DOI: 10.1590/1413-81232021262.42552020

Primary Care Assessment Tool (PCAT): developing a new baseline for evaluating Brazilian health services

Luiz Felipe Pinto (https://orcid.org/0000-0002-9888-606X) [1]
Vinicius Siqueira Tavares Meira Silva (https://orcid.org/0000-0002-3271-0811) [1,2]

Abstract *In Brazil, within the SUS, Primary Health Care (PHC) gained relevance from the Family Health Strategy's structuring from the 1990s to the 2000s. Several instruments are available in the world to evaluate PHC services, including the family of instruments of the Primary Care Assessment Tool (PCAT), developed and disseminated by Starfield & Shi to assess the existence and extent of the features of primary health care services. Reinforcing the importance of using this instrument in Brazil, the Ministry of Health published in 2020 a new edition of the Brazilian version that informs the methodology used for such instruments, reviving the role of IBGE as a significant external evaluator of the SUS. The IBGE pioneered in its primary household random sample survey, the National Health Survey, a question-based module of the reduced version of the PCAT for adult users. The leading global results found for Brazil (overall PCAT score=5.9) inform that those who use PHC services (adults with referred morbidities) the most are also those who evaluate these services most positively. Differences were also observed among the residents of households registered by the family health teams, those receiving visits from the community and endemic workers, and age groups (older people evaluate services more positively).*

Key words *Primary Health Care, Health evaluation, Household surveys, PCAT, Brazil*

[1] Programa de Pós-Graduação em Atenção Primária à Saúde, Faculdade de Medicina, Universidade Federal do Rio de Janeiro. Av. Presidente Vargas 2863, Cidade Nova. 20210-030 Rio de Janeiro RJ Brasil. felipepinto.rio@medicina.ufrj.br
[2] Programa de Residência em Medicina de Família e Comunidade, Secretaria Municipal de Saúde do Rio de Janeiro. Rio de Janeiro RJ Brasil.

Introduction

The Alma-Ata Declaration (1978)[1] marks a shift in the global health paradigm by establishing primary health care (PHC) as an essential element for ensuring health as a universal human right. PHC comprises the first level of care for the user, acting as their gateway to the health system, and has held an increasingly strong and central position in the organization of national systems in countries such as the United Kingdom, Portugal, Spain, Canada, among others[2-4].

In Brazil, PHC gained relevance within the Unified Health System (SUS) from the structuring of the Family Health Strategy (ESF) between the 1990s and 2000s, a model for organizing this level of care with peculiar features, as the work in multiprofessional teams and community orientation – community health workers – reinforcing the bond with the territory.

Several instruments evaluating PHC services are found in the world. The Primary Care Assessment Tool (PCAT) was developed and disseminated by Starfield and Shi[5-8] to trace the service orientation for the so-called "essential attributes": first contact access, longitudinality, comprehensiveness, and coordination of care, besides the three "derived" dimensions: family and community orientation and cultural competence[9].

The PCAT has some mirror versions of its questionnaires. For this reason, we usually speak of "families of PCAT instruments", according to the target audience (children, adults, health professionals – doctors, nurses, and dental surgeons – managers/administrators). This instrument has been translated, statistically validated, and used in whole or in part by dozens of countries on all five continents in the world[10]. Some abridged versions for adults were proposed and validated to allow greater practicality, reduced application costs, and technical feasibility in the "real world" of health management. In this sense, the Brazilian Institute of Geography and Statistics (IBGE) innovated by including the short 25-item version of the referred instrument for adult users[11,12] in the last PNS-2019.

IBGE is the government institution responsible for producing information about the Brazilian population. Since 2013, it coordinates the National Health Survey (PNS), a population-based household survey whose last version was in the field as of August 2019. PNS-2019 reached all 27 federation units and inquired the population about a wide variety of topics related to sociodemographic features, health conditions, habits and lifestyles, issues related to the use of health services, and obtained anthropometric measurements from a subsample.

