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Assessment of child and adult users of the degree of orientation of Primary Healthcare in the city of Rio de Janeiro, Brazil

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Abstract *In the first half of 2014, 6,675 adults and caregivers of children using Primary Care (PC) services in Rio de Janeiro were interviewed using the Primary Care Assessment Tool - PCA-Tool-Brazil. The aim was to arrive at an accurate overview of the extent to which PC services in all of the Planning Areas (PA) of the Rio de Janeiro City Health Department (CHD) – Municipal Health Secretariat have the essential and derivative attributes. This was a cross-sectional study of random, independent samples of the service users (children and adults). Results were measured using the scores assigned to PC attributes. In the opinion of adults and children using PC services, Type A Units – Municipal Healthcare Centers and Family Clinics staffed only with Family Health Teams, performed better than Type B units. The scores for the attributes "first contact accessibility", "comprehensive service – services provided", "community orientation" and "family orientation" still need to be improved. On the other hand "coordinated care" and "continuity" are on their way to quality scores, being always rated at around 6.0 or even higher.*

Key words *Primary healthcare, Health services, Service assessment*

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Introduction

There is a lot of evidence supporting Primary Healthcare (PHC) as the ordering element of a healthcare system. In other words, services that make up the Healthcare Networks should be organized based on the healthcare needs of the populations they serve, identified by Family Health Teams[1]. Ministry of Health Directive 4,279 reaffirms the ordering role of this level of care within the Brazilian Unified Healthcare System (SUS)[2]. Furthermore, countries with strong Primary Healthcare (such as the UK, Canada, France, Spain and Portugal) have better health indicators for lower investments in health, compared to countries with poor Primary Healthcare (such as the US)[3]. Many studies already conducted in Brazil[4-10] have demonstrated the importance of a Family Health Strategy (FHS - ESF) for improving the health of the nation's population. Today, over 35 thousand teams are active all over the country, providing care for over half the population. Studies show that the Family Health Strategy had a positive impact on infant mortality, on reducing hospitalization for conditions sensitive to the FHS, on the quality of pre-natal and infant care, and expanded access to healthcare services for the population considered vulnerable from a social-sanitary point of view[5-11].

Seen as the first level of healthcare, it is defined as the initial access to the healthcare system ('first contact access'), and is primarily characterized by being continuous and comprehensive, with care coordinated within the healthcare system itself. It may also be complemented with elements such as family and community orientation and cultural competence. This definition covers the essential and derivative attributes. The four essential attributes are: (1) First contact access: ease of access and use of the healthcare services as a source of care at each new problem or episode of a given health problem, with the exception of true medical emergencies or urgencies, (2) continuity: the availability of a continuous source of care and its use over time. The relationship between the population and its source of care should reflect in an intense interpersonal relationship of mutual trust between healthcare users and professionals, (3) comprehensiveness: the range of services available and provided by the primary healthcare services. Services that the healthcare services should offer to ensure users receive comprehensive care from both the biopsychosocial approach to the health-disease process, as well as health promotion, disease prevention and cure, and rehabilitation measures suitable to the context of this level of care, even if some of these may not be offered within this type of unit. This includes forwarding to focal medical specialties and hospitals, among others, (4) coordination: assumes some form of continuity, either in the form of care provided by the same professional, medical files or both, as well as awareness of the problems approached by other services and integration of this care in the patient's overall care. The primary healthcare provider must be able to integrate all of the care the patient receives by coordinating across the different services. The three derivative attributes are: (1) Family orientation: in assessing individual needs for comprehensive care, one must consider the family situation and its potential to care for or threaten the patient's health, including the use of family approach tools, (2) community orientation: awareness by the healthcare services of the community's healthcare needs based on epidemiological data and direct contact and interactions with the community, and joint planning and assessment of the services provided, (3) cultural competence: provider (healthcare team and professionals) adaptation to the specific cultural characteristics of the population to facilitate the relationship and communication.

Numerous studies in Brazil show that the care provided by the FHS teams is not homogeneous, nor are the challenges to expand their ability to face new and old concerns regarding healthcare in Brazil[5,12-14].

