


# Service users' perception about healthcare provided by teams participating in the National Program for Primary Care Access and Quality Improvement in Brazil\*

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## Abstract

**Objective:** to analyze service users' perception of health care provided by the teams participating in the National Program for Primary Care Access and Quality Improvement (PMAQ-AB) in Brazil. **Methods:** this was a cross-sectional study using data from interviews with users of services provided by PMAQ-AB teams in 2012. Multinomial logistic regression was used to analyze the association between perception level (very good/good, regular, poor/very poor) and variables of four primary care attributes: accessibility, integrality, longitudinality and care coordination. **Results:** out of 65,391 users, 78.9% evaluated care as very good/good, 19.0% as regular and 2.1% as poor/very poor. Associations with care by the same physician (OR 3.21; 95% CI 2.68, 3.83) and physical examination at consultation (OR 3.08; 95% CI 2.50, 3.79) were the most prominent. **Conclusion:** the majority of users evaluated care positively, however there is perception of care problems within the recommended attributes.

**Keywords:** Primary Health Care; Patient Satisfaction; Quality of Care; Cross-Sectional Studies.

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## Introduction

Primary Health Care in Brazil, the structuring axis of the Brazilian Unified Health System (SUS), is generally characterized as being the service user's first contact with the health care system.<sup>1</sup> Primary health care (PHC) in Brazil is based on the theoretical-methodological framework comprising the essential attributes of accessibility, longitudinality, integrality and care coordination.<sup>2-4</sup> However, building a health care model based on these premises is an arduous task and its development requires qualification of the care offered, and should count with instruments that enable permanent evaluation of the performance of the teams responsible for this level of care.<sup>5</sup>

In this aspect, international experience has indicated the need to consider the contribution of service users in the social and technical monitoring of health care services,<sup>6,7</sup> since their evaluation may add elements that strengthen interventions aimed at improving the quality of services offered.

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In Brazil, interest in considering the community's participation in service planning and evaluation processes, incorporating the issue of evaluation by service users, gained strength in the 1990 and there is considerable scientific production on the subject.<sup>8</sup> Although the approaches to assessment by service users are quite varied and subject to questioning about the methodological strategies adopted, study results tend to indicate a high degree of user satisfaction with the service received.<sup>8</sup> This finding should be assessed in view of persisting problems in access to and quality of health care services in Brazil. It is, therefore, a subject worthy of more in-depth examination of health care dimensions that may be associated with service user's positive assessment of health care services.

In the primary care context, with effect from 2011 the Brazilian Ministry of Health began a policy of monitoring

and evaluating health services offered by the national health care network, namely the National Program for Primary Care Access and Quality Improvement in Brazil (PMAQ-AB). This program aims to establish a monitoring and evaluation system that also includes technical scientific support in order to stimulate the improvement of primary care team work process quality, driving local managers to seek strategies for promoting equity and universal health coverage in their territories.<sup>9</sup> One of the program's stage is external evaluation, carried out by teaching and research institutions with the aim of verifying in situ care accessibility and quality offered by PHC teams taking part in the program, through direct observation and by recording the points of view of the teams themselves and of the people who use the services they provide.

The database generated by PMAQ-AB for evaluating PHC represents an opportunity to get to know, at national level, aspects of the organization and process of care provided, from the service users' point of view, based on their experience at the services, accessibility conditions, health care service uptake and perception of services received. This adds to the existing knowledge about the theme a discussion about dimensions of care offered, by seeking to identify possible organizational barriers to PHC accessibility and quality from the point of view of those who actually use these services. It is assumed that evaluation by service users depends on the context in which health care is provided. Structural characteristics that may be responsible for this evaluation are also suggested.<sup>8</sup>

Based on these reflections, the objective of this study is to analyze the perception of users in relation to services provided by teams participating in PMAQ-AB, considering the four key attributes of PHC: accessibility, integrality, longitudinality and care coordination.

