

Health Service Research

Assessment of primary health care from the perspective of patients hospitalized for ambulatory care sensitive conditions

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Abstract

Background. The hospitalization for ambulatory care sensitive conditions (ACSC) has been used to assess the effectiveness of primary health care (PHC). Due to the existence of different models of organization of PHC in Brazil, it is important to develop indicators and tools for their assessment.

Objective. Assessment PHC from the perspective of patients hospitalized for ACSC.

Methods. A cross-sectional study was carried out. The patients were interviewed for assessment of PHC quality using the primary care assessment tool and a questionnaire. Descriptive analyses were performed and the Primary Health Care Index (PHCI) was calculated according to the health service modality, either the traditional primary health care (TPHC) or the Family Health Program (FHP). The PHCI of the two health care models were compared.

Results. A total of 314 ACSC patients were interviewed 26.4% from the FHP and 73.6% from the TPHC. In general, the PHCI dimension with the lowest score was health service access. There was no significant difference in the general PHCI for the two modalities of services ($P = 0.16$); however, comprehensiveness was better assessed in the TPHC, while longitudinality, family focus and community orientation were better evaluated by FHP users ($P \leq 0.05$).

Conclusion. The FHP was found to be better qualified to establish longitudinality in the community, an important dimension for continued care. However, promoting access to and consolidating a proactive care model focussed on family shows to be a great challenge for the implementation of a quality and resolute PHC in large urban centres.

Key words. Family Health Program, Health Care Access and Quality Assessment, health systems, hospitalization, primary health care.

Introduction

In 1994, the Brazilian Unified Health System (Sistema Único Saúde or SUS) reorganized primary health care (PHC) and implemented

a Family Health Program (FHP). This strategy aimed at providing health care delimited by geographical regions through planned actions based on individual and familial risk factors as a substitute of the traditional primary health care model (TPHC), which

provides care to populations as large as 30 000 inhabitants in large urban centres (1). The FHP staff cares for a maximum population of 4000 inhabitants and includes a general practitioner, nurse, a dentist, secondary education-level technicians and community health agents, community professionals trained to register and follow-up families through routine domiciliary visits (1).

The Brazilian Health Ministry reports that ~56% of the population is covered by the FHP (2). In Minas Gerais state, its coverage is 72%; however, in contrast to the state reality, in the municipality of Divinópolis, FHP coverage has increased little, with only 28% of the population being covered by the FHP and most of the population still under the traditional services (2).

Due to the existence of different models of organization of PHC in Brazil, it is important to develop indicators and tools for their assessment. The ambulatory care sensitive conditions (ACSC) indicator has been used to assess the effectiveness of PHC in Brazil (3,4). The Brazilian ACSC list was drafted based on this theoretical concept and includes 19 groups of causes of hospitalization from the International Classification of Diseases, 10th revision (ICD-10) (5).

The studies performed using the ACSC indicator allow an indirect evaluation of health care quality; however, it is important to consider essential PHC characteristics and engage the various actors in its assessment (6). Bearing this in mind, Almeida and Macinko (7) carried out the transcultural adaptation and validation of the primary care assessment tool (PCAT) for Brazil for the assessment of PHC performance from the viewpoints of patients and health professionals.

The goal of the present study was to assess PHC quality in a midsize Brazilian municipality according to the perception of hospitalized ACSC patients in an attempt to assess whether the FHP performs better when compared to the TPHC.

Method

Study site

This study was conducted in the municipality of Divinópolis, located in the Midwest region of the State of Minas Gerais, Brazil. It has a population of 213 016 inhabitants and a human development index of 0.76 (8). Divinópolis is a health care referral centre in a region comprising 54 municipalities. It has two public hospitalization services, one hospital operating under an agreement with SUS and an immediate care unit.

Two different PHC models coexist in Divinópolis, the TPHC and the FHP. During the study period, the PHC had 32 health care centres, with 17 under the TPHC and 15 under the FHP.

Study design and data collection

This cross-sectional study was conducted in two public hospitalization centres, a general hospital and an immediate care unit. All hospitalizations performed and paid for by SUS during the study period (22 August 2011 to 23 November 2011) were documented based on patient medical charts and hospital records. Patients residing in Divinópolis who were attended by the facilities and hospitalized for ACSC according to the Brazilian ACSC list were eligible for the interview (5). The diagnoses reported in the screening records were validated by a community and family health professional.

