

## Assessment of the quality of Primary Health Care in Fortaleza, Brazil, from the perspective of adult service users in 2019

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**Abstract** *Primary Health Care (PHC) is the “front door” and keystone of Brazil’s public health system, meaning that the evaluation of the quality of primary care services is of utmost importance. Using the Primary Care Assessment Tool (PCAT), this study evaluated the performance of public PHC services in Fortaleza from the view of adult service users. We conducted a cross-sectional study of 233 adult service users from 19 primary care centers (PCCs) between June and December 2019, collecting data on the sociodemographic and epidemiological characteristics of users and structural features of PCCs. The association between user and PCC characteristics and primary care attribute scores was measured by multilevel logistic regression. Most participants were women, aged between 30 and 59 years, brown, house owners, had completed high school, did not own health insurance, and belonged to families with at least 4 members. The lowest and highest-scoring attributes were “first contact accessibility” and “first contact utilization” (2.8 and 8.1, respectively). The overall essential and general scores were 6.0 and 5.7, respectively. Having complete health teams, more community health workers, and a family and community medicine residency program had a positive effect on the general score ( $p < 0.05$ ). Overall, the public services analyzed in Fortaleza received a low performance rating from the adult service users.*

**Key words** *Primary Health Care, Health Services Research, Quality of Health Care*

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## Introduction

The expansion of primary health care (PHC) in Brazil has been marked by a number of historic milestones, including the creation of the country's public health care system, the *Sistema Único de Saúde* (SUS), Family Health Program (FHP) and Family Health Strategy (FHS), and the publication of the new National Primary Care Policy<sup>1</sup>. Although 2018 marked the SUS's 30<sup>th</sup> anniversary, and despite major improvements in care provision, various challenges remain to ensuring the effective implementation of the system and strengthening PHC<sup>2-5</sup>. Various changes occurred in PHC in Brazil in 2019<sup>6</sup>, encompassing a new model of monitoring and evaluation and funding<sup>7</sup>.

Multiple initiatives aimed at evaluating and improving PHC have been developed in the country in recent years. An example is the National Program for Improving Primary Care Access and Quality (PMAQ-AB, acronym in Portuguese), launched in 2011 by the Ministry of Health<sup>8</sup>. However, evaluations have come up against a number of challenges, ranging from lack of consensus on definitions and the dimensions of analysis to problems related to the development of indicators, standardization of tools and comparison of results<sup>9</sup>.

Barbara Starfield<sup>10</sup> emphasized four essential attributes of primary care (first contact, longitudinality, coordination and comprehensiveness) and three derivative attributes (family orientation, community orientation and cultural competence). Starfield and colleagues developed the Primary Care Assessment Tool (PCAT)<sup>10</sup> to measure the presence and extent of these primary care attributes. The tool was adapted and validated for use in Brazil in 2006 and, in 2010, the Ministry of Health launched the PCAT manual, encouraging the application of the tool across the country's health services<sup>11,12</sup>. Literature reviews have shown that the tool is widely used in Brazil and internationally<sup>13,14</sup> and that, among the many available evaluation instruments, the PCAT is the best equipped to provide inputs to help improve the FHS<sup>15</sup>. A systematic review found that 68.2% (n=15) of studies using the PCAT in different countries between 2007 and 2015 were undertaken in Brazil<sup>16</sup>. However, a study conducted in Curitiba measuring the agreement between the PMAQ-AB and PCAT revealed that the standards used by the PMAQ-AB did not cover all the primary care attributes defined by Starfield<sup>17</sup>.

The FHP was initiated in Fortaleza, the capital of the State of Ceará, in 1997. In 2006, 460

family health teams (FHTs) were formed to work alongside the existing traditional primary health teams (PHTs) and the family and community medicine (FCM) residency program was created<sup>18</sup>. The local Health Care Network (HCN) was created in 2013, adopting the "Chronic Care Model"<sup>19</sup> and dividing the health region into six Regional Secretariats (RSs). In 2019, Fortaleza had an estimated population of 2,669,342 inhabitants<sup>20</sup> and 113 primary care centers (PCCs) covering approximately 61.45% of the population (1,624,290 people)<sup>21</sup>.

