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Applicability and potentiality in the use of Business Intelligence tools in Primary Health Care

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Abstract *Data management tools, called Business Intelligence (BI), can be important to provide complete and customizable information for the demands of health management. The objective of the article is to present the evaluation of the applicability and potential of a BI tool in the planning of management actions of Primary Health Care. Exploratory study, with a quantitative approach, using the dimensions of efficiency and optimization as attributes of quality. A Family Clinic was selected in the city of Rio de Janeiro. Data from the territory, from the Bolsa Família Program register and some "Care Lines" were inserted in the BI, in order to explore the possibilities of combining and generating indicators. In this article, we present the use of Form A and the pregnant woman's Care Line. As a result, greater range of detailed indicators compared to a common tab, and optimization in obtaining lists and perform monitoring tasks by the teams and the manager. Regarding efficiency, its low cost and easy handling reduces the costs of creation and necessary professionals. As a conclusion, the BI tool enables greater organization and planning, facilitating the Family Health Clinic management, mainly for the monitoring of indicators and evaluation processes.*

Key words *Business Intelligence, Information Management, Primary Health Care, Health Management, Family Health*

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Introduction

Health facility management involves the management of various types of information, including epidemiological, financial and socioeconomic data and indicators of access to healthcare and service quality. Business Intelligence (BI) tools can facilitate the organization of this process by bringing together data stored in innumerous databases and providing more complete and customizable information for health care management. Salimon and Macedo[1] define BI as follows: *... a set of methodologies, processes and technologies employed to collect, integrate, analyze and provide data, transforming it into meaningful and useful information to enable more effective "strategic, tactical and operational insights" and decision-making.*[1](p.32).

Despite the availability of BI tools, poor data quality and paper files are still a reality in various municipalities across Brazil. Some facilities still use physical records, hampering and delaying work processes. Studies show that cases such as these are characterized by limited interaction between managers and bureaucratized work processes[2]. In a literature review undertaken by Salimon and Macedo in 2017[1], various articles reported difficulties in obtaining reliable data due primarily to the nature of the sources. Boland et al.[3] also highlighted challenges in obtaining reliable data and creating new knowledge from data sources. Schaeffer et al.[4], on the other hand, emphasize the benefits of using data technology, including the reduction of healthcare costs, adverse events and readmissions, thus optimizing the entire hospital operating process. Data recording has therefore become a key issue[5].

Electronic health records

Cavalini et al.[5], define electronic health records (EHRs) as a "longitudinal collection of health data in an electronic format". For Araújo et al.[6], an EHR is a "set of patient health and care information throughout their life". Recording health data entails legal obligations involving professional and institutional confidentiality. Safeguarding this data is the responsibility of the health institution and responsible doctors and assistant doctors also have co-responsibility when in possession of or using this information. EHRs speed up appointments, facilitate diagnosis and promote more timely, efficient and cost-effective treatment[7]. Although EHRs provide greater information protection than physical records, they also pose a challenge for security[8,9].

EHR systems in Brazil include the Electronic Patient Record (EPR) and Electronic Citizen Record (ECR), which bring together all the functions and components used in health services. These systems incorporate most of the necessary components of EHRs and are adjusted based on evaluations according to operational needs[10]. Authors distinguish between EHRs and EPRs, suggesting that the former offers a broader view of the patient's records, while the latter is a more specific system, providing individual patient data and appointment history[6,11].

EHR systems support diagnosis and therapeutic responses, help organize patient flow and work processes and facilitate scientific research. They are also useful tools for evaluating processes and the quality of health services, thus supporting decision-making. In this regard, BI enables health managers to combine databases and provide complete and customizable information, making it a powerful health facility management tool.

In primary health care (PHC), more specifically the Family Health Strategy (FHS), the sequence of data collection, coding and decoding and subsequent development of an evidenced-based action plan is essential to ensure that this continuous cycle is useful and tailored to identified needs, such as the reduction of hospital admissions for ambulatory care sensitive conditions, where the performance of primary care services is a determining factor[12].

Management tools and the City of Rio de Janeiro

Rio de Janeiro is divided into 10 Planning Areas (PAs), each responsible for the planning, execution and evaluation of PHC in the area. Created in 2010 by the Rio de Janeiro City Council Department of Health and discontinued in 2017, the Observatory for Health System and Service Information and Communication Technologies (OTICS-RIO, acronym in Portuguese) was an important tool for communicating and disseminating information[13].

