Primary care evaluation in the Brazilian context: Effects of the health care model transition.

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Abstract

Introduction: Literature has already described the benefits of Primary Health Care (PHC). The high heterogeneity in quality of provided care affects health outcomes. Studies that evaluate health care have been considered essential to identify possible gaps and action priorities. The Brazilian health system, especially Primary health care organization have been under reform and currently, we are amid a transition from what we call the "traditional model" to the Family Health Strategy (FHS). Albeit many studies had proved the advantages of the FHS model, other undertaken evaluations show inconsistent results. Persistent high rates of Hospitalizations due to Ambulatory Care Sensitive Conditions (ACSC) still pose a challenge to both models and demands further investigation.

Objective: To evaluate the attributes of primary care offered to children hospitalized due to ACSC, comparing the two models of primary care.

Methods: We used a cross-sectional design with a quantitative approach. Sample comprises children admitted to the pediatric ward diagnosed with ACSC. Data collection followed the criteria of the Primary Care Assessment Tool (PCATool - Brazil). Independent variables were: age, maternal literacy, family income, type of diagnosis and model of care offered, dependent variables were PHS attributes according to Starfield's referential.

Results: 65.2% of total hospitalizations were due to ACSC; 501 users were interviewed; attributes showed lower orientation to the PHC principles but model of care influenced the results.

Conclusion: There was a low orientation to the principles of PHC, with the exception of the coordination attribute. PHS services were better evaluated by FHS users.

Introduction

Proposed since Alma - Ata and reaffirmed in 2008 by the World Health Report "Primary Health Care - Now more than ever", the World Health Organization (WHO) recommends that Primary Health Care (PHC) should orientate health systems reforms [1]. Literature already provides sufficient evidence about the importance and benefits of Primary health Care. Health Systems that have PHC as their structuring axes are more equitable, achieve better results on population health and can be considered more cost-effectives compared to others, achieving better satisfaction rates when valuated by users [2].

However, in order to achieve such results, PHC should act as the gateway to the system, be resolute and articulate to other levels of care, coordinating the user flow through the health system. According to Starfield, a PHC service provider must fulfil four key attributes: be the first contact access, provide the longitudinally and continuity of care, and be responsible for the comprehensiveness and coordination of care within the system. The same author also proposed three attributes considered derivatives, which qualify the actions: health care focused on family (or family counselling), community orientation and cultural competence of its professionals [3]. Compliance to these attributes serves as a framework for assessing the degree of implementation and offered grade of PHC.

The Brazilian health system, called the Unified Health System (UHS – SUS in Portuguese) passes through a period

of restructuring, and during this period PHC has been under transition between two models: the traditional model and the Family Health Strategy (FHS). The traditional model is characterized by a biomedical approach, provided by specialized doctors (pediatricians, Internal medicine physicians and obstetrician-gynaecologists) according to spontaneous demand from the population and promoting care according to programs based on epidemiological profiles of diseases. On the other hand, the FHS proposed since 2000, is a targeted service model for health promotion, prevention, treatment and rehabilitation offered for an enrolled population of a given region, through a Family Health team, consisting of one general practitioner, one nurse, two nursing technician and 4 to 6 community health agents. Care is guided by the principles of people centered medicine, focused on the person, in the family and in the community [4].

Aiming to plan Public Health Policies to better achieve the desired health outcomes, it is essential to assess whether these paradigmatic changes are in accordance with the principles of comprehensive PHC [5].

So far, the evaluations carried out in our country have presented some positive impacts, such as infant mortality rate decrease, but the results are still inconsistent [6-9]. One of the indicators that signal potential problems in offered PHC is the high prevalence of preventable hospitalizations, or primary care sensitive hospitalizations (ACSC) in São Paulo [10]. The high rates of ACSC suggest problems of access and/or offered PHC quality [11,12].

Considering the high rates of ACSC, particularly in the pediatric population, and the transition of the Brazilian health system, this study aims Identify in a group of children hospitalized due to ACSC which attribute of PHC failure occurred, that could justify these hospitalizations, and compare if there are any differences in the extension of these attributes between the two models of care currently offered: the traditional and the FHS.