A number of studies have evaluated the quality of PHC in Ceará over the years; however, the majority used unvalidated questionnaires or qualitative methods. To date, only three evaluations using the PCAT (health care professional and child editions) have been conducted in Fortaleza<sup>22-25</sup>. The main objectives of this study were to evaluate the performance of public primary health care services in Fortaleza against primary care attributes from the perspective of adult service users and analyze possible relationships with the sociodemographic and epidemiological characteristics of users and structural features of primary care facilities.

## Methodology

We conducted a quantitative cross-sectional study between June and December 2019. Thirty-six PCCs were selected using stratified random sampling. Sample size (n=463) was calculated based on the total number of people living in the area covered by the FHS at the time of data collection (n=1,206,983) using a sample size formula for finite populations. The outcome was the hypothetical proportion of users giving a high primary care attribute score ( $\geq 6.6$ ) for 50% of the evaluated PHCs, adopting a 95% confidence interval, 5% error and design effect correction factor of 1.2. Due to transport difficulties and time restraints, only 233 individuals were interviewed in 19 PCCs located in five RSs.

Study participants were selected using convenience sampling. We interviewed users aged 18 years and over registered in the selected PCCs waiting for an appointment with a doctor or nurse on the day of the interview and who had seen a doctor or nurse in the same PCC at least twice in the last 12 months (including the appointment on the day of the interview). Individuals who used referral services outside Fortaleza and who had been living in the area for less than six months were excluded.

The data were collected by the lead researcher and previously trained interviewers using smartphones and following the recommendations contained in the Ministry of Health PCAT manual<sup>12</sup>. Three instruments were used: 1) a structured questionnaire devised to gather information on patient sociodemographic and epidemiological characteristics based on user the registration forms filled out by community health workers (CHWs): (race/color, age, sex, level of education, possession of health insurance, living situation, type of household, number of people living in the household, pregnant woman, smoker, alcohol use, use of other drugs, high blood pressure, diabetes, admission to hospital in the last 12 months, diagnosed with a mental health disorder); 2) the adult edition of the Brazilian version of the PCAT; and 3) a questionnaire answered by the PCC coordinator devised by the author to gather information on the structural features of the PCC based on previous studies<sup>26,27</sup> (total population registered with the center, number and composition of health teams, appointment wait time, appointment availability, services available, presence of a residency program).

The PCAT consists of 87 items divided into 10 components corresponding to the following primary care attributes: “strength of affiliation” (A), “first contact utilization” (B), “first contact accessibility” (C), “longitudinality” (D), “coordination - integration of care” (E), “coordination - information systems” (F), “comprehensiveness - services available” (G), “comprehensiveness - services provided” (H), “Family orientation” (I), and “community orientation” (J). The questions are answered using a five-point Likert scale (4=“definitely”, 3=“probably”, 2=“probably not”, 1=“definitely not” and 9 for “don’t know/can’t remember”). The attribute score is the mean of the scores obtained by each of its respective items. The essential score is the sum of the mean essential attribute scores divided by the number of components. The general score is the sum of the mean essential and derivative attribute scores divided by the number of components. To compare the presence and extent of the attributes, the high score cut-off point was set at  $\geq 6.6$ <sup>28</sup>.

The data were analyzed using SPSS version 24® (SPSS Inc., Chicago, USA). We performed a *descriptive statistical analysis* of the independent quantitative variables (PCAT scores assigned by users and mean scores for each PCC and Fortaleza as a whole) and independent categorical variables (user and PCC characteristics). The results were compared using the Kruskal-Wallis

test. Multilevel linear regression was then applied to identify the predictive factors (Level 1 - user characteristics and Level 2 - PCC characteristics) that influenced the essential and general scores. The results were presented as beta coefficients with their respective confidence intervals and p-values. For each variable included in the model, we calculated the t-statistic (the Wald test) to determine variance and standard error. We adopted a significance level of 0.05. The goodness of fit of the residual analysis model and presence of multicollinearity were also tested<sup>29</sup>.

The study was approved by the Federal University of Ceará’s Research Ethics Committee.