The patients were asked to answer a questionnaire with clinical, socio-economic, demographic information and PHC assessment items in a structured interview. The PCAT used in the assessment of the PHC items was validated for Brazil and presented good validity and reliability characteristics (7).

The PCAT consists of eight dimensions, namely, health service access, gatekeeping or first contact care, PHC comprehensiveness, longitudinality, coordination, family focus, community orientation and health care provider professional training. The answers given followed a Likert-type scale in which each option was attributed a score from 0 ('never' answer) to 5 ('always' answer), thus allowing the calculation of a general Primary Health Care Index (PHCI) and for each PHC dimension using the arithmetic mean of the response scores. The greater the PHCI, the better the PHC service assessment (7).

All the instruments used in this investigation were submitted to a preliminary test and a pilot study. Either patients or patient companions were interviewed during the hospitalization, and the data were collected using the Questionnaire Development System, QDS@ V2.6.1.

Data analysis

Descriptive analyses were performed using frequency distribution and central tendency and dispersion measures. A comparative analysis of PHC quality assessment between user groups according to PHC modality, TPHC and FHP was also performed. Categorical variables were compared using either Pearson's chi-square test or Fisher's exact test as appropriate. The continuous variables were analysed through either the Mann-Whitney test or *T*-Student test with a significance level of 0.05. Our comparisons were carried out for two-tailed tests.

The PHCI of each PCAT dimension and the general PHCI were calculated. Additionally, the PHCI of each dimension was classified based on the PCAT scores obtained, scientific literature using Likert-type scales (9) and on expert discussion as follows: non-existent or incipient category (PHCI from 0 to 1.99), fair condition category (PHCI from 2.0 to 3.99) and satisfactory condition (PHCI from 4.0 to 5.0).

The PCAT internal consistence was analysed for the study population with the Cronbach's alpha coefficient. All the analyses were performed with Statistical Package for Social Sciences SPSS®, version 18.0.

Results

A total of 483 patients resident of Divinópolis diagnosed with ACSC were hospitalized during the study period, 92 (19%) of which did not participate in the study, 66 (71.7%) were discharged before the interviews, 15 (16.3%) were transferred, 7 died (7.6%) and 4 (4.4%) were excluded due to severe clinical condition. Twenty patients (4.7%) declined to participate in the study. Fifty-seven (15.4%) of the 371 remaining patients were excluded from the study because they reported not to be users of any PHC services. Three hundred and fourteen patients were interviewed for PHC assessment.

Hospitalized patients not registered in the PHC service were mostly male (60%), self-reported white (47.3%), had mean age of 53 years [standard deviation (SD) = 24.3%] and 9 or fewer years of schooling (8.7% were illiterate and 54.3% had not finished elementary education). The mean family income was USD 903.00 (SD = 482.00) and the patients had lived in Divinópolis for at least 10 years (74.1%). Regarding chronic diseases, 24.1% reported diabetes mellitus and 48.1% reported systemic arterial hypertension.

Out of the 314 interviewees, 156 were carried out with patient (49.7%) and 158 with companions (50.3%). Comparative analysis was performed between the two groups of respondents; however, there was no difference in the evaluation of PHC assessment ($P > 0.05$), either in the global or the eight dimensions of PCAT.

Among respondents, 83 (26.4%) were assisted by TPHC units and 231 (73.6%) by FHP. Comparison of the two service modalities showed a significant difference between TPHC and FHP patients regarding age, self-reported skin colour, length of residence in the municipality and access to piped water ($P < 0.05$). TPHC patients were older than FHP patients (TPHC: 53 years versus FHP: 43 years) and had lived in the municipality for over 5 years (TPHC: 88.3% versus FHP: 77.1%), and more PHC patients had access to piped water (TPHC: 90.0% versus FHP: 70.7%). Most of the FHP patients (53.1%) self-reported brown skin, while most of the TPHC patients self-reported to be white (52.4%) (Table 1).