## Methods

This is a cross-sectional study. We used data obtained from the external evaluation of teams taking part in PMAQ-AB. The evaluation took place between May and December 2012, under the initiative of Primary Health Care Department of the Brazilian Ministry of Health and in partnership with Brazilian higher education institutions.

In 2012, nearly 52% of PHC teams were taking part in PMAQ-AB. The external evaluation visited and

interviewed 17,479 PHC teams and 65,391 services users in 3,972 Brazilian municipalities.

Analysis was performed on information from module III of the program external evaluation. The information had been obtained by means of a structured questionnaire answered by service users attending primary health centers (PHC) on the days they were visited by PMAQ-AB interviewer teams. The questionnaires were administered by teams of interviewers duly trained for this purpose by teaching and research institutions responsible for the PMAQ-AB external evaluation. The aim of the questions was to assess, in view of the user, accessibility conditions, use of health care services and perception about the care received.<sup>9</sup> This module was applied to four service users receiving care from the Primary Health Team under assessment on the day the evaluation took place at the Primary Health Center HC. The intentional sample was comprised of service users who accepted a verbal invitation to take part. Service users who agreed to participate in the interview signed a Free and Informed Consent form. Inclusion criteria for selection of interviewees were as follows: use of the service in the last 12 months; and at least one parent or guardian of children younger than 2 years old and one elderly person.

Service users' level of perception about the care provided by teams assessed by PMAQ-AB was evaluated according to the following scale: very poor, poor, regular, good and very good. These answers were in response to the question: "In your opinion, is the care you receive from the health team". The dependent variable corresponded to the categorization of these answers into three categories: *very good/good*, *regular* and *poor/very poor*, the latter being the reference category.

The independent variables refer to the essential attributes of PHC, divided into four attributes as described below. The answer options offered to users interviewed are shown in brackets.

Accessibility: (i) presence of a physician at the health care center or in activities in its territory at all times atin which the health center is operational (yes or no); (ii) the service user receives attention to solve any problem, regardless of whether or not they have an appointment (yes, yes/always, sometimes/no); (iii) how long do you have to wait before being seen (0 to 15 minutes/15 to 30 minutes/more than 30 minutes).

Integrity: (i) does the team seek to meet your needs/solve your problems at the health center itself

(yes/no/sometimes); (ii) during appointments, do the team's professionals perform physical examinations (yes/most of the time/hardly ever/never); (iii) do the health professionals ask about other health needs, in addition to those that gave rise to the appointment (yes/ most of the time/hardly ever/never); (iv) do the health professionals suggest solutions in keeping with your reality (yes/ most of the time/hardly ever/never).

Longitudinality: (i) are you always seen by the same physician (yes/yes, sometimes/rarely/never); (ii) do other health care team professionals visit your home (yes/yes, sometimes/yes, almost always/no).

Care coordination: (i) when a service user so requires, can the team make an appointment with other professionals or specialists (yes/yes, sometimes/never); (ii) after having received care from other professionals in other health services, did the team talk with you about the care you received (yes, always/yes, sometimes/no); (iii) is it easy to get your test results when they are sent to this health center (yes, yes, always/sometimes/no).

In the descriptive stage of the study, absolute and relative frequencies were calculated for participants' sociodemographic variable categories, namely: sex (male/female), age (16-24 years old, 25-34 years old, 35-59 years old, 60 years old or more, no information provided), income (R\$0.00-R\$ 500.00,R\$ 501.00R\$ 999.00 R\$ 1,000.00R\$ 9,999.00, no information provided), schooling (1-4 years, 5-7 years , 8 years or more), ethnicity/skin color (white, black, yellow, brown/mulatto, indigenous, no information provided).

In the analytical stage of the study, multivariate analysis using multinomial logistic regression was performed, using the Enter input method of the Statistical Package for Social Sciences (SPSS), version 19. Variables showing multicollinearity and absence of association by Chi-square test were excluded. The *poor/very poor* category was adopted as the reference group.