The aim of OTICS-RIO was to publish information in real-time, promoting interactivity, innovation, and focus on results. With points distributed across the city's 10 PAs, the Observatory was organized as a collaborative network partnering with health centers, PA coordination areas (CAPs, acronym in Portuguese) and the Sub-department of Primary Care and Health Surveillance and Promotion (SUBPAV, acronym in Portuguese). Described by Pinto and Rocha[13],

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the objectives of the network included to support health worker training, data dissemination and health communication and to help improve the quality of information management in PHC services[13]. The authors reported that OTICS-RIO promoted the wider dissemination of information, reflected in almost seven million visits to the blogs of the city's primary care centers.

Also with regard to management tools, the SUBPAV has its own data portal for indicators (http://www.subpav.org), bringing together data from various official sources and thus facilitating access to information for health teams.

PA managers still use basic tools, manual calculations, worksheets and sources extracted from various databases. Indicator calculation and data extraction is performed manually and therefore prone to mistakes. Figure 1 demonstrates the flow of information in PHC with the mediation of BI platforms.

By the middle of 2011, most of Rio de Janeiro's primary care centers had functioning EPR systems. The software was designed to meet the centers' management needs and, in 2012, it was possible to perform an integrated analysis of indicators, assess the cost of materials, human resources, patient volume and performed procedures[14]. By bringing together indicators from various sources, the information provided by BI platforms can help optimize resource utilization and make services more effective and responsive.

One of the many available BI platforms is Qlik Sense (http://www.qlikcloud.com), which has both free and paid versions. Although there are small differences between the two versions, such as the number of users and access allocations, processing capacity is the same. Like other platforms, Qlik has a version that requires installation software and can be used in offline devices. However, for the purposes of this study we used the online version.

The aim of this study was to evaluate the applicability and potential of the Qlik Sense Cloud (http://www.qlikcloud.com) for creating, using and extracting data and its versatility for management processes in a family health center in Rio de Janeiro. To this end, we used two variables related to the management of PHC actions: the service user registration form filled out by community health workers ("Form A") and Pregnant Women Line of Care.

Method

We conducted an exploratory case study using data from the period June 2018 to September 2019.

First, we modeled the intervention by constructing a logic model of the applicability of Qlik Sense to PHC to understand its rationale and the relation between necessary resources, planned activities and the expected effects of the platform[15]. Modeling can also contribute to intervention monitoring by providing a clear follow-up plan, allowing for the replication of successes and problem prevention.

Qlik Sense was assessed using data from a family health center in CAP 5.2 extracted from the electronic health record system, national regulation system (SISREG) and an official platform providing data on federal and municipal financial assistance programs (SUBPAV/BF/CFC). Additional digital datasets were constructed by the authors and others were obtained from the Ambulatory Information System (AIS) using the municipal TABNET app.

Prior to analysis, some of the data were encrypted using letters and numbers to ensure the anonymity of locations and patients. The evaluation encompassed the construction, customization and use of the tool, which consists of a set of 10 applications that use single or combined worksheets with data from various information systems.

A normative assessment was conducted to evaluate the applicability of the BI tool. The results were interpreted for each individual variable and quality was measured based on two of the dimensions of health care quality proposed by Donabedian[16]: efficiency and optimality[16,17]. Efficiency, which is the relation between inputs and outputs, concerns obtaining the expected effect of the health service or technology at the lowest cost. Optimality is defined as the most efficient balance of improvements and costs[18].

The analysis did not consider the construction time of each application, but rather focused on the *process time* and number of user clicks needed to get the desired result. This number was calculated based on the number of clicks and worksheet modifications needed to get the information.

The analysis was guided by the following variables related to the management of PHC actions: Management (duplicate records between health centers, pending medical record data); Territory (data from the service user registration

