This study assessed the essential and derivative attributes of primary health care from the perspective of health service users and professionals from 35 primary health facilities in São José de Ribamar in the State of Maranhão, Brazil. Data were collected from 73 professionals and 386 service users through interviews based on the Primary Care Assessment Tool. The health professionals rated all attributes except first-contact care as satisfactory (overall score = 7.54, essential attributes score = 7.28, and derivative attributes score = 8.02), while the service users rated all attributes as unsatisfactory. The differences in perceptions between health professionals and service users reveal that the population’s health needs are not being met at this level of care. If the population fails to access services, it fails to benefit from any of the other attributes of this level of care.

**Keywords:** Primary Health Care. Health services. Health services research. Health evaluation.
Introduction

As a care model, primary health care corresponds to the first level of care in the health system and usually consists of outpatient services designed to meet the more common health needs of a population\(^1\). Studies in Brazil have demonstrated that the Family Health Strategy has a positive impact on infant mortality due to primary care sensitive conditions and the quality of prenatal and postnatal care and improves access to health services for vulnerable populations\(^2-4\).

One of the first documents to mention the concept of primary health care (PHC) from the perspective of the hierarchical regional organization of health services based on level of complexity was the Dawson Report, published in 1920 by the UK Ministry of Health. The idea of the systematic provision of health care services to a given population in a given region inspired the creation of the National Health Service in 1948, which has served as the basis for the reorganization of health systems in various countries throughout the world\(^5\).

The Alma-Ata Declaration of 1978 is regarded as the first international declaration underlining the importance of PHC. The Declaration stresses that PHC performs a central function in national health systems, constituting an integral part of a continuing health care process – which includes prevention, promotion, cure, and rehabilitation – and that, as part of a broader process of social and economic development, PHC should involve cooperation between other sectors to promote social development and tackle the determinants of health\(^6\).

In Brazil, in the middle of the 1990s, the Ministry of Health established the Family Health Strategy (FHS) as the front door of the country’s public health care system, the Sistema Único de Saúde or SUS. However, the separation of functions across different levels of care remains unclear, particularly in large cities where traditional structures of health care provision are strongly consolidated\(^7,8\).

The organization of primary care services based on the essential and derivative attributes of primary care (first-contact care, longitudinality, comprehensiveness, and coordination of care; and family centeredness, community orientation, and cultural competence, respectively) results in better health indicators, more effective treatment of chronic conditions, improved efficiency of health care and patient flow, increased utilization of preventive services, greater user satisfaction, and a reduction in inequalities in access to health services\(^9\).

Donabedian\(^10\) developed a three-pronged conceptual framework for assessing the quality of care built around the concepts of structure, process, and outcomes. The Primary Care Assessment Tool (PCAT) was designed to assess the presence and extent of the attributes of primary care, enabling the analysis of the structure and process of primary care services and thus enhancing the rigor and quality of the assessment of health services\(^11\).
The assessment of the presence and extension of attributes of primary care is fundamental for measuring the outcomes and quality of care, providing parameters for health managers and professionals to improve practice and guide policies designed to promote advances in local health care systems and thus improve the quality of care delivered to the population of a given region\textsuperscript{12,13}.

This study assessed the quality of primary care services in São José de Ribamar in the State of Maranhão to support the development of new forms of organization, enable the reorientation of professional practice, and inform decision-making tailored to specific local and regional characteristics, with the aim of improving the quality of services delivered to the community and, ultimately, ensuring compliance with the guiding principles of PHC and the SUS.

**Methodology**

We conducted a quantitative evaluation of the organizational characteristics and performance of the services provided by family health teams in São José de Ribamar between October and December 2018, based on the attributes of primary care proposed by Starfield\textsuperscript{1}. According to the Brazilian Institute of Geography and Statistics (IBGE), in 2018, São José de Ribamar was the third largest city in the State of Maranhão (with an estimated population of 176,321 people) and had a Human Development Index (HDI) of 0.708 (high)\textsuperscript{14} in 2010, which was higher than the state average of 0.639 (medium).

According to the São José de Ribamar City Department of Health, in 2018, the city had 38 primary care facilities and 46 health teams working in the FHS, providing a population coverage of 89.6\textsuperscript{15}.