The variables used for adjustment were sex, schooling, income and users' age. A significance level of 5% ( $p < 0.05$ ) using two-tailed tests was used to indicate the statistical significance of associations. The odds ratios (OR) and their respective 95% confidence intervals (CI) were estimated. The adjustment quality of the models created was analyzed using the Hosmer and Lemeshow test.<sup>10</sup> The final model was selected considering a value of  $p > 0.05$  for the test, which corresponds to an absence of statistically significant differences in the distribution of the actual and

expected dependent values.  $R^2$  was also used to verify model adjustment.

The database used was provided by Primary Health Care Department of the Ministry of Health and the study was approved by the Ethics Research Committee of the Federal University of Minas Gerais (UFMG) under opinion number 28804 30/05/2012 (CAAE: 02396512.8.0000.5149).

## Results

Of the 65,391 users of PHC teams taking part in PMAQ-AB in 2012, 77.7% were women and 22.3% men. The majority of the interviewees were between 35 and 59 years old (39.8%). In relation to ethnicity/skin color, 44.8% classified themselves as brown/mulatto. Most of the interviewees had family income between R\$ 500.00 and R\$ 1,000.00 (57.3%), which, at the time of data collection, corresponded to between 1 and 2 minimum wages, and 70.3% had more than 8 years of schooling (Table 1).

The majority of users (78.9%) evaluated the care provided by the teams as good or very good, 19% as regular and 2.1% as poor or very poor.

In relation to accessibility (Table 2), in the adjusted analysis, the variable "presence of a physician at the health center or in activities in its territories at all times in the the health center is operational" was associated with user perception as being *very good/good* (OR 4.29; 95% CI 3.42; 5.38). As regards "how long do you have to wait before being seen", it was found that in the case of waiting between 1 and 15 minutes, and between 16 and 30 minutes, the degree of association with the assessment of care provision classified as *very good/good* was similar (OR 1.80; 95% CI 1.36; 2.38 and 1.82; 95% CI 1.37; 2.45, respectively). There was positive association among users who considered that they always received attention to solve their problems whether or not they have an appointment and the level of perception *very good/good* (OR: 2.35; 95% CI 1.70; 3.23).

In questions related to the integrality (Table 3), we found a strong association with positive user perception of the service for all the analyzed variables. Thus, the association between the variable "does the team seek to meet your needs/solve your problems at the health center itself" and *very good/good* user evaluation resulted in an odds ratio of 28.68 (CI: 24.03; 34.22), and even this only occurred sometimes, the association produced an

odds ratio of 7.22 (CI: 6,12;8,53). This association was also observed for those users who evaluated it as *regular*, although association was not so strong.

For the variable "during appointments, do the team's professionals perform physical examinations", association was positive with the evaluation *very good/good* for the frequency always (OR 3.08; 95% CI 2.50; 3.79) and for *most of the time* (OR 2.12; 95% CI 1.70; 2.63). The questions dealing with the interest of health professionals in relation to other health needs of the user, as well as those related to the reason for appointment and the suggestion of solutions appropriate to the user's reality also showed association with positive user evaluation, whereby intensity became greater as the frequency of this attitude on the part of the professionals increased.

With regard to longitudinality (Table 4), the variable "are you always seen by the same physician" had positive association with *very good/good* user evaluation when care is always provided by the same physician (OR 3.21; 95% CI 2.68; 3.83) and in cases in which care is provided several times by the same physician (OR 2.60; 95% CI 2.14; 3.29). For the variable "do other health care team professionals visit your home", association was positive with *very good/good* evaluation, both in cases in which the visit *always* occurs (OR 3.60; 95% CI 2.87; 4.50) and in those in which the visit occurs *sometimes* (OR 3.43; 95% CI 2.63; 4.48).