## Results

Most of the study participants were women (83.7%, n=195), aged between 30 and 59 years (55.3%, n=126), brown (69.5%, n=162), house owners (68.7%, n=160), had completed high school (39.5%, n=92), did not possess health insurance (89.3%, n=208), and belonged to families with at least four members (88%, n=205). Almost one-third of the sample (31.3%, n=73) had high blood pressure, 12.9% (n=30) had diabetes, and 15.5% (n=26) had been diagnosed with a mental health disorder. A small proportion of the respondents were pregnant women (10.7%, n=25), smokers (7.7%, n=18) or drinkers (14.2%, n=33) (Table 1).

Nine of the PCCs had family and community doctors (n=16 from a total of 77 doctors), six had FCM residency programs, and three had multidisciplinary family health residency programs. The mean wait time for standard appointments – i.e. consultations not related to a specific program – was 49.7 days.

Table 2 shows the mean attribute, essential and general scores for the overall sample. The lowest-scoring attribute (2.8) was “first contact accessibility”. The mean essential and general scores for Fortaleza as a whole were 6.0 and 5.7, respectively.

Table 3 shows the mean attribute scores by user characteristics. Going to school was associated with greater “strength of affiliation” (p=0.046) and poorer “first contact utilization” (p<0.001), “longitudinality” (p=0.032) and “family orientation” (p=0.026). Level of education influenced the attribute “first contact utilization” (p=0.004), with values being inversely proportional to number of years of study. Other than that, being older was associated with a higher score in “first con-

**Table 1.** Sociodemographic and epidemiological characteristics of the respondents, Fortaleza, Brazil, 2019.

Sociodemographic characteristics	Total (N=233)		Total (N=233)	
	n	%	n	%
Race/color				
Yellow		4		1.7
White		47		20.2
Brown		162		69.5
Black		20		8.6
Sex				
Female		195		83.7
Male		38		16.3
Level of education				
No education		5		2.1
Reading and writing		11		4.7
Elementary School		43		18.5
Middle school		37		15.9
Completed fundamental education		22		9.4
Completed high school		92		39.5
Higher education, postgraduate		23		9.9
Living situation				
Renting		61		26.2
Living rent-free		10		4.3
Financed		1		0.4
Occupation		1		0.4
House owner		160		68.7
Type of household				
Apartment		27		11.6
House		202		86.7
Room		3		1.3
Other		1		0.4
No. people living in the household				
1		13		5.6
2		41		17.6
3		59		25.3
4		62		26.5
>4		56		25
Health insurance?				
No		208		89.3
Yes		25		10.7
<b>Epidemiological characteristics</b>		<b>No</b>		<b>Yes</b>
	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>
Pregnant woman	208	89.3	25	10.7
Smoker	215	92.3	18	7.7
Drinker	200	85.8	33	14.2
Other drugs	229	98.3	4	1.7
High blood pressure	160	68.7	73	31.3
Diabetes	203	87.1	30	12.9
Admitted to hospital in the last 12 months	206	88.4	27	11.6
Mental health disorder	197	84.5	36	15.5

Source: Authors' elaboration.

**Table 2.** Individual attribute, global and essential scores from the adult edition of the PCAT, Fortaleza, Brazil, 2019.

Scores	Mean	Lowest	Highest	Standard deviation	95%CI
Essential score	6	2.4	8.6	1.1	5.9 - 6.2
General score	5.7	2.1	8.7	1.2	5.5 - 5.9
Attribute					
Strength of affiliation (A)	9.7	6.7	10	0.9	9.6 - 9.9
First contact - Utilization (B)	8.06	0	10	2.5	7.7 - 8.4
First contact - Accessibility (C)	2.8	0	6.9	1.5	2.6 - 3.0
Longitudinality (D)	6.4	0.7	10	1.9	6.1 - 6.6
Coordination - Integration of care (E)	7.01	0	10	2.8	6.3 - 7.7
Coordination - Information systems (F)	5.9	0	10	2.5	5.5 - 6.2
Services available (G)	5.3	2.1	9.1	1.3	5.1 - 5.5
Services provided (H)	3.6	0	10	2.2	3.3 - 3.9
Family orientation (I)	4.9	0	10	3.1	4.5 - 5.3
Community orientation (J)	4.02	0	10	2.3	3.7 - 4.3

Source: Authors' elaboration.

**Table 3.** Mean PCAT attribute scores by user sociodemographic and epidemiological characteristics, Fortaleza, Brazil, 2019.