The percentage of patients who were illiterate (TPHC: 18.5% versus FHP: 14.5), with incomplete elementary school (TPHC: 57.1% versus FHP: 61.3%) stood out in this population, but the difference between the two groups was not significant. The average family monthly income was approximately USD 663.00. This value represents two Brazilian basic monthly wages at the time of the study (Table 1).

Bacterial pneumonia was the main cause of ACSC (14.1%), followed by systemic arterial hypertension and congestive heart failure, each corresponding to 12.7% of the total number of hospitalizations for ACSC. Diabetes mellitus was the fourth main cause of ACSC (10.8%). Kidney and skin infections, 9.2% each, were also

significant causes of hospitalization. No significant difference was observed in ACSC distribution between the TPHC and FHP groups (Table 2).

Table 3 and Figure 1 present the results of the PHC assessment and the comparison of the patient groups. The general PHC did not show any significant difference between the two service modalities (FHP: 3.34 versus TPHC: 3.22, P -value = 0.166). Statistically significant differences were found for the dimensions longitudinality, comprehensiveness, family focus and community orientation ($P \leq 0.05$). Comprehensiveness was assessed better by TPHC patients, while longitudinality, family focus and community orientation were assessed better by FHP patients.

In general, the dimensions with the lowest scores were accessibility (FHP: 1.85 versus TPHC: 1.88), family focus (FHP: 2.50 versus TPHC: 1.81) and community orientation (FHP: 2.59 versus TPHC: 2.09). The dimensions with the highest scores were gatekeeping (FHP: 4.33 versus TPHC: 4.54) and comprehensiveness (FHP: 4.01 versus TPHC: 4.20).

Cronbach's alpha coefficient varied from 0.43 (accessibility) to 0.92 (comprehensiveness) for the eight dimensions. The PCAT global scale that assesses PHC performance in all dimensions presented high internal consistency ($\alpha = 0.89$) for its use in a specific population with ACSC patients (results not shown in a table).

Table 1. Socio-economic and demographic characteristics of hospitalized ACSC patients. Comparison of the FHP and the TPHC patient groups, Divinópolis, 2011 ($n = 314$)

Variables	Valid <i>n</i>	FHP <i>n</i> (%)	TPHC <i>n</i> (%)	<i>P</i> -value χ^2 Pearson
Sex	<i>n</i> = 314	83 (26.4)	231 (73.6)	0.754
Male		35 (42.2)	102 (44.2)	
Female		48 (57.8)	129 (55.8)	
Age (average)	<i>n</i> = 314	42.81 (SD = 27.92)	52.95 (SD = 26.30)	0.001*
Monthly family income (average)	<i>n</i> = 259	USD 681.4 (SD = 445.7)	USD 645.2 (SD = 372.5)	0.544*
Self-reported skin colour	<i>n</i> = 310			0.003
Brown		43 (53.1)	73 (31.9)	
White		25 (30.9)	120 (52.4)	
Black		12 (14.8)	30 (13.1)	
Others		01 (1.2)	06 (2.6)	
Schooling	<i>n</i> = 246			0.811
Illiterate		09 (14.5)	34 (18.5)	
Incomplete elementary school		38 (61.3)	105 (57.1)	
Elementary education or incomplete secondary school		11 (17.7)	29 (15.8)	
Complete secondary education or higher school		04 (6.5)	16 (8.7)	
Home property	<i>n</i> = 314			0.267
Own		62 (74.7)	157 (68.0)	
Rented or lent		21 (25.3)	69 (29.9)	
Other condition		0	05 (2.2)	
Length of residence in Divinópolis	<i>n</i> = 314			0.014
Less than 1 year		08 (9.6)	17 (7.4)	
1–5 years		11 (13.3)	10 (4.3)	
Over 5 years		64 (77.1)	204 (88.3)	
Means of transportation	<i>n</i> = 314			0.431
Public transport		60 (72.3)	168 (72.7)	
Car		18 (21.7)	45 (19.5)	
Motorcycle		03 (3.6)	03 (1.3)	
Bicycle		02 (2.4)	01 (0.4)	
Others		0	14 (6.1)	
Access to electricity	<i>n</i> = 314	83 (100)	229 (99.1)	1.00**
Access to piped water	<i>n</i> = 313	58 (70.7)	208 (90.0)	0.000

Bold values indicate P -value < 0.05 . SD, standard deviation.