The study population consisted of all doctors and nurses from the care network’s 46 family health teams (including care facility managers) and users of the FHS. The following inclusion criteria were used for the selection of the health professionals: had been working in the health team for at least two months; and not on a break, annual leave, or medical leave during the study period. Only 88 of a possible 92 eligible professionals were working during the data collection period (October to December 2018). Of these, four refused to participate in the study and two were not found after three attempts on random days. In addition, some of the professionals were dismissed or transferred during the study period, resulting in a final sample of 73 professionals from 44 teams (corresponding to 95.65\% of all the family health teams in the city’s primary care network) working in 35 primary care facilities (corresponding to 92.11\% of all the facilities making up the city’s primary care network).

Twelve service users were selected for each of the 44 teams. The users were randomly selected in the health facilities on different days and shifts. Where the user was aged under 10, the interview was conducted with the child’s carer. No attempt was made to make the sample gender/age-heterogeneous. A total of 386 service users were interviewed (adults and carers).
Three versions of the PCAT-Brazil were used: the Child Edition, Adult Edition and Professional Edition\textsuperscript{11}. For each edition, the questions were answered using a Likert scale with the following options: 1 = definitely not; 2 = probably not; 3 = probably; and 4 = definitely. The option “Don’t Know/Cannot Remember” was scored as “0”.

Based on the validated version of the PCAT-Brazil, each score was standardized on a scale of 0 to 10, where scores of 6.6 and above were considered to be high (options 3 or 4 in the original scale)\textsuperscript{16}.

\[(\text{Score - 1}) \times 10\]
\[\text{3}\]

The essential score was the average score of the components making up the essential attributes of primary care (first contact, longitudinality, coordination, and comprehensiveness). The derivative score was the average score of the components making up the derivative attributes of primary care (family centeredness and community orientation). The overall score was the average score of all of the components of the essential and derivative attributes of primary care\textsuperscript{16}. Scoring was based on the PCAT-Brazil manual\textsuperscript{11}.

The use of the different editions of the PCAT-Brazil has increased in recent years. This may be explained by the publication of the validated instrument manual by the Ministry of Health\textsuperscript{11}, which has been available through its official communication channels since 2010.

The PCAT is easy to use and understand, making it a quick and cost-effective instrument for evaluating work processes and the conditions of health services\textsuperscript{17}.

A team of 11 field researchers (eight pharmacy, medicine, and nutrition undergraduate students and three postgraduate students from ABRASCO/FIOCRUZ’s Family Health master’s program) received training covering all stages of the study, including the discussion of the study objectives and questionnaires, critical reading and analysis of questions, instructions on participant selection filters, the informed consent form and ethical issues, and correct filling in of the questions. After training, a pilot survey was performed in a primary care facility in São Luís, the capital of the State of Maranhão, in September 2018, resulting in adjustments in the identification of interviewees and suggestions for modifying the application of the instrument.

The health professional interviews were conducted in the workplace and/or during meetings held by the City Health Department with FHS nurses who also occupied management positions in the last quarter of 2018. The service users were interviewed in private in the health facility.

The answers were entered into a database using the Epi Info 7.2 and checked for consistency. The data were analyzed using Stata 14.2 adopting a 95% confidence interval and standard deviations.
Participation in the study was voluntary and the respondents were able to withdraw freely at any stage of the questionnaire or refuse to answer any question. The respondents were not identified to ensure confidentiality and protect anonymity.

This article is part of the project “Evaluation of the quality of primary care services in the Unified Health System in two municipalities in the State of Maranhão”, approved by the Maranhão State University Hospital Research Ethics Committee (HUUFMA CAAE 89446318.6.0000.5086, approval code 2.788.428).

Results

The final sample consisted of 73 health professionals from 44 family health teams and 386 service users (354 adults and 32 children) from 35 Primary care facilities.

Table 1 shows the scores for the essential attributes and their components. From the perspective of the health professionals, the only attribute with an average score below the cut-off point (6.6) was access (3.91±0.4) and the highest scoring component was information system, which is part of the coordination attribute (8.93±0.4). From the perspective of the service users, the lowest-scoring component was accessibility (3.43±0.1). Only two components, utilization (7.77±0.2), from the access attribute, and information system (6.97±0.2), from the attribute coordination, obtained high scores (6.6 and above).