Characteristics	Attribute									
	A	B	C	D	E	F	G	H	I	J
Race/color										
Other	9.8	7.5	2.5	6	6.1	5.9	5.1	3.4	4.8	3.7
Brown	9.7	8.3	3	6.6	7.3	5.9	5.3	3.7	4.9	4.2
P-value*	0.601	0.08	0.018	0.028	0.092	0.915	0.494	0.31	0.924	0.148
Goes to school										
No	9.7	8.4	2.8	6.6	7.2	6	5.2	3.8	5	4.1
Yes	9.9	7.1	3	5.9	6.5	5.3	5.4	3.1	4.5	3.7
P-value*	0.046	0	0.22	0.032	0.269	0.119	0.639	0.026	0.244	0.341
Level of education										
Fundamental	9.9	8.4	2.8	6.4	6.9	5.9	5.3	3.6	4.7	4.1
High school	9.6	7.9	2.7	6.3	7	5.9	5.3	3.5	4.9	4
Higher	9.7	6.7	3.3	6.6	7.5	5.8	5.2	3.6	5.8	3.7
P-value*	0.111	0.004	0.236	0.86	0.988	0.988	0.773	0.911	0.29	0.704
Living situation										
Other	9.7	8.2	2.9	6.2	7.3	6	5.2	3.4	4.7	3.3
Home owner	9.8	8	2.8	6.5	6.9	5.8	5.3	3.7	5	4.3
P-value*	1	0.473	0.529	0.428	0.594	0.483	0.545	0.379	0.629	0.002
Pregnant										
No	9.8	8.1	2.8	6.4	7	5.9	5.3	3.6	4.9	4.2
Yes	9.5	7.6	3	6.5	10	6.1	5.3	3.3	5.1	2.9
P-value*	0.111	0.283	0.555	0.611	0.347	0.712	0.982	0.5	0.748	0.01
High blood pressure										
No	9.7	8.1	2.8	6.3	7	5.9	5.4	3.6	5.1	4
Yes	9.8	8	2.9	6.5	7	5.9	4.9	3.5	4.5	4
P-value*	0.797	0.788	0.788	0.582	0.971	0.942	0.039	0.93	0.17	0.686
Mental health disorder										
No	9.7	8	2.9	6.4	7	5.9	5.4	3.6	4.9	4.1
Yes	9.7	8.2	2.4	6.5	7.2	5.9	4.9	3.7	4.6	3.4
P-value*	1	0.801	0.066	0.762	0.991	0.844	0.005	0.817	0.555	0.055

\*P-value: Kruskal-Wallis test.

Source: Authors' elaboration

tact accessibility” ( $p=0.018$ ) and lower score in “family centeredness” ( $p=0.004$ ).

Table 4 shows the results from the multilevel linear regression analysis including the PCC characteristics (total number of PHTs, number of doctors in the FHS, number of CHWs, appointment wait time, and presence of a FCM residency program) and their influence on the general and essential scores. The variable “total number of PHTs” had a negative impact on the general score (reduction of 0.298;  $p=0.007$ ; 95%CI -0.5 – -0.1) and essential score (reduction of 0.272;  $p=0.013$ ; 95%CI -0.5 – -0.10). “Number of CHWs” was associated with an increase in the general score (increase of 0.034;  $p=0.020$ ; 95%CI 0.0 – 0.1). The variable “has a FCM residency program” had a positive impact on both the general score (increase of 0.635;  $p=0.005$ ; 95%CI 0.2 – 1.1) and essential score (increase of 0.527;  $p=0.018$ ; 95%CI 0.1 – 1.0). User characteristics were not found to be significant predictors of general and essential scores in the multilevel model.

## Discussion

The sociodemographic and epidemiological characteristics of the 233 study participants cor-

roborate the findings of previous national studies showing the predominance of women, black and brown people, people with a low level of education and income, and people without health insurance among SUS users<sup>30-33</sup>. The prevalence of users with chronic diseases was not high, despite the well-known fact that these patients use health services more often<sup>34</sup>.