About the material and methods

The PNS-2019 is a research developed with cluster probabilistic sampling in three stages. In the first, 8,036 primary units were selected by simple random sampling. In the second, also by simple random sampling, the households visited were determined and ranged from 12 to 18 households per UPA, according to the size of each of the 27 federative states. In the third, all household residents were interviewed or, in some modules of the instrument, such as PHC, an adult resident aged 18 years or older was randomly selected to respond.

For the first time, the survey incorporated the validated short version of the PCAT for adults. Contained in "Module H", these questions were applied to individuals aged 18 years or older who claimed having sought at least one medical visit in PHC facility (with or without a Family Health Team (eSF)) in the six previous months and had been seen by the same professional previously at least once. The result showed a population of 17.2 million people served (after expanding the sample of approximately 10,000 respondents).

The data were obtained by applying a four-point Likert scale questionnaire. A numerical value was assigned to each answer (from 1 to 4, from the least positive to the most positive), which is the basis for calculating the mean of all responses. In the versions of the instrument published by the Ministry of Health in 2010 and updated in 2020[10,13], these numerical responses were later transformed into a score ranging from 0 to 10. Thus, the interpretation of the results was facilitated by using a numerical scale widespread in health management, which is assigning a score on this scale to evaluate a health action, program, or service. This score indicates higher or lower availability and extent of PHC attributes in the service under evaluation, classified as "high" when greater than or equal to 6.6 and "low" if less than 6.6. In other words, the attribute or set of services is deemed to be correctly oriented to PHC if two-thirds of the value are obtained in each item, attribute, or score.

Data collection in the Brazilian context in its continental dimensions

Brazil is a country with continental features. Its vast territorial extension imposes logistical challenges to national household surveys such as the PNS. On the one hand, there is a considerable population concentration in densely populated metropolises and, on the other, regions such as the interstate area of the Legal Amazon, with a low occupation, difficult access, and poor and limited transport infrastructure. The data collection process at PNS-2019 can be considered the most extensive demographic effort to record home-based health data after the ten-year Census.

Primary Care Assessment Tool (PCAT) results in the PNS-2019

The first results published by IBGE refer to the comparison of the overall score obtained in the questionnaire according to some sociodemographic variables: (1) gender, (2) age group, (3) ethnicity/skin color, (4) per capita household income groups, (5) marital status, (6) selected comorbidities: hypertension, diabetes, heart disease, asthma, depression, and chronic lung disease. Scores are also presented according to the home features regarding the provision of PHC services, such as their registration at a health unit equipped with Family Health Teams, and home visits by community health workers (ACS) and endemic disease workers (ACE) in the last 12 months (Table 1).

PNS-2019 showed an overall Brazilian PHC score of 5.9, which is below the benchmark value of 6.6 recommended in the methodology of the instrument used to evaluate services. However, variations are found when the results are stratified by sociodemographic characteristics or PHC-related morbidities. Women used the PHC service more than men. However, the assessment was similar for both genders, generating an overall score of 5.9 and 5.8 for women and men, respectively. A variation was observed when looking at the results by age group. Older people from 60 years of age evaluated services better than younger people, with a progressive increase in the overall score as the age group increased. The values were 5.6 in the 18-39 years group, 5.9 in the 40-59 years group, and 6.1 in the group of people aged 60 years and over. The results were identical for people declared white and black/brown, indicating an overall score of 5.9 for PHC. The assessment of PHC also did not vary according to marital status, reaching an overall score of 5.9 in all groups.

Other essential differences observed for Brazil refer to the better performance of PHC services when considering registered households versus those not registered in health facilities with Family Health Teams (eSF). In the first case, the general score was 6.0 [5.9-6.1] and 5.5 [5.4-5.7] in the second, showing, therefore, the correct choice of the National PHC Policy in the last decades in its commitment to strengthen and expand the Family Health Strategy across the geographic regions of the country. Also, the visit of community workers or other members of the eSF brought more favorable estimates among the households that received at least one visit in the last 12 months (general score of 6.1 [6.0-6.2] versus the general score of 5.7 [5.5-5.8] among households that never received a visit).