Primary Healthcare in the city of Rio de Janeiro

Up until 2008, public healthcare in the city of Rio de Janeiro was not solidly based on primary healthcare. In December 2008, only 68 of the 164 Family Health Teams registered with the CNES (National Record of Healthcare Establishments) actually had physicians working with them. If we consider that each FHS team was responsible for an average of 3,450 people (the reference number used at the time by the DAB/SAS/MS), we come to a total of 234,600 users with family health physicians working in fully staffed teams. By mid-2009, the Family Health Strategy system covered only 3.5% of the population. This marked a drastic change in the management of public health. Family Health Strategy was stimulated, and by 2015, coverage had expanded to 45% of the city's population. After checking and removing duplicates, it was found that over 2.7 million of the city's citizens were registered and were being followed by the system.

Ciência & Saúde Coletiva, 21(5):1399-1408, 2016

Up until 2008, the system had numerous acronyms - UCPS, PACS, OS, PA, PU, healthcare units, mixed units, municipal healthcare centers). In 2009, SMS-RJ redefined the nomenclature used to conceptually describe all of the PHC establishments. Currently the Health Ministry CNES shows only two types of establishments in the City of Rio de Janeiro PHC network: Municipal Healthcare Centers (MHC) and Family Clinics (FC). In 2010 and 2011, each of these types of units offered a standard portfolio of activities and services, with different types of units, depending on whether or not they only type of care provided was that related to Family Health Strategy. Thus Type Aunits are those where the entire territory is covered by Family Health Teams (this may be a Family Clinic or Municipal Healthcare Center). The Type B model refers to mixed units, where only part of the territory is covered by Family Health. Finally, Type C is the model used where there is no Family Health Team, but there is a well-defined reference territory[15]. Type C units are not included in this survey as they have only one primary healthcare unit. All of the so-called Family Clinics have been classified as Type A. As far as the Municipal Healthcare Centers go, some are Type A and others Type B. Of the 194 primary healthcare establishments in 2014, 75% were pure family health strategy units (Type A, whether FC or MHC-A).

The goal of this study is to analyze the limits and possibilities of the progress made in Primary Healthcare in the city of Rio de Janeiro, based on the experience of adult and child users.

Methodology

This is a cross-sectional study with independent random samples of service users in each of the ten planning areas in the city of Rio de Janeiro. In all, the sample was comprised of 3,145 children (n1) and 3,530 adults (n2). The PCATool-Brazil was answered by adult users and the caregivers of the children using the system[16]. This measures the extent to which healthcare services are oriented to Primary Healthcare, based on questions in the form of a questionnaire about socio-demographics and referred morbidity. Questionnaires were applied by duly trained interviewers using an "Interviewer Handbook".

Sample size was estimated considering the aim of comparing the extent to which Family Clinics (CF), Healthcare Centers (HCC-A) and Mixed Healthcare Centers (HCC-B) oriented to Primary Healthcare (on a scale of 0 to 10), from the point of view of adult and child users. A minimum difference of 0.5 in the mean overall score of the three types of primary healthcare services was assumed. 5% significance and 80% statistical power was used for child users, and 90% for adult users. The complex nature of the sample was also incorporated into the sample calculation, using an adjustment factor with an interclass correlation coefficient (ICC) of 0.01[17]. Thus, the sample size estimated for child users was 2,600, and for adult users was 2,884. Ten percent was added for losses, bringing the total number of interviews required for the selected sample to 6,033. Interviews were broken down based on the population registered with eachcare unit, and selected independently by planning area. Within each of these groups, samples were split into adult and child sub-samples, proportional to the number of people registered in each family health unit. Two PAs (2.1 and 5.3) decided to expand the sample and asked the survey coordination team for a new sample selection. Inclusion/exclusion criteria considered healthcare units that had been operating Family Health for at least six months, as per the SMS-RJ list provided in July 2013. Eligible participants were adults 18 or older and children 12 years or under, approached as they left a medical visit at the healthcare unit on the day of the interview, and who had seen a physician at the same healthcare unit at least twice in the past two years. Users who did not have the mental or physical skills to answer the questionnaire were excluded, as were those who had not seen a physician at least twice in the past two years (at the same unit). Data was collected between January and June 2014. Teleform v. 10.5[18] was used to design the questionnaire, read questionnaire images and validate the data.