Method

This study is part of a larger study that assessed various aspects of PHC offered to children and adolescents in the western region of São Paulo, the largest Latin American city. This region has about 480 000 inhabitants, 94 000 between 0 and 14 years old and 44.5% of them users of the public health system exclusively (UHS). To serve this population, the PHC network consists of 14 primary care units (PCU - UBS in Portuguese) that serve people based on two models of care: the traditional and the FHS model.

We used an analytical, descriptive and cross-sectional study design, with a quantitative approach.

It is a universal sample, that comprised children and adolescents from 0 to 14 years old, admitted to the pediatric ward of the University Hospital of the University of São Paulo (Hospital Universitário da Universidade de São Paulo) (HU-USP) from 1 January to 31 December

2011. Inclusion criteria were: the primary diagnosis on admission as an ACSC, according to the Brazilian list and the child or adolescent being followed up in 1 of the 14 PHC units in the studied region [13]. Exclusion criteria were: Adult in charge of the patient having already responded to the questionnaire in previous hospitalization occurred during data collection period or child was not accompanied by an adult in charge or the person in charge had no knowledge about patient's ambulatory follow-up or previous diseases or the person in charge disagreeing to respond to the survey after being informed about the terms of consent.

In order to collect data, trained interviewers performed three or four weekly visits to the HU-USP pediatric ward throughout 2011. Patients and care-givers were interviewed during the hospitalization period.

The Primary Care Assessment Tool, validated in Brazil—Brazil PCATool—child version instrument was used for data collection [14,15]. This questionnaire originally developed by Starfield's team at The Johns Hopkins Populations Care Policy Center for the Undeserved Populations allows the evaluation of PHC attributes (access, longitudinality, comprehensiveness, coordination, family orientation and community orientation) and the total PHC score [16]. The PCATool has been recommended to study PHS due to the evaluation systematizing and the scientific rigor promotion [5]. The instrument consists of 55 questions about structure and process of care. Answers to these questions are presented as a Likert scale: 4. surely yes; 3. probably yes; 2. probably not; 1. surely not, and 9. Do not know/cannot remember. The scores were calculated according to the instructions in the PCATool-Brazil Guidelines and values higher ore equal to 6,6 are considered as a high orientation to PHS principles [15].

Data input underwent double typing and validation, using SPSS version 10.0 (SPSS Inc. Chicago) and Excel 2000 (Microsoft Corp. U.S.) software.

The study was submitted to the Hospital's Internal Review Board (CEP HU-USP) and approved under registration no. 1039/10.

Statistical Analysis

Bivariate analyzes were performed for each of the attributes and for the total score of PHC, comparing the degree of orientation to the principles of PHC (high X low) to socio-demographic characteristics (age, maternal education, income), the type of diagnosis (acute X chronic) and the received model of primary care (traditional X FHS), using Pearson's chi-square test and adopting the significance level of $p < 0.05$.

Results

From a total of 2031 hospitalizations in the pediatric ward of the HU-USP from 1 January 2011 to 31 December, 1325 (65.2%) were diagnosed as ACSC. One hundred and

eighty-eight patients were discharged before the interview and were considered lost, rendering 1137 patients. From these 636 met one or more exclusion criteria. The final sample consisted of 501 patients who met all inclusion criteria. Mothers were the main informants, answering 87% of the questionnaires.

Thirty-nine per cent of the sample was followed under FHS model. Table 1 shows the final sample composition and characteristics, evidencing the similarity of both groups.

Table 2 presents the total PHC score and each attributes scores, showing that hospitalized patients due to ACSC had a bad evaluation of the PHC received.

The analysis of the influence of patient characteristics, type of diagnosis and Primary care model in assessing the PHC is shown in Table 3 for the total PHC score and in Table 4 for each of the attributes separately.

Discussion

Indicators are used to assess and support the healthcare planning, and also to identify risk situations, compare different strategies and the effects of adopted policies.