People with per capita household income of up to one minimum wage at the time of the interview were the ones who used PHC services the most. However, per capita household income does not seem to have influenced the PHC assessment. The overall score in the per capita household income of up to one minimum wage was 5.8, 6.0 with one to three minimum wages, and 5.8 above three minimum wages.

With respective confidence intervals, the study estimates a list of morbidities of interest to PHC in the population. In general, the assessment of PHC services was higher among respondents who reported having any of these diseases than those who denied it. The overall score was 6.2 among the individuals who declared hypertension diagnosis, while it was 5.7 among those who denied it. Likewise, for diabetes (6.3 among carriers and 5.8 among non-carriers), heart disease (6.4 among carriers and 5.8 among non-carriers), asthma (6.0 among carriers and 5.9 among non-carriers), depression (6.1 among carriers and 5.8 among non-carriers) and chronic lung diseases (6.4 among carriers and 5.9 among non-carriers).

Discussion

The evidence brought by the PCAT in the PNS-2019 points in favor of the Brazilian PHC SUS model, anchored in family health teams, which users evaluated more positively, mirroring an overall score higher than that observed among people-residents in households not registered by these teams.

Table 1. Overall mean score of primary health care (value from 0 to 10) with an indication of the confidence interval. Brazil, 2019.

Selected variables	Overall score	95%CI
Gender		
Men	5.9	[5.8 - 6.0]
Women	5.8	[5.8 - 5.9]
Age groups		
18-39	5.6	[5.5 - 5.7]
40-59	5.9	[5.7 -6.0]
60 and over	6.1	[6.0 - 6.2]
Ethnicity/skin color		
White	5.9	[5.7 - 6.0]
Black or brown	5.9	[5.8 - 6.0]
Per capita household income		
Up to 1 minimum wage	5.8	[5.7 - 5.9]
1-3 minimum wages	6.0	[5.9 - 6.2]
Three or more minimum wages	5.8	[5.4 - 6.2]
Marital status		
With spouse	5.9	[5.8 - 6.0]
Without spouse	5.9	[5.8 - 6.0]
Arterial hypertension		
Yes	6.2	[6.1 - 6.3]
No	5.7	[5.6 - 5.8]
Diabetes		
Yes	6.3	[6.1 - 6.4]
No	5.8	[5.7 - 5.9]
Heart disease		
Yes	6.4	[6.1 - 6.6]
No	5.8	[5.7 - 5.9]
Asthma		
Yes	6.0	[5.7 - 6.3]
No	5.9	[5.8 - 5.9]
Depression		
Yes	6.1	[5.9 - 6.2]
No	5.8	[5.8 - 5.9]
Chronic lung disease		
Yes	6.4	[6.0 - 6.8]
No	5.9	[5.8 - 5.9]
Is the household registered at the Family Health facility?*		
Yes	6.0	[5.9 - 6.1]
Não	5.5	[5.4 - 5.7]
Did it receive an ACS visit in the last 12 months?		
At least once	6.1	[6.0 - 6.2]
Never	5.7	[5.5 - 5.8]
Did it receive an ACE visit in the last 12 months?		
At least once	6.0	[5.9 - 6.1]
Never	5.6	[5.4 - 5.7]

Source: IBGE, Directorate of Research, Coordination of Work and Income, National Health Survey 2019, results released in October 2020.

Notes: The table considers the following universe, according to the PCAT methodology in the PNS-2019: people aged 18 or over who sought a Primary Health Care service (health post, health center, or unit with family health teams) in the last six months before the interview and this service was not the first to be carried out with the same doctor at the service. The questions about the referred morbidities were asked, arguing the selected resident about whether: "some doctor has already given him/her the diagnosis of...". *Exclusive to people who did not know whether the household was registered at a facility staffed with Family Health teams.