<table>
<thead>
<tr>
<th>Essential attributes</th>
<th>Professionals</th>
<th>Users</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Average</td>
</tr>
<tr>
<td>First-contact care</td>
<td>70</td>
<td>3.91</td>
</tr>
<tr>
<td>Utilization</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Accessibility</td>
<td>70</td>
<td>3.91</td>
</tr>
<tr>
<td>Longitudinality</td>
<td>72</td>
<td>7.57</td>
</tr>
<tr>
<td>Coordination</td>
<td>73</td>
<td>8.41</td>
</tr>
<tr>
<td>Integration of care</td>
<td>73</td>
<td>8.15</td>
</tr>
<tr>
<td>Information system</td>
<td>73</td>
<td>8.93</td>
</tr>
<tr>
<td>Comprehensiveness</td>
<td>69</td>
<td>7.79</td>
</tr>
<tr>
<td>Services available</td>
<td>70</td>
<td>7.51</td>
</tr>
<tr>
<td>Services received</td>
<td>72</td>
<td>8.19</td>
</tr>
</tbody>
</table>
The derivative attributes (family centeredness and community orientation) are shown in Table 2. The highest-scoring attribute among the professionals was family centeredness (8.9±0.4). The lowest-scoring attribute among the service users was community orientation (5.03±0.3).

Table 2. Average derivative attribute scores on a scale of 0 to 10. São José de Ribamar, 2018.

<table>
<thead>
<tr>
<th>Derivative attributes</th>
<th>Professionals</th>
<th></th>
<th></th>
<th>Users</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Average</td>
<td>95% CI</td>
<td>n</td>
<td>Average</td>
</tr>
<tr>
<td>Family centeredness</td>
<td>73</td>
<td>8.90</td>
<td>8.59-9.21</td>
<td>385</td>
<td>5.52</td>
</tr>
<tr>
<td>Community orientation</td>
<td>73</td>
<td>7.58</td>
<td>7.17-7.99</td>
<td>338</td>
<td>5.03</td>
</tr>
</tbody>
</table>

The presence and extension of the attributes of primary care based on the average overall scores is shown in Table 3. The average overall scores for the essential and derivative attributes were 7.28 (± 0.2) and 8.02 (±0.3), respectively, among professionals and 5.44 (±0.2) and 5.27 (±0.3), respectively, among users.

Table 3. Total attribute scores and overall score on a scale of 0 to 10. São José de Ribamar, 2018.

<table>
<thead>
<tr>
<th>Score</th>
<th>Professionals</th>
<th></th>
<th></th>
<th>Users</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Average</td>
<td>95% CI</td>
<td>n</td>
<td>Average</td>
</tr>
<tr>
<td>Essential attributes</td>
<td>65</td>
<td>7.28</td>
<td>7.07-7.49</td>
<td>105</td>
<td>5.44</td>
</tr>
<tr>
<td>Derivative attributes</td>
<td>73</td>
<td>8.02</td>
<td>7.69-8.35</td>
<td>335</td>
<td>5.27</td>
</tr>
<tr>
<td>Overall score</td>
<td>65</td>
<td>7.54</td>
<td>7.33-7.75</td>
<td>103</td>
<td>5.47</td>
</tr>
</tbody>
</table>

Discussion

The scores of each attribute of primary care show that the health professionals rated PHC more positively than the service users. According to the professionals, service performance was satisfactory across the attributes, with the majority of components being scored above 6.6. These results are consistent with the findings of other studies showing that health professionals rate services more positively than service users. The average essential, derivative, and overall scores reported by service users were unsatisfactory. This finding is similar to those of other studies assessing service quality from the perspective of service users using the PCAT.
Studies assessing PHC using the same methodology show that professionals tend to give better ratings for service quality\textsuperscript{21,22}, while service users and carers tend to be more critical\textsuperscript{23}. With regard to the contradictions between professionals’ and service users’ perceptions of the attributes assessed by this study, the holistic view of anthropology in research of the quality of health services proposed by Atkinson\textsuperscript{24} demonstrates that rapid approaches assume that conflict between service providers and users result only from the different explanatory models and are thus resolvable through training and education. Although attention should be given to the expectations of patients, it is also important to understand health service structure. In this regard, the difference between patient expectations of service and the service received and the service limitations recognized by professionals can be minimized by providing service users a list of available services (availability of consultations with specialists, nursing consultations, inhalation, vaccination, dressings, among others). Service quality must be focused on the wider contexts of health service structure and patients’ socioeconomic circumstances.

Our findings show important differences in perceptions between professionals and service users across all attributes except access. Despite obtaining a higher score among users, this attribute did not show a statistically significant difference, meaning that both professionals and service users considered access to services to be unsatisfactory. These findings are consistent with those of other studies involving multiple actors and may be related to the difference in level of knowledge between service providers and users regarding the questionnaire items. It is likely that professionals and service users will have different interpretations and interests when it comes to attributes encompassing professional practice, team structure and work processes, service provision, screening needs, disease prevention strategies, and availability of materials and equipment, as well as differing interests\textsuperscript{21,23}.