Those who manage to capture the various determinants of health, such as socioeconomic and environmental conditions, besides the supply and quality of care provided can signal potential problems that might be happening and are the starting point from which appropriate measures can be taken to given population needs. To this extent, one of the currently most used indicators is the Ambulatory Care Sensitive Conditions (ACSC) considering that timely access, regular monitoring and qualified care can possibly prevent the onset of diseases or the worsening of existing conditions, thence, reducing the risk of hospitalization [11,12,17,18].

The first finding of our study was the high prevalence of ACSC among the 2031 admissions during the study period (65.2% of the diagnoses). This proportion was higher compared to other national and international studies, in which the prevalence of ACSC ranges from 35 to 60% [18-22]. This high prevalence of ACSC reinforces the importance of this study to evaluate the aspects involved in the offered primary care.

The total PHC score obtained was 5.33 ± 1.66, indicating that the evaluated services are not sufficiently oriented to

Table 1. Composition of the sample-variable distribution comparing the two care models (FHS X traditional)

	FHS n (%)	Traditional n (%)	Total n (%)
Total	197 (39)	304 (61)	501 (100)
Age			
0–11 months and 29 days	83 (42)	132 (43)	215 (43)
1–4 years 11 months and 29 days	68 (35)	101 (33)	169 (34)
5–9 years 11 months and 29 days	35 (18)	43 (14)	78 (15)
10–14 years	11 (6)	28 (9)	39 (8)
Maternal Education			
No education	1 (1)	7 (2)	8 (2)
Incomplete elementary	51 (26)	95 (31)	146 (29)
Complete elementary	24 (12)	45 (15)	69 (14)
Incomplete graduate	37 (19)	46 (15)	83 (16)
Complete school graduate	75 (38)	102 (34)	177 (35)
College	9 (5)	9 (3)	18 (4)
Family income			
Up to ½ minimum wage (MW)	5 (3)	8 (3)	13 (2)
From ½ to less than 1 MW	29 (15)	31 (10)	60 (12)
1 to less than 2 MW	74 (38)	120 (39)	194 (39)
2 to less than 5 MW	68 (35)	116 (38)	184 (37)
More than 5 MW	21 (11)	29 (10)	50 (10)
Character diagnosis			
Acute	160 (81)	250 (82)	410 (82)
Chronic	37 (19)	54 (18)	91 (18)

Table 2. Attributes Scores, Total Score and Orientation to PHS principles

Attributes	Valid interview	Score (0–10) ± DP	Orientation to PHS principles
Access	484	4,97 ± 1,87	Low
Longitudinality	492	4,93 ± 2,53	Low
Coordination	112	6,61 ± 2,27	High
Comprehensiveness	437	6,11 ± 2,24	Low
Family Orientation	489	4,19 ± 3,03	Low
Community Orientation	451	4,21 ± 3,04	Low
Total Score	494	5,33 ± 1,66	Low

Table 3. *Bivariate analysis - PHC orientation (Total Score) X patient and care model characteristics*

	TOTAL PHC SCORE		
	Low Orientation (%)	**High Orientation (%)**	**p***
Age	380 (77)	114 (23)	
0–11 m 29 d	157 (74)	56 (26)	
1 y–4 y 11 m 29 d	129 (77)	39 (23)	0,1254
5 y–9 y 11 m 29 d	67 (87)	10 (13)	
10 y–14 y	27 (75)	9 (25)	
Maternal Education	379 (77)	112 (23)	
No education	7 (88)	1 (13)	
Incomplete elementary	112 (78)	31 (22)	
Complete elementary	44 (67)	22 (33)	0,3146
Incomplete graduate	62 (76)	20 (24)	
Complete graduate	140 (80)	34 (20)	
College	14 (78)	4 (22)	
Family Income	352 (77)	106 (23)	
Up to ½ MW	10 (77)	3 (23)	
From ½ to less than 1 MW	43 (74)	15 (26)	
1 to less than 2 MW	153 (79)	41 (21)	0,9312
2 to less than 5 MW	136 (76)	44 (24)	
More than 5 MW	10 (77)	3 (23)	
Character diagnosis	378 (77)	114 (23)	
Acute	311 (77)	93 (23)	0,9756
Chronic	67 (76)	21 (24)	
Care model	380 (77)	114 (23)	
FHS	132 (67)	65 (33)	**0,0000**
Traditional	248 (84)	49 (16)	

the guiding principles of PHC. As the studied sample had a selection bias, the occurrence of ACSC, this result was expected, since these admissions are related to the received primary care failure. Since the aim of this study was to determine the extension of the attributes and to identify possible gaps in the provided care, instead of comparing the impact of the models of care on the ACSC rates, this selection bias didn´t interfere with the results.