The essential and general scores were below 6.6, demonstrating that Fortaleza’s public primary health care services performed poorly against the primary care attributes from the perspective of service users. The main problems that contributed to low scores were: poor accessibility for acute conditions and unscheduled consultations; lack of access at night and weekends; poor access to information through non-face-to-face channels; bureaucracy and long appointment wait times; lack of scheduling flexibility; weak longitudinal user affiliation with primary care providers; poor comprehensiveness of care; poor patient centeredness; flaws in information communication and integration with other levels of care and care networks; barriers to access to specialist services; low availability and diversity of services; lack of inclusion of the community in health team actions; lack of family orientation; and poor patient participation.

**Table 4.** General and essential PCAT scores by health center characteristics, Fortaleza, Brazil, 2019.

General score					
Variable	$\beta$ coefficient	Standard error	T-statistic	P-value	95%CI
Constant	5.424	0.546	9.936	<0.001	4.3 - 6.5
Number of PHTs	-0.298	0.086	-3.457	0.007	-0.4
Number of doctors in the FHS	0.206	0.116	1.782	0.098	0.0 - 0.5
Number of community health workers	0.034	0.013	2.579	0.02	0.0 - 0.1
Appointment wait time (days)	-0.001	0.004	-0.273	0.787	0.0 - 0.0
Has a FCM residency program	0.635	0.203	3.12	0.005	0.2 - 1.1
Essential score					
Variable	$\beta$ coefficient	Standard error	T-statistic	P-value	95%CI
Constant	5.412	0.424	12.762	<0.001	4.6 - 6.3
Number of PHTs	-0.272	0.091	-2.975	0.013	-0.4
Number of doctors in the FHS	0.229	0.12	1.906	0.079	0.0 - 0.5
Number of community health workers	0.027	0.014	2.009	0.062	0.0 - 0.1
Appointment wait time (days)	-0.001	0.004	-0.238	0.814	0.0 - 0.0
Has a FCM residency program	0.527	0.204	2.576	0.018	0.1 - 1.0

PHT=traditional teams; FHS=Family Health Strategy; FCM=Family and Community Medicine;  $\beta$  coefficient=beta coefficient in the linear regression; T-statistic=Wald test; 95%CI=95% confidence interval for beta coefficient values.

Source: Authors’ elaboration.

### Evaluation of primary care attributes

Most of the respondents answered “definitely” for the items “first contact utilization”, referring to the PCC as their primary source of care. However, only 66.1% (n=154) go to the PCC when they have a new health problem. This may be partially explained by the misconception that PHC services are for scheduled appointments for uncomplicated conditions or chronic diseases, rather than acute or urgent cases, meaning that users seek urgent care centers for more complicated conditions<sup>35</sup>. The 2013 National Health Survey showed that 74.4% of Brazilians had a usual source of care and that PCCs were this source in one-third of cases<sup>36</sup>.

The worst-performing attribute was “first contact accessibility”, corroborating various other Brazilian studies<sup>14,37</sup>. This may be explained by a number of factors, ranging from unprepared staff to structural problems and poor organization of *appointment scheduling*, thus increasing appointment wait time and user dissatisfaction<sup>38,39</sup>. It is important to highlight that usual PCC opening times are 7 am to 7 pm, Monday to Friday, thus limiting access at night and weekends. Only 46.4% (n=108) of the users responded “definitely” to the item asking whether they were seen on the same day, revealing poor accessibility for non-scheduled consultations<sup>40</sup>.

With regard to the attribute “longitudinality”, health care professional-patient interpersonal relationships were poor and the disease-centered approach was predominant. In addition, 62.2% (n=145) of the participants said they would change services if they could, demonstrating dissatisfaction.

With regard to “coordination - integration of care”, most respondents said that health care professionals seemed to be interested in scheduling and the quality of specialist services, which is similar to the findings of previous studies<sup>41,42</sup>. Despite the fact that all PCCs have internet access, digital health record systems and established referral flows, the mean score for “coordination - information systems” was only 5.9<sup>25</sup>.