*Mann–Whitney test.

**Fisher's exact test.

Table 2. Percent distribution of hospitalization causes per ACSC in PHC: comparison of FHP and TPHC patient groups, Divinópolis, 2011 ($n = 314$)

Variables	Valid	FHP	TPHC	Total	P-value*
	N	n (%)	n (%)	n (%)	
Causes of hospitalization and diagnosis	$n = 306$	83 (26.4)	231 (73.6)		
Bacterial pneumonia		14 (17.9)	29 (12.7)	43 (14.1)	0.251
Congestive heart failure		10 (12.8)	29 (12.7)	39 (12.7)	0.982
Hypertension		05 (6.4)	34 (14.9)	39 (12.7)	0.052
Diabetes mellitus		07 (9.0)	26 (11.4)	33 (10.8)	0.550
Kidney or urinary tract infection		09 (11.5)	19 (8.3)	28 (9.2)	0.605
Skin infection		10 (12.8)	18 (7.9)	28 (9.2)	0.397
Lung diseases		05 (6.4)	18 (7.9)	23 (7.5)	0.758
Angina		01 (1.3)	17 (7.5)	18 (5.9)	0.051
Cerebrovascular diseases		02 (2.6)	09 (3.9)	11 (3.6)	0.735
Gastrointestinal ulcer		05 (6.4)	06 (2.7)	11 (3.6)	0.156
Asthma		05 (6.4)	05 (2.2)	10 (3.3)	0.131
Infectious gastroenteritis		01 (1.3)	05 (2.2)	06 (2.0)	1.000
Nutritional deficiencies		0	04 (1.8)	04 (1.2)	0.575
Ear, nose and throat infections		0	04 (1.8)	4 (1.2)	0.575
Epilepsies		02 (2.6)	01 (0.4)	03 (1.0)	0.161
Prenatal diseases and delivery		02 (2.6)	01 (0.4)	03 (1.0)	0.161
Anaemia		0	02 (0.9)	02 (0.7)	1.000
Vaccine-preventable diseases		0	1.0 (0.4)	01 (0.3)	1.000

No diagnosis made in cause group: inflammatory diseases of female pelvic organs. Eight patients had inconclusive ACSC diagnosis.

*Pearson's chi-square test or Fisher's exact test used as appropriate.

Table 3. Basic Health Care Index and result of the inter-group comparison test, Divinópolis, 2011 ($n = 314$)

Dimension	FHP	TPHC	Total	P-value*
	$n = 83$	$n = 231$	$n = 314$	
	PHCI (SD)	PHCI (SD)	PHCI (SD)	
Accessibility	1.85 (0.77)	1.88 (0.74)	1.87 (0.75)	0.69
Gatekeeping	4.33 (1.21)	4.54 (0.91)	4.48 (1.00)	0.06
Longitudinality**	3.90 (0.87)	3.60 (1.03)	3.68 (1.00)	0.03
Comprehensiveness	4.01 (0.87)	4.20 (0.82)	4.15 (0.84)	0.05
Coordination	3.98 (0.82)	3.88 (0.91)	3.91 (0.89)	0.45
Family focus**	2.50 (1.43)	1.81 (1.40)	1.99 (1.44)	0.01
Community orientation**	2.59 (1.39)	2.09 (1.49)	2.22 (1.48)	0.01
Health care providers training	3.54 (1.14)	3.69 (1.09)	3.65 (1.10)	0.27
General PHCI	3.34 (0.68)	3.22 (0.68)	3.25 (0.68)	0.17

*Mann-Whitney test and T-Student test used in the statistical analysis of general PHCI.

**Statistically significant difference ($P < 0.05$).

Discussion

The assessment of PHC by patients hospitalized for ACSC showed an unsatisfactory evaluation in some essential dimensions of PHC without a significant improvement in the global performance of the FHP when compared to the traditional services. In general, the dimensions with the worst assessments were accessibility, family focus and community orientation. Despite a marginal difference, comprehensiveness was better assessed by the users of the traditional service, while longitudinality, family focus and community orientation were better assessed by the FHP users with a statistically significant difference.