Primary care model was the only variable that was significantly associated with the performance of the total PHC score. Although most (67%) of the FHS users assigned a score lower than 6.6, they evaluated the PHC received better, compared to patients covered by the traditional model (table 3). This improved performance of the FHS has already been reported in other studies. Although the majority of these studies use the same instrument (PCATool) as ours, there is a huge variability in the used methods [9,23-26]. The major observed difference in several studies was the performance of the different dimensions that characterize PHC.

Findings in the present study, suggests that the FHS showed a higher proportion of users who considered as "strong" the orientation to the principles of PHC compared to the traditional model, albeit the domains "coordination and comprehensiveness are not statistically significant (Table 4). The analysis of the attributes separately identifies possible explanations for the best performance of FHS compared to the traditional model.

Coordination and Comprehensiveness were not influenced by patients' characteristics, or type of diagnosis or care model (Table 4). We attribute these results to the fact that both attributes are directly related to macro-organizational characteristics and the health system itself, and therefore, are common to both models.

According to Starfield, comprehensiveness concerns the PHC service's ability to provide to the population the full range of services needed, solving the problems that are within their competence, and heading for the other levels of care when the complexity of the situation so requires [3]. Thus, one would expect no difference between the traditional model and the FHS, since the other levels of care network are common to both models. According to our findings, from the perspective of users, the services are not providing comprehensive care. Other Studies that addressed access to specialized care from the PHC showed inadequate services offer and difficulties of coordination with other levels of care, probably due to the recent expansion of PHC coverage and unfinished system decentralization process Brazilian health [27-30].

The coordination of care, on the other hand, is related to the health care organization and the flow of information within the health system and, therefore, is directly related to the information system and is also a common element to both models of care. Therefore, it did not show differences in ratings. This was the only attribute that showed a score higher than 6.6, however, we consider this as a possible inadequacy of the instrument to evaluate this attribute.

Table 4. *Bivariate analysis - PHC orientation (attributes) X patient and care model characteristics*

	ACCESS			LONGITUDINALITY			COORDINATION		
	Low Orientation n (%)	High Orientation n (%)	p*	Low Orientation n (%)	High Orientation n (%)	p*	Low Orientation n (%)	High Orientation n (%)	p*
Age	381 (79)	103 (21)		347 (71)	145 (29)		53 (47)	59 (53)	
0–11 m 29 d	157 (75)	52 (25)		139 (66)	72 (34)		16 (53)	14 (47)	
1 y–4 y 11 m 29 d	134 (82)	30 (18)	0,4123	119 (71)	49 (29)	0,1001	24 (46)	28 (54)	0,8836
5 y–9 y 11 m 29 d	61 (81)	14 (19)		62 (81)	15 (19)		10 (43)	13 (57)	
10 y–14 y	29 (81)	7 (19)		27 (75)	9 (25)		3 (43)	4 (57)	
Maternal Education	379 (79)	102 (21)		344 (70)	145 (30)		53 (48)	57 (52)	
No education	5 (71)	2 (29)		7 (88)	1 (13)		0 (0)	1 (100)	
Incomplete elementary	118 (85)	21 (15)		104 (73)	38 (27)		17 (53)	15 (47)	
Complete elementary	53 (79)	14 (21)	0,4121	43 (65)	23 (35)	0,7025	7 (47)	8 (53)	0,5712
Incomplete graduate	60 (74)	21 (26)		55 (67)	27 (33)		4 (31)	9 (69)	
Complete graduate	131 (77)	40 (23)		123 (71)	51 (29)		23 (53)	20 (47)	
College	12 (75)	4 (25)		12 (71)	5 (29)		2 (33)	4 (67)	
Family Income	356 (79)	94 (21)		322 (71)	134 (29)		50 (49)	52 (51)	
Up to ½ MW	9 (69)	4 (31)		9 (69)	4 (31)		4 (67)	2 (33)	
From ½ to less than 1 MW	46 (78)	13 (22)	0,7237	37 (64)	21 (36)	0,6898	7 (47)	8 (53)	0,2848
1 to less than 2 MW	151 (80)	38 (20)		142 (74)	51 (26)		20 (56)	16 (44)	
2 to less than 5 MW	139 (79)	38 (21)		126 (70)	54 (30)		17 (40)	26 (60)	
More than 5 MW	11 (92)	1 (8)		8 (67)	4 (33)		2 (100)	0 (0)	
Character diagnosis	381 (79)	102 (21)		345 (70)	145 (30)		52 (47)	59 (53)	
Acute	321 (81)	76 (19)	**0,0325**	284 (70)	119 (30)	0,9501	42 (50)	42 (50)	0,3408
Chronic	60 (70)	26 (30)		61 (70)	26 (30)		10 (37)	17 (63)	
Care model	381 (79)	103 (21)		347 (71)	145 (29)		53 (47)	59 (53)	
FHS	139 (74)	50 (26)	**0,0347**	120 (62)	75 (38)	**0,0006**	14 (38)	23 (62)	0,2260
Traditional	242 (82)	53 (18)		227 (76)	70 (24)		39 (52)	36 (48)	