Scores were obtained by transforming the original scale for the question (from 1 to 4) to the same scale as the attribute scores (0 to 10). *A score above 6.6 indicates high quality of healthcare in that particular item/attribute.*

Attribute scores, essential and overall scores were compared between the two groups of healthcare services - A = Family Clinics and CMS-A (combined), and CMS-B -, using Student's t for both independent samples of child and adult users of the services.

To compare the ten planning areas (PA) we used variance analysis followed by the Tukey test whenever the hypothesis of equality was rejected.

For analyses including the entire sample - both child and adult users -, we used a sample

plan structure that enabled incorporating adjustments in the estimates of variability. Results are shown as mean scores and their 95% confidence interval; we considered a significance level of 5%. Data Analysis and Statistical Software (STATA) v. 12[19], and Statistical Analysis Software (SAS) v. 9.4[20] were used for data processing.

This study was approved by the City of Rio de Janeiro Department of Health (SMS-RJ) Ethics Committee under number 133/13. Interviews were performed after handing over a letter introducing the survey to the users or caregivers, and after participants had read and signed a Free and Informed Consent Form (FICF). All users and caregivers received the letter introducing the survey and a copy of the FICF.

Results

By the end of the survey, we had collected completed questionnaires from 3,530 adult users and from 3,145 caregivers of child users. Most respondents had used Family Clinics (~50%), followed by CMS-A (~30%) and CMS-B (~20%). This distribution is quite similar to the distribution found among the population registered with these healthcare centers at the time the samples were selected, demonstrating that the sample is representative from the point of view of the distribution of interviews completed. For the child survey, it took 30 minutes (mean)/29 minutes (median) to answer the survey. For adults it took 33 minutes (mean)/30 minutes (median).

The first part of Table 1 shows the mean scores for attributes with a 95% confidence interval, based on the experience of adult and child users of primary healthcare services in the city of Rio de Janeiro, comparing Type A and Type B units. For adults, there were no statistically significant differences in the essential and overall scores for the essential and derivative attributes ($p > 0.05$). Mean overall scores in both cases were close to 6.0, or below the cutoff point for good overall primary healthcare, which was set at 6.6. If we break down this analysis by attribute, we find the reasons for these scores. In general the contribution of "ease of access", "community orientation" and "comprehensive services" was negative, while "affiliation", "use", "coordination - information system", and "coordinated care" helped improve the score.

The second part of Table 1 analyzes data for child users, where again we found no statistically significant differences in the essential and general scores for Type A and Type B units ($p > 0.05$). Mean overall scores in both cases were above 6.0, still below the cutoff point for good overall primary healthcare, which was set at 6.6. If we breakdown this analysis by the attributes included we find the same reasons for these scores as we found among the adult users. Once again, "ease of access", "community orientation" and "comprehensive services" was negative. "Affiliation", "use", "coordination - information system", "coordinated care" and in this case "continuity" contributed to improving the score.

Figure 1 shows the mean scores by Primary Healthcare attribute, comparing all ten planning areas based on the experience of adult users. There are important and statistically significant differences between the different parts of the city, surveyed in independent samples to make up all of the city of Rio de Janeiro. This is particularly true for the negative results found in area 5.1. On the other hand, our survey found evidence of better quality in the following planning areas: 2.2 (highest overall score = 6.52), 4.0, 2.1 and 3.1 – in this order, with overall scores of 6.0 or more. The Confidence Intervals estimated for areas 2.1, 2.2 and 4 include the reference value of 6.6. This means that statistically, the sample for these four areas showed good quality primary healthcare according to the Starfield[11] methodological design. At the other extreme, the worst overall scores were found in sanitary districts 5.1 (the lowest score or 5.09), 3.2, 1.0, 3.3, 5.2 and 5.3, in this order.

The highest scores obtained from the adult users were continuity and coordinated care (these attributes received the highest mean scores).

Figure 2 shows the results for child users, with scores higher than those obtained from the adult population. However, there remain statistically significant differences between areas.