In relation to care coordination (Table 5), there was positive association between the variable "appointments made with other professionals or specialists" and *very good/good* user assessment (OR 5.80; 95% CI 4.92; 6.84). Association was also positive with *very good/good* evaluation when "the team talked with you about services provided in other health services" (OR 5.49; 95% CI 4.28; 7.03). In relation to the variable "is it easy to get your test results when they are sent to this health center", positive association was high with *very good/good* evaluation when this situation occurred *always* (OR 4.79; 95% CI 4.09; 5.60), whilst strength of the association was lower in the case of those who had access to test results *sometimes*, the (OR 2.13; 95% CI 1.80; 2.55). This same difference also occurred with the variables "making appointments with other professionals or specialists" and "after having received care in other health services, the team talked with you about the care you received".

**Table 1 – Sociodemographic characteristics of service users cared for by teams participating in the National Program for Improving Primary Health Care Access and Quality, Brazil, 2012**

Variables	n	%
<b>Sex</b>		
Men	14,600	22.3
Women	50,791	77.7
<b>Age (years)</b>		
16-24	9,737	14.9
25-34	13,927	21.3
35-59	26,005	39.8
60 or over	14,844	22.7
No information	878	1.3
<b>Income (R\$)</b>		
0-500	5,686	8.7
501-999	37,472	57.3
1,000-9,999	8,089	12.4
No information	14,144	21.6
<b>Education level</b>		
1 to 4 years	16,295	24.9
5 to 7 years	3,098	4.8
8 years or more	45,998	70.3
<b>Ethnicity/skin color</b>		
White	25,164	38.5
Black	7,966	12.2
Yellow	1,735	2.7
Brown/mulatto	29,311	44.8
Indigenous	616	0.9
No information	599	0.9
<b>Total</b>	<b>65,391</b>	<b>100.0</b>

## Discussion

Service users' perception about the care provided by teams taking part in PMAQ-AB showed a high percentage of positive evaluation, as more than three-quarters of the interviewed users considered the level of attention received as *very good/good*.

In addition, there was positive association between the services provided and the users' perception as to their being *very good/good* with regard to issues approached about accessibility, integrality, longitudinality and care coordination.

These results are important for the discussion about user perception regarding the accessibility and quality of primary health care in Brazil, since it is based on an evaluation that deals with dimensions of care that go beyond a more general survey of users' satisfaction. This is because, although service user evaluation

tends to be positive, there is perception of problems in the care received in relation to the attributes recommended for primary health care.

The positive perception of service users found in the results in relation to care provided is in accordance with that described in other studies, such as in literature reviews and concepts about the topic, as well as in studies such as the one conducted in Ribeirão Preto city in 2005,<sup>8,11-13</sup> which shows that in general service users indicate good assessment of care received.

In terms of accessibility, the importance of the presence of a physician at all times of health center operation for achieving positive service user assessment can be understood as a demand for ensured medical attention at the health center during its entire opening hours. The National Policy on Primary Care recommends that primary health care centers should organize their work process in order to match the

**Table 2 – Association between users' perception of care provided by teams participating in the National Program for Improving Primary Health Care Access and Quality and accessibility variables, Brazil, 2012**

Variables	Perception							
	Regular				Very good/good			
	Crude analysis <sup>a</sup>		Adjusted analysis <sup>b</sup>		Crude analysis <sup>a</sup>		Adjusted analysis <sup>b</sup>	
	OR <sup>c</sup>	95%CI <sup>d</sup>	OR <sup>c</sup>	95%CI <sup>d</sup>	OR <sup>c</sup>	95%CI <sup>d</sup>	OR <sup>c</sup>	95%CI <sup>d</sup>
<b>Presence of a physician at the health center or in activities in the neighborhood at times at which health center is operational</b>								
No	1.00	-	1.00	-	1.00	-	1.00	-
Yes	2.23 <sup>e</sup>	1.96;2.54	1.63 <sup>e</sup>	1.30;2.06	6.63 <sup>e</sup>	5.85;7.51	4.29 <sup>e</sup>	3.42;5.38
<b>Service user receives attention to solve any problem, regardless of having an appointment</b>								
No	1.00	-	1.00	-	1.00	-	1.00	-
Yes, always	0.73 <sup>e</sup>	0.62;0.87	1.25	0.91;1.74	0.97	0.82;1.14	2.35 <sup>e</sup>	1.70;3.23
Yes, sometimes	0.78 <sup>e</sup>	0.65;0.95	0.83	0.62;1.10	0.58 <sup>e</sup>	0.47;0.69	0.61 <sup>e</sup>	0.46;0.81
<b>Waiting time for treatment (in minutes)</b>								
31 or over	1.00	-	1.00	-	1.00	-	1.00	-
1 - 15	1.47 <sup>e</sup>	1.15;1.89	1.20	0.90;1.60	3.56 <sup>e</sup>	2.79;4.54	1.80 <sup>e</sup>	1.36;2.38
16 - 30	1.49 <sup>e</sup>	1.31;1.96	1.38	1.03;1.84	2.45 <sup>e</sup>	1.87;3.22	1.82 <sup>e</sup>	1.37;2.45