The low score obtained for “comprehensiveness - services available” for Fortaleza as a whole is consistent with the findings of national studies<sup>16</sup>. A high percentage of respondents answered “definitely” to the items encompassing vaccination, oral health, cervical cancer prevention and antenatal care, with scores ranging from 67.8% (n=158) to 95.3% (n=222). These results reflect the strong presence of maternal and infant health

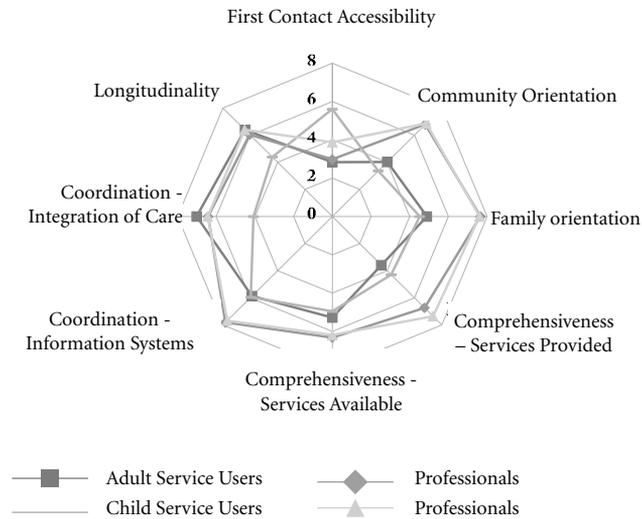
programs<sup>43-45</sup>. With regard to “comprehensiveness - services provided”, the items encompassing diet, physical exercise and cholesterol levels obtained the highest percentage of “definitely” answers, demonstrating that health care professionals tend to value chronic disease prevention<sup>45</sup>. Our findings also corroborate various previous studies of PHC services in Brazil showing low availability of procedures that are considered to be surgical or invasive – such as wart removal and sutures<sup>46,47</sup> – counseling on firearm possession, and use of seat-belts and child car seats<sup>48</sup>.

Performance in the attributes “family centeredness” and “community orientation” was poor. The high proportion of respondents who answered “definitely not” to the items asking whether surveys of user satisfaction or community health problems are conducted is notable. However, 65.2% of the users responded “definitely” to the item asking whether home visits are made, probably reflecting the important role played by CHWs<sup>49</sup>. A study of 80 municipalities in São Paulo showed that 85% of PHC service users received visits from CHWs, while 58% reported that they “never” or “almost never” had visits from other health professionals<sup>50</sup>. Our findings show that 85.8% (n=200) of the participants responded “definitely not” to the item asking whether they had been invited to participate in the local health council, which is similar to the results reported by a study in Juazeiro do Norte, a medium-sized city in Ceará<sup>51</sup>.

Graph 1 compares the mean primary care attribute scores across four studies undertaken in Fortaleza between 2013 and 2019 using the PCAT. It is interesting to note that health care professionals rated most attributes higher than adult and child service users and the large differences in attribute scores over the years 6 years.

### Factors influencing the evaluation of PHC services

The results presented in Table 3 corroborate the findings of previous studies showing that people with a higher level of education tend to show a lower level of satisfaction with health services<sup>52,53</sup>. In contrast, other studies have shown a positive association between high level of education and high primary care attribute scores, or high level of satisfaction. However, these studies show that satisfaction increased with increasing age, with Augusto et al.<sup>54</sup> finding that people aged 80 years and over with a higher level of education rated “access” and “longitudinality” higher.



**Graph 1.** Comparison of mean primary care attribute scores across four studies in Fortaleza-CE.

Source: Tomé<sup>22</sup>, Benevides et al.<sup>23</sup>, Sales<sup>24</sup>, Rolim<sup>25</sup>.

User age was also associated with high primary care attribute scores in a study of men in Teresina, Piauí, which showed that ratings of “longitudinality” and “information systems” increased with increasing age<sup>55</sup>.

A study of 1,076 adult service users in 32 municipalities in Rio Grande do Sul examined the association between the evaluation of longitudinality and socioeconomic, demographic and health service characteristics (sex, age group, level of education, color/race, marital status, having children, income, formal employment, health insurance, type of transport used to go to the health center, health region, and health care model). The findings showed an association between high scores and being aged 60 years and over and registered in a PHC that adopts the family health model of health care<sup>56</sup>.