Overall scores show that children get better Primary Healthcare than adults in the following planning areas: 2.2 (highest score, or 7.26), 2.1, 3.1, 4.0, 1.0 and 3.2, in this order. All of these planning areas received scores of 6.0 or more. The Confidence Intervals estimated for areas 2.1, 2.2, 3.1 and 4.0 include the reference value of 6.6. This means that statistically, these three areas got very good scores. At the other extreme, the worst overall scores were found in sanitary districts 5.1 (the lowest score or 5.47), 3.2, 3.3, 5.2 and 5.3, in this order.

The highest scores obtained from the child users were continuity and coordinated care.

Tabela 1. Escores[#] médio e intervalos de confiança (IC 95%) dos atributos da Atenção Primária à Saúde na experiência dos usuários adultos e crianças. Município do Rio de Janeiro – 1º semestre de 2014.

Atributos da Atenção Primária à Saúde	Usuários adultos						
	Geral		Unidade tipo A (CF ou CMS-A)		Unidade tipo B (CMS)		
	n	Média (IC 95%)	n	Média (IC 95%)	n	Média (IC 95%)	Valor-p*
Afiliação	3.496	7,05 (6,83; 7,27)	2.701	7,11 (6,86; 7,37)	795	6,85 (6,44; 7,27)	0,292
Utilização	3.502	7,96 (7,84; 8,09)	2.708	7,98 (7,84; 8,13)	794	7,94 (7,69; 8,18)	0,729
Acessibilidade	3.362	4,19 (4,08; 4,30)	2.599	4,26 (4,14; 4,39)	763	3,96 (3,76; 4,15)	0,010
Longitudinalidade	3.503	6,27 (6,13; 6,40)	2.710	6,27 (6,11; 6,42)	793	6,28 (5,99; 6,58)	0,937
Coordenação do Cuidado	1.000	6,57 (6,33; 6,81)	734	6,57 (6,27; 6,87)	266	6,59 (6,24; 6,94)	0,933
Coordenação Sistema de Informação	3.304	6,63 (6,42; 6,84)	2.540	6,63 (6,37; 6,88)	764	6,67 (6,36; 6,98)	0,839
Integralidade - Serviços Disponíveis	2.779	5,00 (4,81; 5,19)	2.135	4,98 (4,75; 5,22)	644	5,06 (4,77; 5,35)	0,685
Integralidade - Serviços Prestados	3.251	3,99 (3,82; 4,15)	2.515	4,02 (3,82; 4,21)	736	3,92 (3,61; 4,23)	0,600
Escore Essencial	**3.469**	**5,93 (5,82; 6,04)**	**2.680**	**5,95 (5,82; 6,08)**	**789**	**5,87 (5,67; 6,08)**	**0,587**
Orientação Familiar	3.425	5,08 (4,88; 5,28)	2.646	5,10 (4,87; 5,33)	779	5,05 (4,63; 5,46)	0,826
Orientação Comunitária	2.863	4,74 (4,53; 4,96)	2.211	5,01 (4,77; 5,25)	652	3,85 (3,48; 4,22)	< 0,001
Escore Geral	**3.485**	**5,73 (5,60; 5,84)**	**2.695**	**5,77 (5,63; 5,91)**	**790**	**5,61 (5,37; 5,84)**	**0,267**