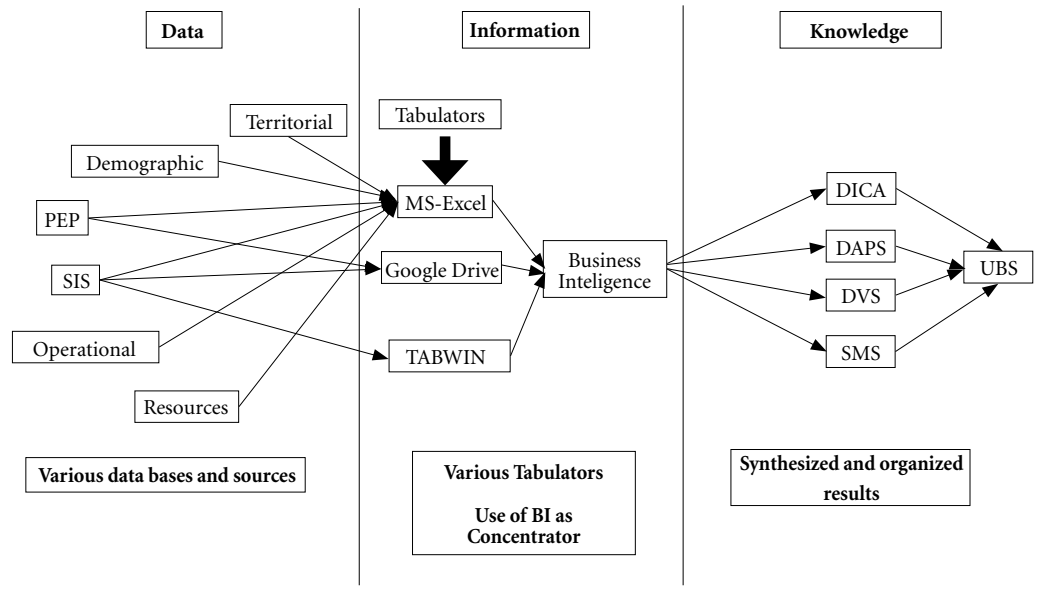

Figure 1. Flowchart of the data cycle in CAPs with BI

Source: Authors' elaboration.

form filled out by a community health worker (CHW) - "Form A", data from the financial assistance programs *Bolsa Família* and *Cartão Família Carioca*); and lines of care (Children aged 0 to 1 year, Children aged 1 to 2 years, Diabetes, Pregnant Women, and Tuberculosis). This study focused on Territory (Form A) and the Pregnant Women Line of Care.

Study area

According the most recent census (2010) conducted by the Brazilian Institute of Geography and Statistics (IBGE), Rio de Janeiro had a population of 6,320,446 million people and PAC 5.2 (Campo Grande and Guaratiba) had a population of 438,419 inhabitants. Based on data from registered service users in September 2019, 635,140 people were registered in primary care centers in the area. This difference is mainly due to the fact that the census data was already out of date in 2019. The study used data from a family health center in this area with 15,146 registered services users.

Given that CAP 5.2 has areas that are not covered by the FHS, it is likely that the actual population is greater than the number of registered service users. It is known that the same service users may be registered in more than one health center, due to the lack of integration between facility record systems. The patient records were therefore cross-checked using CPF (the equivalent of the Individual Taxpayer Identification Number) and national health card numbers to obtain a more accurate figure, resulting in the exclusion of 13,073 duplicates.

The coverage of the FHS in Rio de Janeiro increased from 3.5% at the end of 2008 to 70.9% at the end of 2016[19]. In 2009, EPRs were used in most primary care centers, comprising the main source of data. The level of FHS coverage dropped after the change of government in 2017, falling to 64.9% in 2018, with a reduction in the number of frontline professionals amounting to approximately 1,700 workers[20].

Assessment guide

An assessment guide was developed containing items relevant to the planning and management of primary care centers for each application following the steps outlined above, including preparation and gathering of the final data. Below we describe what was prioritized in the analysis of the two management variables.

Form A

Incomplete personal information in the EPRs not only hamper the analysis of individual data, but also fail to comply with a recent provision stating that the CPF is a *stand-alone document* for identifying citizens in public service databases[21]. The use of the CPF as an identification document permits cross-over between public and private systems, allowing, for example, the reimbursement of Brazil's national health service, the Unified Health System (SUS, acronym in Portuguese) by private health operators for care delivered to insured patients (Article 38, Law n. 9,656 of 1998)[22].

We assessed service users registered using Form A with missing or incorrect CPF numbers who were also registered in health insurance plans, thus accounting for missing data and inconsistencies such as incomplete numbers.

Pregnant women

The existence of complications during pregnancy with adverse consequences for delivery may be related to health problems that existed before pregnancy, such as oral health conditions. Many of these problems can be identified at antenatal checks. Lack of counseling regarding the importance of having an oral health assessment and low adherence can lead to preventable delivery complications[23].