Two evaluations of the performance of the SUS were conducted between 2003 and 2005: the World Health Survey, conducted in Brazil in 2003 with a nationwide sample of 3,932 service users; and the World Health Survey-Primary Care, conducted in 2005 with a representative sample of 591 users from the states of Rio de Janeiro and Pernambuco. The survey data were used to identi-

fy factors associated with level of user satisfaction. Multivariate logistic regression was performed to assess the association between user satisfaction and various factors: sex, age, level of education, form of service payment, marital status, self-reported health, chronic diseases, depression, sadness, number of people living in the household, type of construction, census tract, and wealth indicators. The results revealed that users who were young, relied solely on the SUS and had a low level of education and poor self-reported health were more likely to be dissatisfied with health services<sup>57</sup>.

In the present study, brown people rated the attributes “first contact accessibility” and “longitudinality” higher than people of other races. However, it is important to highlight that this result may have been influenced by the high percentage of brown people in the sample (69.5%). It is also important to note that brown people use public PHC services more often than other groups<sup>30</sup>. A cross-sectional study of older persons in Belo Horizonte, Minas Gerais, showed that non-white respondents rated “longitudinality” higher<sup>54</sup>. These results suggest that these health services contribute to the reduction of social inequality.

Having high blood pressure and being diagnosed with a mental health disorder was associated with lower scores for “comprehensiveness - services available”. People with chronic conditions use PHC services more often<sup>58</sup>, meaning it is possible that they are more likely to have negative experiences and therefore be more critical. Augusto et al.<sup>54</sup> found that users with high blood pressure gave lower scores to “coordination of care”. In addition, a significant association was found between having one or more chronic disease and lower ratings for “coordination of care”, “family centeredness” and “community orientation”, regardless of sociodemographic conditions and place of residence<sup>54</sup>. Other studies have shown that being older and having one or more chronic disease influenced general scores<sup>59</sup>.

Being a house owner was associated with higher scores for “community orientation” ( $p=0.002$ ). This may be explained by the fact that longtime residents are capable of providing a better evaluation of health services in the community, such as visits from CHWs. Studies show that the length of time lived in the neighborhood and staff turnover also influence “longitudinality”<sup>60-62</sup>. In addition, municipalities with more than 100,000 inhabitants and <65% FHS coverage, like Fortaleza for example, tend to receive lower user ratings for “longitudinality”<sup>56</sup>.

The results from the multilevel analysis show that user characteristics were not significant predictors of general and essential scores<sup>62</sup>. However, having complete FHTs, a higher number of CHWs and presence of a FCM residency program were shown to have a positive influence on the general score. Similar results were reported by Turci et al.<sup>63</sup> in a study evaluating the performance of PHC services from the perspective of 538 nurses and 147 FHS managers in Belo Horizonte. The factors associated with better performance ratings ( $p<0.05$ ) were availability of equipment and supplies, training in family health, presence of a doctor for more than 30 hours a week, and four or more teams per health center<sup>63</sup>.

A systematic review of the evaluation of PHC in Brazil from the perspective of service users using adapted versions of the PCAT confirms the importance of complete FHTs. The findings show that PCCs covered by the FHS were more oriented towards PHC than traditional care centers<sup>37</sup>.

Although the National Primary Care Policy does not stipulate a minimum number of CHWs per health team, the importance of the role of these health professionals in facilitating health

surveillance and promotion is widely acknowledged, particularly in relation to family and community centeredness. In an integrative review of 18 articles (including 16 studies in Brazil) on the role of PHC in coordinating HCNs, Rodrigues et al.<sup>64</sup> highlighted that one of the challenges to strengthening PHC was increasing the involvement of CHWs<sup>64</sup>.

Previous studies have also compared PCAT scores across health facilities with FCM residency programs or health care professionals who have completed a family health or FCM residency program<sup>64-66</sup>. A study comparing the performance of PHC services in two PCCs (one with a FCM residency program and the other without) in Anápolis, Goiás, found that general and essential scores were higher in the care facility with a residency program (6.8 and 5.5 versus 4.5 and 3.6, respectively). All attributes except “coordination of care” obtained higher scores in the center with a residency program. In addition, a focus group made up of health managers suggested that, despite initial resistance to the work of the residents, significant changes occurred in the services, resulting in more comprehensive and effective care and increased user and staff satisfaction<sup>65</sup>.