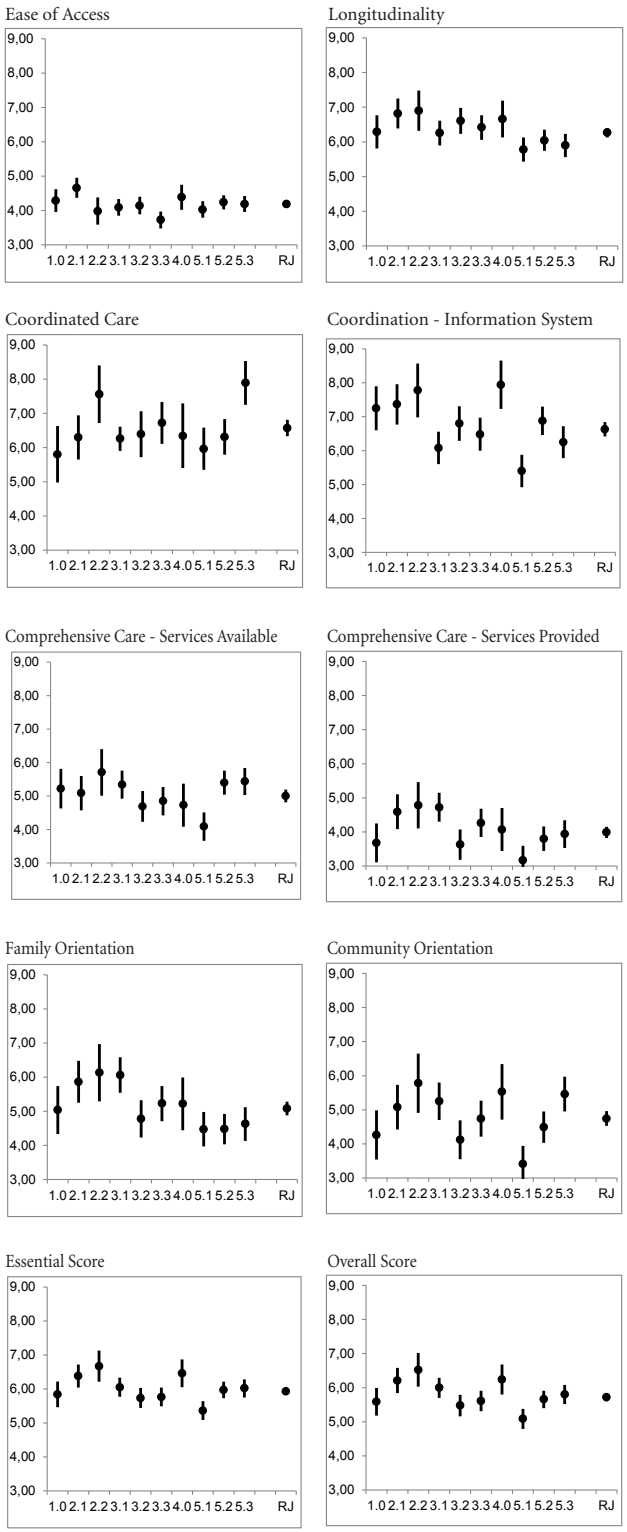
Atributos da Atenção Primária à Saúde	Usuários crianças						
	Geral		Unidade tipo A (CF ou CMS-A)		Unidade tipo B (CMS)		
	n	Média (IC 95%)	n	Média (IC 95%)	n	Média (IC 95%)	Valor-p*
Afiliação	3.115	7,54 (7,34; 7,75)	2.422	7,59 (7,36; 7,83)	693	7,39 (6,95; 7,83)	0,417
Utilização	3.123	7,88 (7,75; 8,01)	2.430	7,90 (7,75; 8,04)	693	7,86 (7,60; 8,11)	0,730
Acessibilidade	3.112	4,72 (4,57; 4,87)	2.426	4,78 (4,61; 4,95)	686	4,53 (4,26; 4,81)	0,129
Longitudinalidade	3.123	6,14 (6,00; 6,29)	2.429	6,11 (5,95; 6,27)	694	6,27 (5,97; 6,58)	0,362
Coordenação do Cuidado	515	6,01 (5,66; 6,36)	398	5,84 (5,45; 6,24)	117	6,60 (5,93; 7,27)	0,057
Coordenação Sistema de Informação	2.967	6,63 (6,42; 6,83)	2.295	6,61 (6,36; 6,85)	672	6,72 (6,40; 7,04)	0,586
Integralidade - Serviços Disponíveis	2.654	5,76 (5,57; 5,95)	2.065	5,71 (5,49; 5,94)	589	5,93 (5,60; 6,26)	0,281
Integralidade - Serviços Prestados	2.985	5,44 (5,19; 5,68)	2.315	5,35 (5,08; 5,62)	670	5,76 (5,26; 6,27)	0,160
Escore Essencial	**3.109**	**6,30 (6,18; 6,43)**	**2.417**	**6,29 (6,15; 6,44)**	**692**	**6,34 (6,11; 6,58)**	**0,658**
Orientação Familiar	3.042	5,43 (5,22; 5,63)	2.368	5,41 (5,17; 5,65)	674	5,51 (5,13; 5,88)	0,666
Orientação Comunitária	2.544	5,09 (4,85; 5,32)	1.991	5,42 (5,18; 5,67)	553	3,91 (3,43; 4,39)	< 0,001
Escore Geral	**3.116**	**6,09 (5,95; 6,22)**	**2.421**	**6,11 (5,95; 6,26)**	**695**	**6,03 (5,78; 6,27)**	**0,699**

Fonte: Harzheim et al.[15]. [#] Escores assumem valores de 0 a 10. IC: intervalo de confiança. * Associado ao teste t para duas amostras independentes.