We attempted to identify pregnant women who had not had an oral health assessment after at least two antenatal appointments in order to verify whether assessments had been performed.

The study was conducted in accordance with the regulatory norms and standards for research involving human subjects set out in National Health Council Resolution 466/2012 and approved by the research committees of the Sergio Arouca National School of Public Health, Oswaldo Cruz Foundation, and the Rio de Janeiro City Council Department of Health.

Results and discussion

The logic model of the applicability of BI to PHC is shown in Figure 2.

The basis for the construction of a logic model is a clear description of the intervention and how each component contributes to the process and achieving the end goal. In some points the components are complementary, while in others they are essential. The main advantage of the model is that is shows the links between the intervention itself and its effects, providing a visual depiction of the steps between elaboration and end goals. To this end, we developed a model that represents the intervention, which for the purposes of this study is the BI applicability to management processes operational logic model[24]. This visual representation enabled the identification of the different components of the BI tool, including operational resources, main activities and short, medium and long-term effects[24].

In order to improve understanding and the objectives of the intervention, the model was validated with the actors participating in the intervention as part of a collaborative elaboration process, resulting in alterations based on their contributions[25]. During the validation process, the following primary end goal of the use of the BI tool was defined: improve management planning, monitoring and evaluation capacity.

The second stage of the study was the utilization of the Qlik Sense Cloud. This particular tool was chosen because it has a free online version that provides all the necessary functions and does not require software installation or servers.

The first access showed that the tool is very intuitive. The platform is available in multiple languages, including Portuguese, facilitating requests. However, the majority of the codifications are in English, the dominant language used in information technology[26].

Territory/Form A

The application's Head up Display (HUD) is a little more complex, precisely because it encompasses the Territory variables that make up Form A. This information is important from an epidemiological point of view and contributes to action planning. An example of a visualization from the Form A application is regions with open sewers and without a piped water supply. The platform allows the user to click on this specific filter to identify the health teams and micro-areas with the largest number of families living in this situation, signaling the need to focus attention on these areas, which are likely to have a higher prevalence of diarrheal diseases. The HUD contained the following information: team, micro-area, health insurance plan, sex, race/color, family income, water, sewage, garbage, CPF, Statement of Live Birth, national health card, vulnerability, *bolsa família*, the updated Form A and patient list.

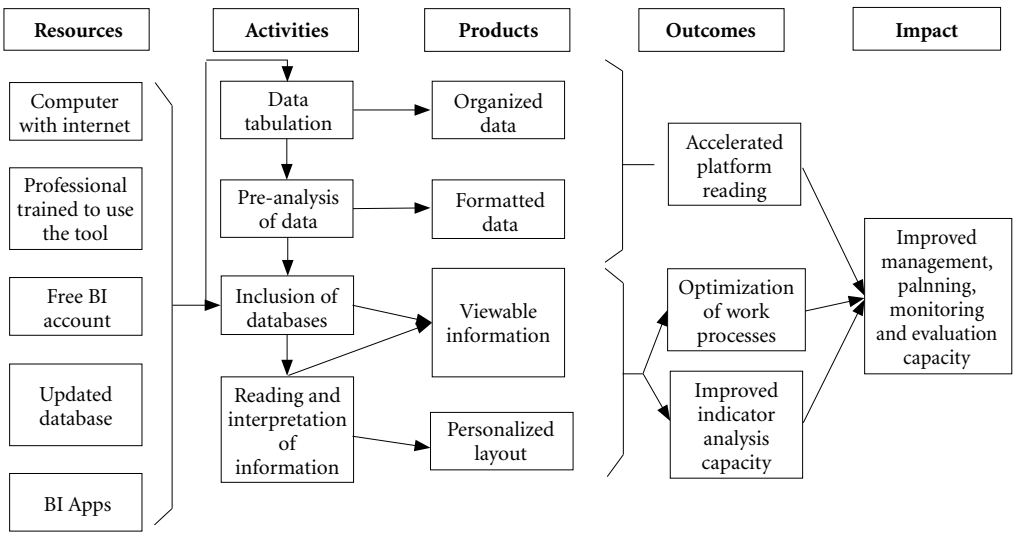

Figure 2. Logic model of the applicability of BI to PHC.

Source: Authors' elaboration.

Pregnant Women line of care

The HUD for pregnant women follows the same logic, facilitating access to information relevant to antenatal care based on important follow-up parameters. Most of these parameters are determinants of good antenatal care, reducing the probability of maternal and infant complications. The charts contained in the protocols are easy to read and show patient listings.