Using the PCAT child edition, Leão and Caldeira<sup>66</sup> investigated the association between primary care attributes and the qualifications of doctors and nurses in Montes Claros, Minas Gerais. Teams with professionals who had completed family health or FCM residency programs obtained a higher general score than those who had not ( $p=0.009$ ). The results from the multivariate analysis showed an association between high primary care attribute scores and having professionals who had completed a residency program ( $p<0.001$ )<sup>66</sup>.

A study of 48 doctors and 44 nurses in Goiânia investigating the association between professional experience and qualifications and PCAT scores showed that staff turnover was greater among doctors and that nurses had more experience and qualifications and affiliation with the FHS. Logistic regression showed that low doctor turnover and training and development were associated with better quality services<sup>67</sup>.

Other studies that did not use the PCAT have also found an association between presence of residency programs and better quality of PHC. Herrera<sup>68</sup> assessed the impact of FCM residency programs on service quality in 12 PCCs in Gurupi, Tocantins between December 2017 and March 2018. One-hundred and seven health care professionals (doctors, nurses, nursing technicians and

CHWs) answered the *QualiAB* (quality of primary care) questionnaire. The findings showed a significant difference between PCCs with and without medical residency programs. The items that contributed most to this difference were “health education” and “resources, procedures and basic supplies”. The authors concluded that having a residency program promoted improvements in the quality of PHC<sup>68</sup>.

A study of health teams with residents or professionals who had completed a residency program in Montes Claros, Minas Gerais assessed the influence of FCM residency programs and multidisciplinary family health residency programs using performance and quality standard indicators from the first and second evaluation cycles of the PMAQ (2011/2012 and 2013/2014). The study included 17 teams from the first cycle and 26 from the second. A significant improvement in the indicators “access to appointment scheduling” and “unscheduled consultations” was observed between the first and second cycles. With regard to user satisfaction, all teams received above-average scores in the second cycle<sup>69</sup>. These results suggest that FCM residency programs can help improve access to PHC, which was the worst-performing attribute in Fortaleza and various other cities in Brazil.

#### Study limitations

Limitations include problems inherent in cross-sectional study designs, the use of convenience sampling, which lacks external validity, and the fact that the number of participants was less than the calculated sample size. In addition, the fact that the interviews were conducted after the appointments may have resulted in courtesy bias. It is important to stress that the analysis of the quality of PHC services in Fortaleza was based solely on the perspective of the participating service users.

#### Conclusion

The findings show that the overall presence and extension of the primary care attributes in the selected PCCs was weak from the perspective of the participating service users. Despite study limitations and the fact that the results cannot be generalized to the municipality of Fortaleza as a whole, these findings can be used to guide health care professionals and local and national health managers in the search for strategies to strengthen PHC.

A series of strategies could be implemented to improve the quality of PHC in Fortaleza and, consequently, user satisfaction<sup>70,71</sup>, including: increasing funding; expanding access through the adoption of other appointment scheduling models, such as advanced access, non-face-to-face access using online communication tools, extended opening times (including weekends), and better organization of *appointment scheduling*; providing a broader range of health services by creating a service portfolio with guaranteed funding and suitable staff training to ensure effective service delivery; widening the clinical-care role of health teams; expanding the computerization of care services to include the entire network; improving the regulatory system; optimizing the supply of suitably trained staff; providing care support to health teams; encouraging the participation of patients and other actors; and promoting the ongoing systematic evaluation of health services.

We recommend that special emphasis be given to CHWs, in light of the vital role these professionals play in organizing services and ensuring the quality of PHC and helping tailor health services to the community’s health needs. It is also important to strengthen FCH residency programs as a key element of policies to strengthen PHC. Moreover, we recommend the systematic use of the PCAT for the evaluation of local health services, given that it permits the ongoing

monitoring of individual attribute items, thus enabling comparison with other regions in Brazil and other countries. It is vital to recognize that strong primary health care is the key to achieving universal access to quality comprehensive and long-term care that reduces inequality and promotes human development and social justice.

### **Collaborations**

LB Costa contributed to study conception, data curation, analysis and interpretation, methodology, project administration, and to drafting the article and revising the final version to be published. MV Mota and MMA Porto contributed to study conception, methodology, project administration, and to revising the final version to be published. CSGV Fernandes, ET Santos, JPM Oliveira, TC Mota, ALS Porto and MNA Alencar contributed to data collection.

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