<sup>a</sup>Binomial Logistic Regression, having as reference the category *poor/very poor* of the dependent variable and the first response category of the independent variable.

<sup>b</sup>adjusted for age, income, sex and education level.

<sup>c</sup>OR: odds ratio.

<sup>d</sup>(95% CI) 95% Confidence Interval.

<sup>e</sup>P(value)  $\leq 0,05$ .

working hours of health team professionals with health center opening hours, in order to ensure the widest possible access, the linkage between service users and health professionals, continuity, coordination and the longitudinality of care.<sup>1</sup> The situation identified, based on the positive evaluation of users in relation to presence of doctors, should be analyzed, particularly in municipalities that are more remote, underprivileged, located on the outskirts of large urban centers and which face the recognized difficulty of ensuring the permanent presence of doctors to provide services at levels of care, particularly in primary health care. In a study on the scarcity of physicians in Brazil, Girardi et al. (2014)<sup>14</sup> pointed to socio-regional inequalities in the distribution of physicians, particularly in the North and Northeast regions. The lack of a doctor may possibly have an effect on the opinion of service users,<sup>15</sup> whereby evaluation tends to be worse when a health center does not have a physician fully available during its entire opening time. In this aspect, the Brazilian “*Mais Médicos*” (More Doctors) Program (PMMB), which was created with the aim of bringing doctors to rural areas, remote and outlying regions of the country, is a strategy that is well evaluated by users, in terms of the availability and the sensitivity of Program doctors. This has led people to reaffirm the importance of the continuity of PMMB.<sup>16</sup>

In terms of acceptance as a category of accessibility, we observed that the time spent waiting for care had a strong association with user assessment. As in other studies,<sup>17,18</sup> it was found that the less time spent waiting, the greater the chance of user satisfaction with the service provided. In addition, the possibility of the patient receiving attention to resolve any problem without an appointment had association with a more positive assessment. Such conditions of accessibility seem to strongly influence user assessment, a prolonged waiting time was identified as one of the main reasons for user dissatisfaction and, on the other hand, the interest shown in listening to the user's needs has been identified as a resource for the establishment of the bond between health service user and provider.<sup>19</sup>

Users also evaluated positively those issues analyzed in relation to integrality. In line with the study carried out in Porto Alegre,<sup>20</sup> the results of our study indicate a strong association between solution of problems by the primary care team and user perception. Care integrality includes the possibilities of the team solving problems, in terms of greater or lesser commitment to finding answers to users' problems. Another aspect valued by service users was the interest expressed by the team about users' their other health demands. The association found with a more positive assessment seems to indicate that, for users, it is also important that

**Table 3 – Association between users' perception of care provided by teams participating in the National Program for Improving Primary Health Care Access and Quality and integrality variables, Brazil, 2012**