Discussion

Type A Units - Municipal Healthcare Centers and Family Clinics performed better in the perception of both adult and child users of primary healthcare services in the city of Rio de Janeiro. Children rated the services better than adults, especially those using Type A units. "Ease of access - first contact/accessibility" had the worst scores, and in all ten planning areas brought down the essential and overall scores. "Community" and "Family" orientation were found to be attributes still under construction, although the scores for Type A units were invariably higher than those for Type B units. On the other hand, "Coordinated Care" and "Continuity" are well on their way to quality, with essential and overall scores almost always higher than 6.0.

We call attention to the results of the child questionnaire for areas 2.1 and 2.2. The scores for these areas were higher than all other areas, and the difference was statistically significant. This may be due to the existence of a medical residence program in Family and Community Medicine offered by UERN and SMS-RJ, which by 2014 was already well consolidated. These areas had essential scores above 7.0, and overall scores very close to this value.



Comments: The following statistically significant differences (P<0.05) were calculated between the mean scores for the different Areas.

Ease of Access: comparing the healthcare planning Areas (two by two), we found differences only in Areas 3.3 and 5.1, when compared to district 2.1.
Continuity: comparing the healthcare planning Areas (two by two), we found differences between Area 5.1 and Areas 2.1 and 2.2, and between Area 5.3 and Area 2.1

Coordinated Care: comparing the healthcare planning Areas (two by two), we found a difference only in Area 5.3, when compared to Areas 1.0, 2.1, 5.1 and 5.2.
Coordination - Information System: comparing the healthcare planning Areas (two by two), we found differences in a number of Areas: 3.1 x (2.1 and 2.2); 4.0 x (3.1 and 3.3); 5.1 x (1.0, 2.1, 2.2, 3.2 and 4.0); 5.2 x 5.1; 5.3 x (2.2 and 4.0).

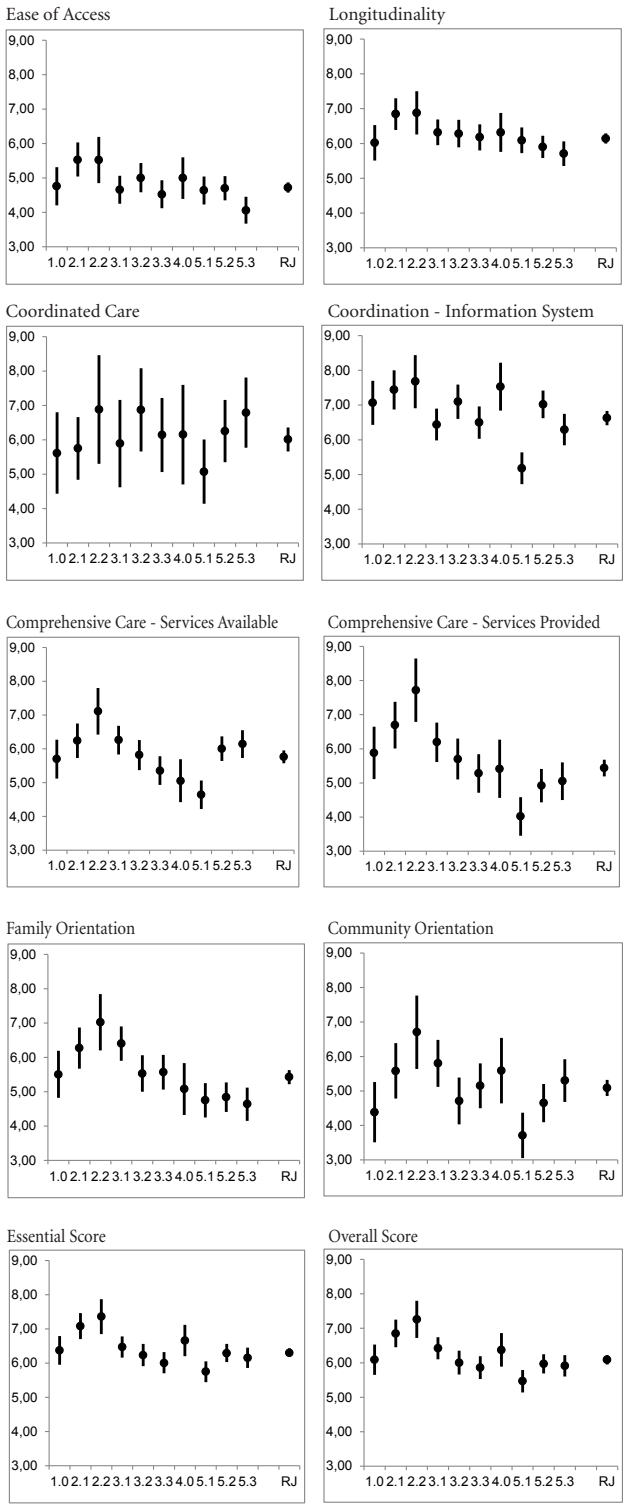
Comprehensive Care - Services Available: differences: 5.1 x (2.2 and 3.1); 5.2 x 5.1; 5.3 x 5.1.
Comprehensive Care - Services Provided: differences: 3.2 x 3.1; 5.1 x (2.1, 2.2, 3.1 and 3.3); 5.2 x 3.1.