The first data published by the IBGE are aggregated for the country's total, which prevents the identification of regional differences between the units of the federation (UF) in the assessment of PHC. Detailed analyses will be enabled to publish the results for the geographic regions, UFs, metropolitan regions, inland municipalities, and capital municipalities. As is known, in social research, aggregate indicators tend to hide internal variability. That is, "Brazil average" will not always represent the set of parts homogeneously.

Incorporating the PCAT in the PNS questionnaire, a survey of national reach and statistical representativeness allows comparing its results with the vast scientific production supported by the same method, which is only possible because the PCAT is a standardized and internationally validated instrument for the evaluation of PHC services. The Ministry of Health itself started to incorporate the possibility of using this methodology from Ordinance N° 3,222 of December 10, 2019[14], which defined payment-for-performance indicators as one of the parts of a broader evaluation system for PHC services in Brazil[15].

The adoption of new technologies for data collection of sample surveys with external validity, such as telephone interviews, may help overcome the logistical challenge of household surveys in Brazil. Recently, IBGE successfully used this methodology in data collection for a special version of the National Continuous Household Sample Survey (PNAD-C) on the COVID-19[16] pandemic. We recommend that the same collection process be carried out for future PNS, that is, that at least the initial modules and the module on primary health care can be collected quarterly and follow the same schedule of the PNAD-C already consolidated with the disclosure of the labor market statistics released by the Institute.

Conclusion

Incorporating the abridged version of the PCAT in the PNS-2019 questionnaire was a historic innovation in the more than 80 years of IBGE's existence. Its results are pioneering regarding global official statistical institutes and comparable to several local Brazilian and international studies. The several versions of the instrument undergo a validation process that aims to guarantee the stability and longevity of its content.

Despite the lack of clarity and consensus in the literature regarding the choice of an instrument for evaluating health services, the experiences of Brazil (PNS-2019) and Catalonia (*Encuesta de Salud de Barcelona 2016-2017*[17]) were successful when they added the short versions of the PCAT in their national/regional household surveys: they manage to draw a baseline for future comparisons and studies more disaggregated by regions/loco-regions, states, and municipalities. Due to its easy operationalization and short application time with the population, the challenge is launched: despite all the difficulties of geographic accessibility, will Brazil be able to perpetuate/update the use of this instrument and, with that, monitor the leading public health policy, the basis of all universal systems, which is PHC? One way that we attempted to show here is the proposal to definitively include this theme on the IBGE's agenda in its Continuous PNAD, reviving the role of a great external evaluator of the SUS and contributing to the analysis of inequalities in access, use, and perception of the Brazilian population on the PHC attributes, using robust, independent, and consolidated scientific methodology in the last twenty years by the academic world.

For all these reasons, IBGE's initiative is encouraging. IBGE included the PCAT module in the very last moment of its questionnaire in the National Health Survey (PNS-2019) and brought a new baseline for the evaluation and comparative analysis of PHC services in Brazil from SUS users' perspective.

Collaborations

LF Pinto and VSTM Silva participated equally in all stages of writing the article. LF Pinto critically reviewed the latest version of the manuscript.