Variables	Perception							
	Regular				Very good/good			
	Crude analysis <sup>a</sup>		Adjusted analysis <sup>b</sup>		Crude analysis <sup>a</sup>		Adjusted analysis <sup>b</sup>	
	OR <sup>c</sup>	95%CI <sup>d</sup>	OR <sup>c</sup>	95%CI <sup>d</sup>	OR <sup>c</sup>	95%CI <sup>d</sup>	OR <sup>c</sup>	95%CI <sup>d</sup>
<b>The team seeks to solve users' needs/problems at the health center itself</b>								
No	1.00	-	1.00	-	1.00	-	1.00	-
Yes	5.85 <sup>e</sup>	5.05;6.76	4.81 <sup>e</sup>	4.03;5.74	12.31 <sup>e</sup>	5.23;19.21	28.68 <sup>e</sup>	24.03;34.22
Some times	3.61 <sup>e</sup>	3.14;4.16	3.32 <sup>e</sup>	2.82;3.91	9.31 <sup>e</sup>	4.51;14.01	7.22 <sup>e</sup>	6.12;8.53
<b>During appointments the teams' professionals perform physical examinations</b>								
Never	1.00	-	1.00	-	1.00	-	1.00	-
Yes	2.45 <sup>e</sup>	2.03;2.96	1.51 <sup>e</sup>	1.23;1.86	9.15 <sup>e</sup>	7.62;10.99	3.08 <sup>e</sup>	2.5;3.79
Most of the time	2.02 <sup>e</sup>	1.65;2.48	1.41 <sup>e</sup>	1.13;1.79	3.98 <sup>e</sup>	3.28;4.84	2.12 <sup>e</sup>	1.70;2.63
Hardly ever	1.33 <sup>e</sup>	1.10;1.60	1.21 <sup>e</sup>	0.98;1.46	1.48 <sup>e</sup>	1.16;1.68	1.21	0.99;1.49
<b>Health professionals ask about other health needs , in addition to those that gave rise to the appointment</b>								
Never	1.00	-	1.00	-	1.00	-	1.00	-
Yes	2.26 <sup>e</sup>	1.94;2.64	1.32 <sup>e</sup>	1.09;1.61	8.56 <sup>e</sup>	7.37;9.94	2.61 <sup>e</sup>	2.51;3.68
Most of the time	1.99 <sup>e</sup>	1.63;2.43	1.30 <sup>e</sup>	1.03;1.65	4.78 <sup>e</sup>	3.94;5.80	2.35 <sup>e</sup>	1.83;2.91
Hardly ever	1.22 <sup>e</sup>	1.02;1.47	0.93	0.75;1.16	1.52 <sup>e</sup>	1.27;1.82	1.08	0.87;1.34
<b>Health professionals suggest solutions in keeping with users' reality</b>								
Never	1.00	-	1.00	-	1.00	-	1.00	-
Yes	2.48 <sup>e</sup>	2.12;2.89	1.66 <sup>e</sup>	1.38;2.03	8.52 <sup>e</sup>	7.32;9.91	3.04 <sup>e</sup>	2.51;3.68
Most of the time	1.90 <sup>e</sup>	1.60;2.25	1.32	0.08;1.61	3.53 <sup>e</sup>	2.99;4.16	1.77 <sup>e</sup>	1.45;2.16
Hardly ever	1.20 <sup>e</sup>	1.00;1.43	1.10	0.88;1.36	1.33 <sup>e</sup>	1.11;1.58	1.17	0.95;1.45

<sup>a</sup>Binomial Logistic Regression, having as reference the category *poor/very poor* of the dependent variable and the first response category of the independent variable.

<sup>b</sup>adjusted for age, income, sex and education level.

<sup>c</sup>OR: odds ratio.

<sup>d</sup>95% CI: 95% confidence interval.