The high percentage of patients not registered in the PHC who were admitted in urgency public health care or hospitalized in a large urban centre stands out. This finding may be directly correlated to the prevalence of ACSC, considering that a number of patients are

not regularly followed up by the TPHC. Nevertheless, these patients are health service users who seek TPHC when they have a severe disease. This suggests that the TPHC does not contribute to the health staff's knowledge of the population; however, other factors may contribute to the development of longitudinality, such as access conditions, humane reception and service resolute capacity (1,10).

Among the main ACSC causes identified in this study, complications arising from chronic conditions, such as heart failure, hypertension and diabetes mellitus, had a great impact, with a significant number of hospitalizations due to severe conditions, especially bacterial pneumonia. The importance of infectious and contagious diseases among the causes of ACSC has been reported in the literature. In 2006, the ACSCs that had the greatest impact on SUS were gastroenteritis (23.2%), followed by congestive heart failure (11.2%) and asthma (9.7%) (4). The great prevalence of hospitalization due

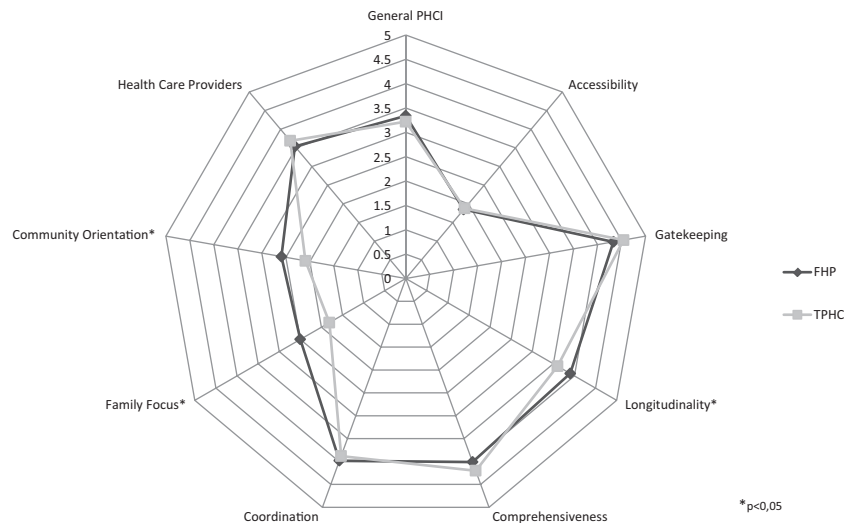


Figure 1. Comparison of PHCI as a function of health care modality, Divinópolis, 2011

to severe conditions that might have been avoided by PHC diagnosis and timely treatment may indicate a difficulty in accessing health care, the fragility of the service provided or an inefficient diagnosis support system (10).

It is important to point out that the present study was conducted mainly during winter, a factor that may have contributed to a higher number of hospitalizations due to respiratory diseases, such as bacterial pneumonia. Another study conducted in Minas Gerais State evidenced the influence of the weather on the morbidity of respiratory diseases (11).

Difficult access was evidenced by patients from the two modalities of PHC, an aspect that has also been pointed out in other studies with a similar approach (6,12,13). The patients in the present study reported difficulty in making timely medical appointments. Another aspect reported as an obstacle to PHC access was consultation times, since the PHC did not offer alternative night or weekend consultation times. As a result, it is recommended that the PHC also operate at times that make it possible for the working class to access health care (14). The need for further discussion on existing PHC service capacity and operation for a better health care for the whole population is evident. The definition of at-risk groups, the scheduling of chronic condition patient care and timely care in severe cases is important (10,14).

In contrast to the accessibility dimension, gatekeeping was reported to be satisfactory in the two health care modalities. PHC was considered to be the gatekeeping to users who need preventive or curative care. This assessment reveals an inconsistency with the score observed for accessibility, which was also reported by other studies using the PCAT instrument (6,13). This discrepancy between the attributed accessibility and gatekeeping scores, as well as the high percentage of hospitalized patients who do not use PHC raises the hypothesis that the gatekeeping dimension reflects the perception of patients who managed to get through health care access barriers.