References

1. *Declaração de Alma Ata sobre Cuidados Primários [Internet]*. 1978 [acessado 2020 Out 28]. Disponível em: http://bvsms.saude.gov.br/bvs/publicacoes/declaracao_alma_ata.pdf
2. Saltman RB, Rico A, Boerma WGW. *Primary care in the driver's seat? Organizational reform in European primary care*. Berkshire: Open University Press; 2006.
3. Pisco L. Reforma da Atenção Primária em Portugal em duplo movimento: unidades assistenciais autónomas de saúde familiar e gestão em agrupamentos de Centros de Saúde. *Cien Saude Colet* 2011; 16(6):2841-2852.
4. Ponka D, Pinto LF, Whalen-Browne M, Meuser A, Prado JC, Michaelides O, Rouleau K. Contrasting current challenges from the Brazilian and Canadian national health systems. The Besrour Papers: a series on the state of family medicine in Canada and Brazil. *Canadian Family Physician December* 2019, 65(12):890-896.
5. Starfield B, Cassady CE, Nanda J, Forrest CB, Berk R. Consumer experiences and provider perceptions of the quality of primary care: implications for managed care. *J Fam Pract* 1998; 46(3):216-226.
6. Cassady CE, Starfield B, Hurtado MP, Berk RA, Nanda JP, Friedenberg LA. Measuring consumer experiences with primary care. *Pediatrics* 2000; 105(4 Pt 2):998-1003.
7. Shi L, Starfield B, Xu J. Validating the Adult Primary Care Assessment Tool. *J Family Practice* 2001; 50(2):161-175.
8. Starfield B. *Atenção primária: Equilíbrio entre necessidades de saúde, serviços e tecnologia*. Brasília: Unesco, MS; 2002.
9. Shi L. The impact of primary care: a focused review. *Scientifica (Cairo)* 2012; 1-22.
10. Brasil. Ministério da Saúde (MS). Secretaria de Atenção Primária à Saúde. Departamento de Saúde da Família. *Manual do Instrumento de Avaliação da Atenção Primária à Saúde: PCATool-Brasil – 2020*. Brasília: MS; 2020.
11. Harzheim E, Pinto LF, D'Ávila OP, Hauser L. Following the legacy of professors Barbara Starfield and Leiyu Shi in Brazil as health policy: the National Health Survey (PNS), led by the Brazilian National Institute of Geography and Statistics (IBGE) and the Primary Care Assessment Tool (PCAT). *Int J Equity Health* 2019; 18(1):176.
12. Instituto Brasileiro de Geografia e Estatística (IBGE). *Pesquisa Nacional de Saúde. IBGE investiga pela primeira vez recepção dos pacientes no sistema público de saúde* [Internet]. Agência de Notícias: IBGE; 2019 [acessado 2020 Nov 03]. Disponível em: https://agenciadenoticias.ibge.gov.br/agencia-noticias/2012-agencia-de-noticias/noticias/25536-ibge-investiga-pela-primeira-vez-recepcao-dos-pacientes-no-sistema-publico-de-saude
13. Brasil. Ministério da Saúde (MS). Secretaria de Atenção em Saúde. Departamento de Atenção Básica. *Manual do instrumento de avaliação da atenção primária à saúde: Primary Care Assessment Tool - PCATool*. Brasília: MS; 2010.
14. Brasil. Ministério da Saúde (MS). Portaria nº 3.222, de 10 de dezembro de 2.019. Dispõe sobre os indicadores do pagamento por desempenho, no âmbito do Programa Previne Brasil. *Diário Oficial da União*; 2019.
15. Harzheim E, Santos CMJ, D'Avila OP, Wollmann L, Pinto LF. Bases para a Reforma da Atenção Primária à Saúde no Brasil em 2019: mudanças estruturantes após 25 anos do Programa de Saúde da Família. *Rev Bras Med Família Comunidade* 2020; 15(42):2354.
16. Brasil. Instituto Brasileiro de Geografia e Estatística (IBGE). *Pesquisa Nacional por Amostra de Domicílios Contínua (PNAD) COVID-19*. Rio de Janeiro: IBGE; 2020.
17. Bartoll X, Pérez K, Pasarín M, Rodríguez-Sanz M, Borrell C. *Resultats de l'Enquesta de Salut de Barcelona 2016/17* [Internet]. Barcelona: Agència de Salut Pública de Barcelona; 2018 [acessado 2020 Nov 10]. Disponível em: https://www.aspb.cat/wp-content/uploads/2018/12/ASPB_Enquesta-Salut-Barcelona-2016.pdf

Article submitted 16/11/2020
Approved 16/11/2020
Final version submitted 18/11/2020

Chief editors: Maria Cecília de Souza Minayo, Romeu Gomes, Antônio Augusto Moura da Silva