	COMPREHENSIVENESS			FAMILY ORIENTATION			COMMUNITY ORIENTATION		
	Low Orientation n (%)	High Orientation n (%)	p*	Low Orientation n (%)	High Orientation n (%)	p*	Low Orientation n (%)	High Orientation n (%)	p*
Age	224 (51)	213 (49)		359 (73)	130 (27)		321 (71)	130 (29)	
0–11 m 29 d	110 (56)	87 (44)		154 (73)	57 (27)		136 (71)	56 (29)	
1 y–4 y 11 m 29 d	67 (45)	83 (55)	0,2291	122 (73)	44 (27)	0,5966	109 (70)	47 (30)	0,9081
5 y–9 y 11 m 29 d	31 (52)	29 (48)		60 (78)	17 (22)		50 (75)	17 (25)	
10 y–14 y	16 (53)	14 (47)		23 (66)	12 (34)		26 (72)	10 (28)	
Maternal Education	222 (51)	212 (49)		359 (74)	127 (26)		320 (71)	129 (29)	
No education	4 (67)	2 (33)		5 (71)	2 (29)		6 (75)	2 (25)	
Incomplete elementary	62 (47)	69 (53)		107 (75)	35 (25)		88 (66)	45 (34)	
Complete elementary	26 (41)	38 (59)	0,1942	41 (62)	25 (38)	0,2803	47 (73)	17 (27)	0,5660
Incomplete graduate	37 (53)	33 (47)		58 (73)	22 (28)		61 (78)	17 (22)	
Complete graduate	84 (56)	66 (44)		134 (77)	39 (23)		108 (72)	43 (28)	
College	9 (69)	4 (31)		14 (78)	4 (22)		10 (67)	5 (33)	
Family Income	206 (51)	197 (49)		337 (74)	116 (26)		299 (71)	121 (29)	
Up to ½ MW	6 (55)	5 (45)		10 (77)	3 (23)		9 (75)	3 (25)	
From ½ to less than 1 MW	25 (48)	27 (52)	0,5242	39 (68)	18 (32)	0,8526	33 (61)	21 (39)	0,1938
1 to less than 2 MW	84 (48)	92 (52)		143 (74)	49 (26)		124 (69)	55 (31)	
2 to less than 5 MW	84 (55)	70 (45)		135 (76)	43 (24)		124 (77)	37 (23)	
More than 5 MW	7 (70)	3 (30)		10 (77)	3 (23)		9 (64)	5 (36)	
Character diagnosis	222 (51)	213 (49)		357 (73)	130 (27)		319 (71)	130 (29)	
Acute	189 (53)	171 (48)	0,2253	298 (75)	102 (26)	0,2528	261 (71)	107 (29)	0,9897
Chronic	33 (44)	42 (56)		59 (68)	28 (32)		58 (72)	23 (28)	
Care model	224 (51)	213 (49)		359 (73)	130 (27)		321 (71)	130 (29)	
FHS	77 (46)	91 (54)	0,0901	129 (66)	65 (34)	**0,0068**	96 (53)	86 (47)	**0,0000**
Traditional	147 (55)	122 (45)		230 (78)	65 (22)		225 (84)	44 (16)	