The term longitudinality has been considered more appropriate to the PHC context as compared with continuity. The longitudinality requires establishing a relationship between patients and provider, allowing the health service be identified by the user as a regular source of care over time, independent of the disease (15). Accessibility and longitudinality are potentially important dimensions in reducing hospitalizations and increasing the satisfaction with health care received by the patient (16).

PHC performed fairly regarding the capacity to coordinate care and longitudinality to the population, but it is worth pointing out that the FHP has made advances in some of the attributes. FHP patients reported having been attended by the same professionals more often, which makes the identification of problems easier and affords greater reassurance to the patient (15). However, this study suggests that the health professionals' approach is focussed mostly on the disease, in disregard of the social determining conditions. This aspect was reported by the users in other studies that assessed PHC in Brazil (7,13).

The satisfactory assessment of the dimension comprehensiveness suggests that PHC offers essential services. The traditional services scored higher than the FHP in child health care, prenatal care and mental health care. This difference between the traditional service and the FHP may be related to the fact that the former provides a greater number of services, including paediatric, gynaecological and psychological care.

Strategies implemented in some Brazilian municipalities seek to expand PHC resolutivity with FHP multiprofessional support teams. These professionals may provide support in the form of matrixing, distance health support and clinical case discussion. This interdisciplinary work may contribute to staff training in care provision (10,17,18).

Although dimensions regarding family focus and community orientation were better assessed in the FHP, this study points to an unsatisfactory assessment of these dimensions in the two service modalities. The patients reported that most professionals were not interested in information related to patient family life conditions. The present study also indicates a lack of patient engagement in health councils and intersectorial actions for community health improvement. The literature supports the finding that family focus and community orientation are not consolidated in PHC professional practice and work procedures (6,13).

The dimension regarding health care providers was assessed as being fair in the two types of service. Continued training for health care providers, both techno-scientific and on family-focussed practices and social context valuing, is considered a strategic axis for PHC strengthening and qualification (15). The implementation of clinical guidelines may provide care procedure support for PHC providers, which becomes more effective with the monitoring of results (10,18).

Some limitations must be considered in the discussion of the results of the present investigation. The assessment by PHC hospitalized patients may be information-biased due to the fact that they could not have received timely resolutive care, which is an important indicator in the identification of critical aspects, but not suitable for generalizing PHC assessment. The assessment by hospitalized patients may have contributed to a poorer PHC assessment.

Internal consistency analysis of the PCAT instrument for the study population showed that the dimension accessibility ($\alpha = 0.43$) had low internal consistency, suggesting that it may not have been the most suitable instrument for measuring this dimension in the local reality. It is important to point out that some of the aspects evaluated in the accessibility dimension were not part of the work process of the municipality's immediate care unit, such as night and weekend operation of some centres and the existence of telephone care service at the times when the centres are closed. The other PCAT dimensions presented satisfactory internal consistency with Cronbach's alpha coefficient ranging from $\alpha = 0.67$ to $\alpha = 0.92$. The global scale, which assesses PHC performance in all dimensions presented appropriate internal consistency ($\alpha = 0.89$), indicating that the instrument was consistent in the ACSC patients' assessment of the PHC in the study municipality.

Therefore, the results presented here may contribute to improve the assessment and planning of health care actions. It is worth highlighting that this study stands out from others of its kind for the use of the ACSC indicator (19,20), since primary data were used to identify the target population, while most studies used secondary official data from government agencies from Brazil and elsewhere.

This investigation also proved to be innovative in the use of PHC assessment by patients (6,7,13), as it was assessed based on information provided by hospitalized ACSC patients. Nevertheless, further studies are required for a thorough assessment of health care services, mainly considering social determinants and urban centre characteristics.

We hope that our findings will guide political decisions aiming at enhancing access to health care of ACSC patients in the coming years. The study has the potential to provide relevant information about the development and progression of PHC assessment in this municipality.

Declaration

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Ethical approval: this investigation complied with Resolution 196/96, which regulates human subject research. All the ethical principles contained in the Declaration of Helsinki were observed and the research project was approved by the Institutional Review Board/Research Ethics Committee of Hospital São João de Deus, Divinópolis, Minas Gerais state, file number 25/2011.

Conflict of interest: none.

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