Family Orientation: differences: 3.2 x 3.1; 5.1 x (2.1, 2.2, 3.1); 5.2 x (2.1, 2.2, 3.1); 5.3 x 3.1.
Community Orientation: differences: 5.1 x (2.1, 2.2, 3.1, 3.3, 4.0); 5.3 x (3.2, 5.1).

Essential Score: differences: 3.2 x 2.2; 3.3 x 2.2; 5.1 x (2.1, 2.2, 3.1, 4.0); 5.2 x 5.1; 5.3 x 5.1.
Overall Score: differences: 3.2 x 2.2; 5.1 x (2.1, 2.2, 3.1, 4.0); 5.3 x 5.1.

Figure 1. Mean (#) Scores and Confidence Intervals (95% CI) for the attributes of Primary Healthcare according to the experience of adult users. By Planning Area, city of Rio de Janeiro - First Half of 2014.

Source: Harzheim et al.[15].



Comments: The following statistically significant differences (P<0.05) were calculated between the mean scores for the different Areas.

Ease of access: differences 5.3 x (2.1, 2.2 and 3.2).
Longitudinality: differences 5.2 x 2.1; 5.3 x (2.1 and 2.2)

Coordinated Care: differences: none.
Coordination - Information Systems: differences 5.1 x (1.0, 2.1, 2.2, 3.1, 3.2, 3.3 and 4.0); 5.2 x 5.1; 5.3 x 5.1.

Comprehensive Care - Services Available: differences: 3.3 x 2.2; 4.0 x 2.2; 5.1 x (2.1, 2.2, 3.1 and 3.2); 5.2 x 5.1; 5.3 x 5.1.
Comprehensive Care - Services Provided: differences: 3.2 x 2.2; 3.3 x 2.2; 4.0 x 2.2; 5.1 x (1.0, 2.1, 2.2, 3.1 and 3.2); 5.2 x (2.1, 2.2 and 3.1); 5.3 x (2.1 and 2.2)

Family Orientation: differences: 4.0 x 2.2; 5.1 x (2.1, 2.2 and 3.1); 5.2 x (2.1, 2.2 and 3.1); 5.3 x (2.1, 2.2 and 3.1).
Community Orientation: differences: 2.2 x 1.0; 5.1 x (2.1, 2.2 and 3.1); 5.2 x 2.2; 5.3 x 5.1.

Essential score: differences: 3.2 x (2.1 and 2.2); 3.3 x (2.1 and 2.2); 5.1 x (2.1, 2.2, 3.1 and 4.0); 5.2 x (2.1 and 2.2); 5.3 x (2.1 and 2.2)
Overall Score: differences: 2.2 x 1.0; 3.2 x 2.2; 3.3 x (2.1 and 2.2); 5.1 x (2.1, 2.2 and 3.1); 5.2 x 2.1; 5.3 x (2.1 and 2.2)

Figure 2. Mean (#) Scores and Confidence Intervals (95% CI) for the attributes of Primary Healthcare according to the experience of child users By Planning Area, city of Rio de Janeiro - First Half of 2014

Source: Harzheim et al.[15].