A small number of patients were not assessed by the oral health team after regular antenatal appointments. This may be due to lack of counseling or certain myths about pregnancy[23].

The HUD contained the following information: team and micro-areas, rapid tests, frequency of home visits, patient record risk assessment, doctor and nurse appointments, timely initiation of antenatal care, oral health assessment, and patient listings.

As above, it is possible to filter chart data according to a desired category, allowing for active searches focused on service needs.

Potential analysis

Although the tool is easy to use, some information must be taken directly from the worksheets using tabulation software filters. Depending on the degree of complexity of the worksheets, it is possible to obtain, for example, lists for specific areas and micro-areas by applying the corresponding filter. This simplified modus operandi can be used to obtain more complex information, for example a list of service users in each micro-area with out-of-date information, by applying more complex filters in the tabulator, making the tool particularly useful.

A comparative time and intervention analysis was conducted for each application to demonstrate the management support potential of each tool. The results are shown in Chart 1.

Initially the Apps were evaluated by three large groups, assessing the retrieval of the information outlined in the assessment guide to determine the velocity of data retrieval.

For other more complex cases involving the application of filters among combinations of tables, usually requiring a data processing specialist and therefore making the practical application of data by health managers infeasible, the tool showed itself to be effective for retrieving information without the need for specialist knowledge.

The analysis did not consider the construction time of each application, since this is a one-

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off event. However, these times are shown in Charts 1 and 2.

Some applications took longer than others to construct, either due to the complexity of the formulas or inexperience of the operator, as in the case of the pregnant women application, the first to be developed. The others were quicker because various formulas used in the first application were reused and adapted, speeding up the process.

The times are expressed as means, since we did not collect the exact construction time in this stage, but rather the daily time in hours. After the first construction, the HUDs were adapted according to needs, including or excluding formulas and customizing information.

In part of the guides, it was also possible to observe the potential of the BI platform even when it is used by some who is not a TI professional, i.e. even without fulfilling its full potential.

The comparison between traditional methods using tabulators and the BI platform for Form A and Pregnant Women is shown in Chart 2. Some tests could not be performed, either due to the large volume of processed data, which common computers are unable to process, or excess combinations. The tabulator used for the tests was Microsoft Excel.

The results of the tests show the potential of the platform, which was faster and required less clicks to achieve the filtering aim. Although a comparison of reliability is beyond the scope of this study, an initial analysis suggests that the results of the platform were more complete.

Although the values were close in one test, they were still 110% higher in the tabulator than in the BI platform. The differences in other tests were large, with the indicator from Form A showing a difference of 1516%, clearly showing the benefit of using the BI platform.

Similar results were found for number of clicks. Generally, the items that require more time also need more clicks, hampering the use of the tabulator for obtaining lists.

Borderline cases include Form A, which required 2800% more clicks in the tabulator than the BI platform to achieve the same result.

The results of the comparative analysis therefore demonstrate the advantages of using the BI platform, not only in terms of visualization of information such as charts, but also the extraction of lists to guide the work of family health teams. This dual view enables health managers to monitor indicator evolution processes.

Chart 1. Construction of the Form A and Pregnant Women applications.

Construction of bases	Territory	Lines of Care
	Form A	Pregnant Women
Construction time	24h	120h
Alterations	8	5
Formulas	16	10

Source: Authors' elaboration.

Chart 2. Comparative test of the platforms for Form A and Pregnant Women.

Utilization		Territory	Lines of Care
		Form A	Pregnant Women
Information retrieval time	BI	12s	26s
	Tabulator	182s	72s
Cliks	BI	4	5
	Tabulator	112	83

Source: Authors' elaboration.

Final considerations

Data management tools facilitate work processes. Advances in information technology and data processing mean that these tools are becoming increasingly accessible to health institutions. It is important to highlight that the use of BI tools optimizes the process of improving practices through the provision of important evidence for planning and decision-making. This evidence can come from everyday practice, academia, or a combination of experiences in order to obtain the best possible results[12,13,27,28]. The analysis of the BI tool used in this study clearly illustrates the potential of its systematic use in the field of health, particularly in PHC.

The proper application of these tools enables the optimization of the monitoring and management of PHC indicators, facilitating the generation of quality information to guide decision-making by health managers.