First-contact care implies accessibility to and use of services for each new problem or episode\textsuperscript{1}. These services are identified by the population and health teams as the first source of care that is sought when there is a health need. Access is the first essential attribute capable of generating impact on health indicators\textsuperscript{25}. If the population does not have satisfactory access to the front door of PHC, it may not benefit from any of the other attributes of this level of care\textsuperscript{26,27}. The fact that access is the lowest-scoring attribute in various studies is a general reflection of the barrier to access\textsuperscript{17,21-23,28-30}. First-contact care was also the lowest-scoring attribute in the present study among both health service users and professionals, demonstrating that there is tremendous room for improvement in work processes and the use of health system performance evaluation tools.

Longitudinality is related to service user satisfaction\textsuperscript{31}. Professionals’, users’, and carers’ perceptions of this essential attribute are particularly important because longitudinal care implies the existence of a regular source of care over time regardless of the presence or absence of specific health-related problems\textsuperscript{1}.

In the PCAT-Brazil\textsuperscript{11}, first contact care is strongly related to flexibility of facility opening hours, availability of professionals for initial consultation, sense of welcome, and timely and appropriate care, including telephone advice and booking routine appointments. Longitudinal care issues are based on the development of a bond between health
professionals and service users and “continuity of information”, which takes place through the accumulation of knowledge about the subject in physical records of diseases that run in the family and the use of medication and difficulty in acquiring medicines that are unavailable in the facility’s pharmacy.

In this regard, Araujo et al. found that restricted opening hours is one of the factors that hamper access. Other factors that hinder access include organizing the schedule of doctors and nurses to prioritize care along the lines of the old vertical health programs (women’s health prioritizing prenatal care without risk stratification at each consultation and patients with high blood pressure and diabetes) and child care to the detriment of postnatal care (growth and development). The low score for first-contact care found in our study may be due to primary care facilities’ opening hours policy (7am to 5pm Monday to Friday), with 26 facilities only opening in the morning due to a reduction in the working hours of professional staff from 40 to 20 hours per week. These factors restrict access even further, which was noted in the field during the interviews. Other factors that contributed to a low first-contact care score were the lack of a telephone, which is consistent with the findings of a study conducted by Cesar in Piracicaba, and the inflexibility of opening hours, which was also found by Reis et al. in a study in São Luís.

The primary care services in São José de Ribamar have some common characteristics, including the fact that referral consultations at other levels of care must be booked at the facility in which the patient is enrolled despite the fact that facilities are not open at night or weekends. Due to the above, items such as seen at the weekend, after 8 pm, on the same day but with a waiting time of more than 30 minutes, or when the facility is closed, and the facility can be contacted by telephone were given a highly negative rating by both professionals and service users. Similar results were found by Hauser et al. in a study in Porto Alegre, especially with regard to the item the facility can be contacted by telephone.

According to Starfield, essential attributes are interrelated, meaning that the usual source of care should be comprehensive and coordinate care. With regard to coordination of care, in almost all of the studies reviewed by the authors, information system was one of the highest rated components by both service users and professionals. This component includes vaccination cards, consultation forms, availability of medical records during care activities, and the patient’s right to read their consultation forms and medical records. However, the average score for this attribute was considered unsatisfactory in the present study and in a study conducted by Paula et al. in a municipality that is a regional referral center or município-polo in the Vale do Jequitinhonha.

To obtain a high score for coordination of care, services must ensure continuity of care in other types of services and at other levels of care. Essentially, the integration of care and utilization of the information system should be capable of responding to the population’s health needs. From the professionals’ perspective, the biggest coordination challenges were booking appointments and examinations in the specialized outpatient care services and receiving useful information about the referred patient from the specialist services. Enhancing the potential of PHC as a central pillar for organizing and integrating health service networks and promotion, prevention and recovery actions is one of the main challenges facing local health managers.
Coordination of care problems related to the fragmentation of the health service network and lack of communication between different services (referral and counter-referral) are challenges not only for São José de Ribamar, but also for the entire São Luís Metropolitan Region. Poor coordination of care results in poor performance across all the essential attributes of primary care. This attribute is considered to be the pillar of PHC, because it assumes some degree of continuity, be it through the delivery of care by the same professional or the recognition of problems addressed in other services\textsuperscript{12}.

