and being able to make a complaint or suggestion at the health unit;
- North: the providers asking about relatives, hours of operation, being seen without an appointment, and the privacy of the office room;

- Midwest: interest of the providers in other health needs, being seen without an appointment, and being able to make a complaint or suggestion at the health unit;

- South: the hours of operation, being seen without an appointment, and being able to make a complaint or suggestion at the health unit;

- Southeast: ease of asking questions after the appointment and being asked by the providers about issues not related to the reason for the appointment.

Finally, the analysis conducted in this study indicates that user satisfaction with Primary Care is related to different dimensions of health care, but it is more associated with humanized care than with the structural and operational conditions of the health units. These findings may benefit health management in the planning of intervention strategies promoting better care provision and greater user satisfaction at this level of care.

Collaborations

APL Protasio, LB Gomes, LS Machado and AMG Valença contributed in the design, analysis and interpretation of the data, writing of the article and approval of the version to be published.

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