Although the BI platform has some weaknesses, as analyzed and described during the process, it also provides a number of benefits, making it a viable tool according to the dimensions of health care assessed by this study. With regard

to efficiency, the tool achieved the expected results at a low cost. In addition, after encoding and basic training, the tool can be used by anybody, reducing creation costs and the number of professionals needed to operate it.

With regard to optimality, the tool showed versatility, permitting modeling according to service and management needs and enabling the incorporation of new functionalities in future versions. In other words, this BI tool has the necessary capacity to improve procedures and work processes by providing information that is responsive to local demands. This study addresses an area that is underexplored in PHC in Brazil – the use of BI platforms for health care management – and the interoperability of health information systems. It also contributes to promoting the expansion of the use of PHC monitoring and evaluation systems. The speed of data retrieval is key to optimizing the time of both health managers and frontline workers in conducting PHC work processes.

Evidence-based innovations enable the expansion of the use of technology in health care settings. BI enables in-depth research aimed at analyzing complex data without the need for large database servers or specialist knowledge.

The findings demonstrate that the use of this BI platform for data processing in CAP 5.2 would bring gains in terms of division of information, control and evaluation. Data processing gains could be translated into more efficient actions, making it easier to achieve the objectives of the health care centers. However, since the study did not assess the direct application of the tool, such as assessment is beyond the scope of this article.

Finally, given that BI tools speed up data retrieval for planning, we recommend that a longitudinal study be conducted to assess the effectiveness of the intervention in the medium and long-term and that health teams be encouraged to use the platform.

Collaborations

DR Torres contributed to the development of the applications, data collection, the literature review, and the creation of the logic model, charts and flowcharts. GCP Cardoso contributed to the literature review, data analysis, creation of the logic model, charts and flowcharts, and drafting the text. DMF Abreu contributed to the literature review, data analysis, creation of the logic model, charts and flowcharts, and drafting the text. EA Oliveira contributed to the literature review, data analysis, creation of the logic model, charts and flowcharts, and drafting the text. DR Soranz contributed to the literature review, data analysis, development of the application guides, and drafting the text.

References

1. Salimon CC, Macedo MCS. Aplicações de Business Intelligence na Saúde: Revisão de Literatura. *J Health Inform* 2017; 9(1):31-35.
2. Littike D, Sodré F. A arte do improviso: o processo de trabalho dos gestores de um Hospital Universitário Federal. *Cien Saude Colet* 2015; 20(10):3051-3062.
3. Boland GW, Thrall JH, Duszak R. Business intelligence, data mining, and future trends. *J Am Coll Radiol* 2015; 12(1):9-11.
4. Schaeffer C, Booton L, Halleck J, Studeny J, Coustasse A. Big Data Management in US Hospitals: Benefits and Barriers. *Health Care Manag (Frederick)* 2017; 36(1):87-95.
5. Cavalini LT, Oliveira Ahiadzro NCL, Cook TW. Os Registros Eletrônicos em Saúde e seus Potenciais Impactos no Campo da Saúde Pública. *J Bras Tele* 2013; 2(4):168-177.
6. Araujo TV, Pires SR, Bandiera-Paiva P. Adoção de padrões para Registro Eletrônico em Saúde no Brasil. *RECIIS* 2014; 8(4):554-566.
7. Leal RM. *O prontuário sob a ótica da defesa médica* [Internet]. LHML [acessado 2019 mar 26]. Disponível em: http://crmpr.org.br/publicacoes/cientificas/index.php/arquivos/article/viewFile/699/683.
8. Jatene DA, Consoni FL, Bernardes RC. *Avaliação da Implementação do Prontuário Eletrônico do Paciente e Impactos na Gestão dos Serviços Hospitalares: a experiência do InCor - Instituto do Coração*. XXXVI Encontro da ANPAD; 2012.
9. Patrício CM, Maia MM, Machiavelli JL, Navaes MA. O prontuário eletrônico do paciente no sistema de saúde brasileiro: uma realidade para os médicos? *Scientia Med* 2011; 21(3):121-131.
10. Kawakami TT, Lunardelli RA, Vechiato FL. O prontuário eletrônico do paciente na perspectiva das recomendações de usabilidade: proposta de organização da informação. Inf Inf 2017; 22(3):456-483.
11. Costa JFR, Portela MC. Percepções de gestores, profissionais e usuários acerca do registro eletrônico de saúde e de aspectos facilitadores e barreiras para a sua implementação. *Cad Saude Publica* 2018; 34(1):e00187916.
12. Ferreira VRS, Najberg E, Ferreira CB, Barbosa NB, Borges C. Inovação em serviços de saúde no Brasil: análise dos casos premiados no Concurso de Inovação na Administração Pública Federal. *Rev Adm Publica* 2014; 48(5):1207-1227.
13. Pinto LF, Rocha CMF. Inovações na Atenção Primária em Saúde: o uso de ferramentas de tecnologia de comunicação e informação para apoio à gestão local. *Cien Saude Colet* 2016; 21(5):1433-1448.
14. Soranz D, Pinto LF, Camacho LAB. Análise dos atributos dos cuidados primários em saúde utilizando os prontuários eletrônicos na cidade do Rio de Janeiro. *Cien Saude Colet* 2017; 22(3):819-830.
15. Chen H. *Practical program evaluation: assessing and improving planning, implementation, and effectiveness*. Thousand Oaks: Sage; 2005.
16. Donabedian A. The seven pillars of quality. *Arch Pathol Lab Med* 1990; 114(11):1115-1118.
17. Conill EM. Avaliação em saúde: bases conceituais e operacionais. *Cad Saude Publica* 2011; 27(1):195.