If we compare these results to surveys conducted using similar methodology, we find that the overall score assigned by adults to primary healthcare in the city of Rio de Janeiro is higher than the same score found in the city of Porto Alegre in 2007[14]. Furthermore, ease of access and comprehensive care - services provided are higher than the same scores obtained in Porto Alegre, even though they were the worst scored attributes in Rio de Janeiro. The scores for community orientation among adults in both cities are quite similar, showing the superiority of a model based on a Family Health Strategy compared to the traditional model. This shows that Rio de Janeiro has progressed towards better quality Primary Healthcare in a short period of time, since in 2007, at the time of the Porto Alegre survey, the city had been operating its Family Health system for 10 years, and at the time covered about 30% of the population. On the other hand, the community orientation scores of both cities show that this attribute goes far beyond the mere presence and activities of the Community Health Agent. The planning of all Healthcare Units must improve based on epidemiological information and on user preferences and values.

When we compare the results of our study to those of the 2004[21] study of children in Porto Alegre, which used similar methodology, we find similar scores, but a smaller statistical difference for Family Health Strategy, which in our case was higher. As in Rio de Janeiro, for many attributes scores measured in Porto Alegre based on the experience of children were higher than those of adults, including the overall PHC score. These results show that primary healthcare services in Brazil, especially Family Health, are able to prioritize the care of children, which already has had an impact on infant mortality rates[5,6]. On the other hand, it seems to have trouble providing first contact access and an expanded list of adult-centered healthcare activities. Here the nation should adopt innovative management micro-policies to expand access for adult users and ensure they have a list of services able to meet their more important healthcare needs.

Final Considerations and recommendations

A number of recommendations may be made to the city government to improve the quality of primary healthcare services in Rio de Janeiro: (i) Strengthen the Family and Community Medicine residence problems so that such programs are available in all Health Planning Areas; (ii) Train Family and Community Medicine professors to support the Residence Program; (iii) create a Training Master Plan for the Rio de Janeiro SUS, organizing student access to healthcare units; (iv) provide phone numbers and/or other forms of non-face-to-face access so that family health physicians and teams may be on call, monitoring health problems and answering specific questions of the citizens registered in their areas; (v) expand the use of blogs at Primary Healthcare Units as the main communication channel with the population; (vi) keep updated records and remove duplicate entries once a month to make it easier for people who move into the area to register for each ESF; (vii) look into the possibility of registering those who do not have an id in the electronic files so that they may migrate as new Family Clinics are opened; (viii) continue to monitor the basic service portfolio, looking at including new procedures, especially for physicians who recently completed their medical residence, (ix) create a tool to disclose health indicators (e.g. Tabnet), to disclose aggregate and validated data for each ESF, (x) continue to transform Type B units into Type A units, inviting the healthcare professionals in Type B units wo work in the Policlinics, making care more widespread; (xi) hire more healthcare providers, both civil servants and employees of private enterprises affiliated with the SUS to close the gaps in the Regulatory System, and re-directing any potential excess openings and tests. Future studies should compare different units with and without specialists in Family and Community Health so measure the impact of these professionals on quality of care, and measure the magnitude of diseases before and after the PHC Reform in Rio de Janeiro, using logistical regression models where the dependent variable is the number of people registered and not registered by the Family Health Clinics. A survey of independent samples shows that new studies for internal consistency and validation of the issues that make up the attributes might reduce the number of items to which this long assessment tool is applied, creating a revised version of PCATool-Brazil, validated for the city of Rio de Janeiro. This would help make this type of assessment routine (twice a year), and results could be used by city healthcare managers in their decision making processes.

Ciência & Saúde Coletiva, 21(5):1399-1408, 2016

Collaborations

E Harzheim and LF Pinto helped conceive, outline, analyze and interpret the data, draft the text and critically review the article. L Hauser helped design the sample and draft the paper. D Soranz helped draft the paper and critically review it.

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