The components services available and services received under the comprehensiveness attribute were also rated as unsatisfactory by service users\textsuperscript{12,28,35}. In contrast, health professionals rated these components as adequate, which is consistent with studies conducted in Chapecó\textsuperscript{22}, Curitiba\textsuperscript{29}, Lajeado\textsuperscript{17}, and Passos\textsuperscript{30}. Ensuring comprehensiveness requires the recognition of a given population’s needs based on the understanding of a broad concept of health and the necessary resources and structures to meet these needs\textsuperscript{35} and contribute to the improvement of health service quality\textsuperscript{28}.

With regard to the derivative score, represented here by family centeredness and community orientation, the health professionals believe that services are strongly oriented towards PHC. The derivative attributes were considered to be satisfactory, which is consistent with studies in Curitiba and Passos conducted by Chomatas et al.\textsuperscript{29} and Ferreira et. al.\textsuperscript{30}, respectively. Our users rated these components as unsatisfactory, with community orientation obtaining the lowest score. This component was also considered unsatisfactory in various other studies\textsuperscript{12,28,35}.

Family and community orientation require, above all, that professionals are aware of the need for clarity of communication in order to facilitate the establishment of a bond between the patient and family health team. By establishing a bond, the professional and team can answer users’ questions, understand the community’s health problems, and encourage patient participation in local health councils\textsuperscript{11}.

Potential study limitations include the fact that the PCAT-Brazil assigns the same weight to each attribute of primary care encompassed by the instrument, assuming that the performance of services can be measured exclusively by their presence and extension. In the current context, in which we are witnessing the hypertrophy of derivative attributes, using only the self-reported experiences of health professionals involved in primary care as an evaluation criteria, without incorporating, for example, a technical evaluation of services, results in an elevated overall score due to the high derivative attribute scores\textsuperscript{29,30,37}.

Another limitation is that the dimensions and items encompassed by the PCAT are very wide-ranging. However, the PCAT-Brazil was chosen because it uses internationally recognized parameters of quality of primary care, making it possible to compare findings with other initiatives\textsuperscript{19}. One solution could be to use of a shorter version of the PCAT\textsuperscript{38} with a set of more objective questions focusing on the most relevant attributes and components for providers and service users\textsuperscript{39}. 
Final considerations

Our findings show that service users’ and health professionals’ perceptions of the quality of primary care in São José de Ribamar differed considerably. In this regard, the health professionals rated all attributes except first-contact care as satisfactory. In contrast, the health service uses rated all attributes and six components as unsatisfactory.

This study also shows that service users’ and health professionals’ perceptions of the orientation of primary health services differ, showing that the services received do not meet all the health needs of the population at this level of care. In addition to the continual technical improvement of health teams, the health facilities need to work towards meeting the needs of service users. In view of the unsatisfactory rating given by health service users for almost all of the components assessed by this study, health managers and professionals should develop methods to assess the health situation and present means of promoting changes in team work processes.

Although the association between the performance of health systems and quality of primary care is conceptually well established, there is a lack of more in-depth research into the aspects of PHC that have the greatest impact on quality. The present study was conducted with a representative population-based sample of primary care service users and using an instrument that has been previously validated for use in Brazil and numerous other countries.

Finally, further research focusing on the assessment of primary care services in São José de Ribamar based on the experiences of service users and health professionals could contribute to adding to and gaining a deeper insight into our findings, thus providing valuable inputs to support the construction of a consistent PHC model.

Authors’ contributions
All authors participated actively in all stages of the preparation of this manuscript.

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References


O estudo avaliou os atributos essenciais e derivados da Atenção Primária à Saúde (APS) na perspectiva dos usuários e profissionais de 35 Unidades de Saúde na Estratégia Saúde da Família (ESF) de São José de Ribamar, Maranhão, Brasil. Os dados de 73 profissionais e 386 usuários foram coletados em entrevistas utilizando Primary Care Assessment Tool (PCATool). Para os profissionais, o resultado foi satisfatório no escore geral (7,54), escore essencial (7,28) e escore derivado (8,02), exceto no atributo acesso de primeiro contato. Os usuários avaliaram como insatisfatório todos os atributos. As divergências encontradas revelaram que as demandas da população não são atendidas nesse nível de atenção à saúde. Se a população não acessa os serviços, não se beneficia de nenhum dos outros atributos dessa modalidade de atenção.


Translator: Philip Gradon Reed

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