<sup>e</sup>P(value) ≤0,05.

the teams seek to expand their work beyond specific health complaints and also demonstrate concern with more integral care.<sup>19</sup>

In relation to longitudinality, which encompasses linkage and accountability, addressed by the questions about care provision by the same physician, access to the results of examinations and household visits made by other professionals, there are also some topics worthy of reflection. For users, the availability of these forms of care is perceived as positive, given that evaluation was highly positive for these conditions. As highlighted in the primary health care policy, the problem-solving ability of the actions carried out depends on linkage and accountability between health teams and service users, as well as the significance given to the user/professional relationship.<sup>20</sup>

Care coordination also has an impact on users' positive evaluation regarding PHC. In the association analysis, the issues evaluated in relation to care

coordination indicated that users value actions that seek to promote integration between the different levels of the health care system.<sup>21</sup>

Even though evaluation can be regarded as very positive for a most of the issues evaluated, certain weaknesses identified in health care organization and processes cannot be minimized. As highlighted by Fausto et al. (2014),<sup>22</sup> these dimensions must be considered and evaluated as part of the set of services offered in PHC.

In addition to revealing users' perceptions, it is also important to identify and investigate negative aspects or those with poor evaluation, because this is what uncovers what is not being well evaluated and what needs to be changed. With this in mind , the results provide evidence that accessibility, integrality, longitudinality and care coordination should also serve for teams to rethink their form of organization and improvement of the care process, seeking to know and fully meet users' health needs.

**Table 4 – Association between users' perception of care provided by teams participating in the National Program for Improving Primary Health Care Access and Quality and longitudinality variables, Brazil, 2012**

Variables	Perception							
	Regular				Very good/good			
	Crude analysis <sup>a</sup>		Adjusted analysis <sup>b</sup>		Crude analysis <sup>a</sup>		Adjusted analysis <sup>b</sup>	
	OR <sup>c</sup>	95%CI <sup>d</sup>	OR <sup>c</sup>	95%CI <sup>d</sup>	OR <sup>c</sup>	95%CI <sup>d</sup>	OR <sup>c</sup>	95%CI <sup>d</sup>
<b>Medical care by the same physician</b>								
Never	1.00	-	1.00	-	1.00	-	1.00	-
Yes	2.08 <sup>e</sup>	1.74;2.49	1.77 <sup>e</sup>	1.47;2.13	4.59 <sup>e</sup>	3.87;5.45	3.21 <sup>e</sup>	2.68;3.83
Yes, sometimes	2.18 <sup>e</sup>	1.75;2.70	1.82 <sup>e</sup>	1.47;2.27	3.75 <sup>e</sup>	3.05;4.62	2.60 <sup>e</sup>	2.14;3.29
Hardly ever	1.38 <sup>e</sup>	1.13;1.69	1.26 <sup>e</sup>	1.02;1.55	1.51 <sup>e</sup>	1.24;1.83	1.23 <sup>e</sup>	1.01;1.50
<b>Other health team professionals make home visits</b>								
No	1.00	-	1.00	-	1.00	-	1.00	-
Yes, always	1.41 <sup>e</sup>	1.12;1.77	1.31 <sup>e</sup>	1.05;1.67	4.05 <sup>e</sup>	3.25;5.04	3.60 <sup>e</sup>	2.87;4.50
Yes, sometimes	1.88 <sup>e</sup>	1.44;2.46	1.77 <sup>e</sup>	1.47;2.04	3.84 <sup>e</sup>	2.95;4.99	3.43 <sup>e</sup>	2.63;4.48

<sup>a</sup>Binomial Logistic Regression, having as reference the category *poor/very poor* of the dependent variable and the first response category of the independent variable.

<sup>b</sup>adjusted for age, income, sex and education level.

<sup>c</sup>OR: odds ratio.

<sup>d</sup>95% CI: 95% confidence interval.

<sup>e</sup>P(value) ≤0,05.