We believe that the most important elements related to the information system should not be judged by users, such as the adequacy of registries in the medical records and the existence of information technologies that enable the flow of patient data between different professionals and different services. This may be one reason for the wide range of results described. Some authors found good results, as our and others describe problems, especially in relation to the reference and counter reference mechanisms [9,23-26, 29,31-33]. The instruments do not allow evaluating

this aspect, and we know that there are no operational mechanisms in place to encourage the counter reference. Thus, in our view, a good evaluation of this attribute, from the perspective of patients, should be less valued.

In all other dimensions: first contact access, longitudinality, family-oriented and community-oriented, FHS users rated significantly better received attention, which justifies the best total score of this care model.

The first contact access scored 4.97 ± 1.87, indicating the presence of access barriers, whether in accessibility or services use. Accessibility comprises the geographic component and the socio-organizational component, and services use depends on user's active attitudes, but is strongly influenced by services characteristics. Thus, the 1st contact access attribute is conditional on a complex relationship between the characteristics of the patient and society, such as income, education and health needs, the health service organizational characteristics, such as the availability of health care and the presence and dimension of other attributes, and the history of public policies. In our study, the variables that influence access evaluation were the nature of the diagnosis and the primary care model although it was poorly rated among most users, and worse rated among those who had acute illnesses and among users of traditional model units (Table 4). Low resoluteness of PHC described by others as one of the reasons for the demand for urgent and emergency services may explain the worst score among patients hospitalized due to acute causes [31,34,35]. On the other hand, the best performance of the FHS in our study was different from that found by other authors, in which the FHS has not worked as good gateway [23,29,31,36,37]. Perhaps this finding is related to the better performance of the FHS in the other attributes, especially in longitudinality since the link between the user and the health service favors its use [38,39].

Longitudinality next to access, is one of the attributes best related to ACSC rates, since better continuity of attention is associated with lower rates of hospitalization [18]. According to Starfield, longitudinality is characterized by continuity of care and its essence is the bond established between the user and the professional and/or health service [3]. Although poorly evaluated among respondents, we found a significantly better score among those of the FHS. Perhaps this result is related to the principles of this model of care: the geographical bond of customers, the presence of community workers who favor users' identification with the service; and patient-centered and family approach, that also strengthen the bond. Like other attributes, the results of other authors regarding longitudinality are quite varied [26,29,40,41].

The family and community orientation that presuppose knowledge of the patient's life context, also favors a more comprehensive and effective care [3]. Both are part of the principles governing the FHS, which justifies the best performance of this model in our study. However, a

large percentage of low scores, even among users of this model, expressed that the principles of the FHS are not yet fully implemented, possibly because of the difficulty of changing the existing training and professionals' qualification [26,30,38].

Study Limitations

Since the study comprised only patients hospitalized due to ACSC, the verified proportions of hospitalizations do not represent the risk of hospitalization for these conditions within the study area, nor do they present inferences about the variables relation to higher or lower risk of hospitalization for these causes or the impact of primary care model on ACSC rates. Similarly, the study design does not permit causal relationship, only an association between the variables related to patients and the care model and the scores obtained in each of the PHC attributes.

Conclusion

The low scores presented in our study suggest that the evaluated services are not properly oriented to the principles of PHC in all attributes with the exception of the coordination principle.

Although FHS users have also assigned low scores in most dimensions, this model of primary care was significantly better assessed in relation to access, longitudinality, the family counselling and community and the total score compared to the traditional model, demonstrating that this model has the potential to change the current reality of PHC in the Brazilian scenario.

This study reinforces the importance of the further investigation in primary care evaluation, especially as the orienting axis of health care.

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