18. Frias PG, Costa JMB da S, Figueiró AC, Mendes MFM, Vidal SA. Atributos da Qualidade em Saúde. In: Samico I, Felisberto E, Figueiró AC, Frias PG, organizadores. *Avaliação em Saúde: Bases Conceituais e Operacionais*. Rio de Janeiro: MedBook; 2010.
19. Soranz D, Pinto LF, Penna GO. Eixos e a Reforma dos Cuidados em Atenção Primária em Saúde (RCAPS) na cidade do Rio de Janeiro, Brasil. *Cien Saude Colet* 2016; 21(5):1327-1338.
20. O'Dwyer G, Graever L, Britto FA, Menezes T, Konder MT. A crise financeira e a saúde: o caso do município do Rio de Janeiro, Brasil. *Cien Saude Colet* 2019; 24(12):4555-4568.
21. Brasil. Decreto nº 9.723, de 11 de março de 2019. Altera o Decreto nº 9.094, de 17 de julho de 2017, o Decreto nº 8.936, de 19 de dezembro de 2016, e o Decreto nº 9.492, de 5 setembro de 2018, para instituir o Cadastro de Pessoas Físicas - CPF como instrumento suficiente e substitutivo da apresentação de outros documentos do cidadão no exercício de obrigações e direitos ou na obtenção de benefícios e regulamentar dispositivos da Lei nº 13.460, de 26 de junho de 2017. *Diário Oficial da União*; 2019.
22. Brasil. Lei nº 9.656, de 3 de junho de 1998. Dispõe sobre os planos e seguros privados de assistência à saúde. *Diário Oficial da União*; 1998.
23. Torres DR, Lopes MGM. Saúde bucal no pré-natal: Integralidade sem restrições. In: Dias PRV, Rendeiro MMP, Costa MH, organizadores. *Intervenções possíveis no território: práticas em saúde da família no SUS*. Rio de Janeiro: Editora UERJ; 2015. p. 167-179.
24. Champagne F, Brousselle A, Hartz Z, Contandriopoulos A-P. Modelizar as Intervenções. In: Brousselle A, Champagne F, Contandripoulos A-P, organizadores. *Avaliação: Conceitos e Métodos*. Rio de Janeiro: Editora Fiocruz; 2011.
25. Cardoso GCP, Oliveira EA, Casanova AO, Toledo PPS, Santos EM. Participação dos atores na avaliação do Projeto QualiSUS-Rede: reflexões sobre uma experiência de abordagem colaborativa. *Saude Debate* 2019; 43(120):54-68.
26. Sawaya MR. *Dicionário de Informática e Internet*. São Paulo: Nobel; 1999.
27. Brum TC. *Oportunidades da Aplicação de Ferramentas de gestão na Avaliação de Políticas Públicas: O Caso da Política Nacional de resíduos Sólidos para a Construção Civil* [monografia]. Juiz de Fora: Universidade Federal de Juiz de Fora; 2013.
28. Rolim EC. Uso de ferramentas de gestão clínica e de segurança do paciente em uma unidade básica de saúde no distrito federal. *CCS* 2018; 29(1):79-83.

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