**Table 5 – Association between users' perception of care provided by teams participating in the National Program for Improving Primary Health Care Access and Quality and care coordination variables, Brazil, 2012**

Variables	Perception							
	Regular				Very good/good			
	Crude analysis <sup>a</sup>		Adjusted analysis <sup>b</sup>		Crude analysis <sup>a</sup>		Adjusted analysis <sup>b</sup>	
	OR <sup>c</sup>	95%CI <sup>d</sup>	OR <sup>c</sup>	95%CI <sup>d</sup>	OR <sup>c</sup>	95%CI <sup>d</sup>	OR <sup>c</sup>	95%CI <sup>d</sup>
<b>Appointments made with other professionals or specialists</b>								
Never	1.00	-	1.00	-	1.00	-	1.00	-
Yes	1.27 <sup>e</sup>	1.06;1.51	2.38 <sup>e</sup>	2.15;2.80	2.02 <sup>e</sup>	1.70;2.39	5.80 <sup>e</sup>	4.92;6.84
Yes, sometimes	0.72	0.61;0.86	1.60 <sup>e</sup>	1.35;1.87	0.42 <sup>e</sup>	0.35;0.50	2.00 <sup>e</sup>	1.70;2.35
No	0.39 <sup>e</sup>	0.3;0.46	0.72 <sup>e</sup>	0.63;0.92	0.14 <sup>e</sup>	0.12;0.16	0.59 <sup>e</sup>	0.42;0.68
<b>After receiving care in other health services, the team talked to user about the care received there</b>								
No	1.00	-	1.00	-	1.00	-	1.00	-
Yes, always	2.98 <sup>e</sup>	2.34;3.80	1.85 <sup>e</sup>	1.44;2.43	13.41 <sup>e</sup>	10.57;16.91	5.49 <sup>e</sup>	4.28;7.03
Yes, sometimes	1.55 <sup>e</sup>	1.22;1.95	1.22	0.90;1.54	3.51 <sup>e</sup>	2.80;4.39	2.48 <sup>e</sup>	1.96;3.13
<b>Easy to get test results sent to this health center</b>								
No	1.00	-	1.00	-	1.00	-	1.00	-
Yes, always	2.78 <sup>e</sup>	2.44;3.18	2.25 <sup>e</sup>	1.87;2.51	8.89 <sup>e</sup>	7.81;10.12	4.79 <sup>e</sup>	4.09;5.60
Yes, sometimes	1.79 <sup>e</sup>	1.54;2.08	1.74 <sup>e</sup>	1.37;3.32	2.40 <sup>e</sup>	2.07;2.77	2.13 <sup>e</sup>	1.80;2.55

<sup>a</sup>Binomial Logistic Regression, having as reference the category *poor/very poor* of the dependent variable and the first response category of the independent variable.

<sup>b</sup>adjusted for age, income, sex and education level.

<sup>c</sup>OR: odds ratio.

<sup>d</sup>95% CI: 95% confidence interval.

<sup>e</sup>P(value) ≤0,05.



It is noteworthy that, in the case of the PMAQ-AB external evaluation, there may have been selection bias, bearing in mind that respondents were service users who were already receiving care at the health centers assessed and, therefore, tended to perceive service quality more positively.<sup>9</sup> In addition, the teams taking part in the 1st PMAQ-AB 1<sup>st</sup> cycle and selected by local managers, may increase this selection bias to the extent that many are probably the best organized in the municipality, which may reflect a more positive assessment by users. It should be emphasized that the results may vary when considering the population size of the municipalities and differences in their ability to organize and institutionalize PHC.<sup>23</sup>

The existing literature on the theme of users' perceptions of health care services indicates a variety of methods and concepts for assessing them, and high rates of satisfaction are very frequently found in these studies.<sup>5,24</sup> In addition, there is still a need to enhance

methodological designs capable of capturing with more accuracy the determinants of a better or a worse user rating of care received, in order to understand and incorporate more widely users' perceptions regarding health care offered.<sup>6,25</sup> This will contribute effectively to the organization and improvement of health care services.

### Authors' contributions

Abreu DMX, Araújo LL and Matta-Machado ATG contributed to the conception and design of the study, data collection, analysis and interpretation, in addition to the writing of the manuscript. Reis CMR, Lima AMLD, Santos AF, Jorge and Fonseca SD contributed to the data analysis and interpretation and to writing the manuscript. All the authors have approved the final version and declared themselves to be responsible for all aspects of the study, ensuring its accuracy and integrity.

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