DOI: 10.1590/1413-812320152010.03262015

The framework of the practice of innovation in primary healthcare: a case study

Cristine Hermann Nodari [1]
Maria Emilia Camargo [1]
Pelayo Munhoz Olea [1]
Eric Charles Henri Dorion [1]
Suzete Marchetto Claus [1]

Abstract *The objective of this study was to identify the practice of innovation in primary healthcare in the second-largest county, by population, in the state of Rio Grande do Sul, Brazil. The methodology employed case studies of multiple units of analysis, where various studies were simultaneously conducted. Forty-five semi-structured interviews were carried out with the directors of basic health clinics, followed by content analysis, beginning with the construction of a system of categories based on the literature. Fifty-six innovations in total were identified: Eighteen were innovations of products (goods and/or services), fifteen in processes, eleven in marketing, and twelve were organizational innovations. Studies that focus on and highlight innovation in primary healthcare facilitate changes, improvements, and alternatives in the form of services provided to the population, serving as a basis for the formulation of public health policy. Finally, we also highlight the limitations and opportunities of future research.*

Key words *Innovation, Primary healthcare, Management*

[1] Programa de Pós-Graduação em Administração, Universidade de Caxias do Sul. R. Francisco Getúlio Vargas 1130, Petrópolis. 95070-560 Caxias do Sul RS Brasil.
cristine.nodari@gmail.com

Introduction

The analysis of the approach related to innovation introduces elements that establish distinct advantages in an organizational context. "Innovation" is defined in terms of the search for, discovery of, and experimentation with and the adoption of new products, processes, and forms of organization generated by new research findings, to offer something new for consumers. In accordance with the Oslo Manual, which has its objective the fixing of guidelines for the interpretation of data regarding innovation, this can occur in any sector of the economy, including governmental services such as health and education[1].

Primary health-care (APS, from *atenção primária à saúde*) is comprised of an organizational form of reorientation and restructuring for many health systems[2]. Currently, the principal strategy geared toward the organization of APS is the Family Health Strategy (ESF - *Estratégia da Saúde da Família*) which has received important financial incentives aiming at the expansion of coverage for the population and reorganization of care[3,4].

With this in mind, we emphasize three current documents that strengthen the standards of the idea of APS, as well as the specific characteristics that direct this analysis, beginning with the construct of innovation. The first of these is the Manual of Evaluation Methods, recognized by the Secretary of Primary Health Care and the Ministry of Health as a tool for evaluating quality, as well as the utilization of the term APS as an equivalent of Primary Care, the term historically used in the Brazilian context[3.] The second document is a publication of the National List of Actions and Health Services (RENASES), introducing a list of criteria and guidelines for access to services according to the complexity of levels of care[4], determining the identity as much as the nature of health services rendered. These actions are implemented for health services according to their complexity, establishing their responsibility. The third document, published in 2011 by the Brazilan chapter of the Pan-American Health Organization (OPAS), "Representation: Brazil," focuses on the stabilization of primary healthcare networks (RAS – *Redes de Atenção à Saúde*) as the main point of access to APS, emphasizing its fundamental role in a health context[2]. In addition, in the present context of Brazilian healthcare there is evidence of a continued necessity to find the elements that can define and represent the best practices for the improvement of health services, with the final objective of providing them to the population through the organizational structure of the APS[2,5,6].

In this sense, considering the importance of the APS for the organization and granting of health services[5,6] and – if the APS indeed introduces something innovative to healthcare – the theories and conceptual framework regarding innovation permit an approximate direction in the search for different forms of interpreting findings based on the facts. In light of this context and taking the theoretical orientation about innovation as a starting point, the research objective was to identify innovations and their repercussions in the APS of one county in Rio Grande do Sul (RS). Therefore, we initially sought to identify those actions and services that were considered new practices offered by a basic healthcare unit (UBS – *Unidade Básica de Saúde*) to the population, afterwards considering their relation to the relevant documents in the literature, thereby stimulating the development of observations and improvements of the configurations in which these services are delivered to the population, and consequently in contemplating alternatives for the formulation of public health policy.

Methods

The research was exploratory and descriptive in character, in which the chosen work method was a case study[7] of the APS in the second-largest county in terms of population in the state of RS[8], which represents a standard of reference in the healthcare sector[9]. Beginning with the 45 UBS distributed through the county, the current network permits access to services of medium and advanced complexity. In addition, it possesses thirty-six teams of ESF in 22 UBS units, and eighteen teams of Dental Health Strategy (ESB – *Estratégia de Saúde Bucal*) in 10 UBS. Public health constitutes one of the largest budgets in the county[10]. Every UBS possesses its own manager responsible for coordinating the workloads between the SMS and population assigned to the UBS. In terms of characteristics, the population of directors has a training in nursing, are statutory civil servants, and 57.7% (n = 26) correspond to a period of five years and one month in the role of management of a UBS, this also being the average duration found for the role of UBS management in the county. In addition, 17.7% (n = 8) possess graduate degrees at the level of a masters, 60% (n = 27) hold graduate degrees in their

Ciência & Saúde Coletiva, 20(10):3073-3086, 2015

area of specialization, and 22.2% (n = 10) of the management holds graduate degrees.

45 individual interviews were carried out at length with these managers, identifying the existence of innovation and in what form these innovations were developed, considering the dimensions of innovation of products (goods and services), processes, marketing, and organization. Keeping in mind that the interview subjects might not have full knowledge of the concepts related to the research subject, index cards were created displaying the definitions as used by the Oslo Manual[1], minimizing digressions and assumptions in respect to the research subject. The research method was applied and verified by specialists in the area of study[11]. The interviews were recorded, according to previous authorization, with a Philips® Model LFH-615/27 Voice Recorder. We proceeded with an analysis of the content that – alongside an objective, systematic, and quantitative description of the apparent content of the communications - has as a technique of investigation the primary objective of explaining these same communications[12,13]. The normal average is that a transcription of an interview demands between four and six times the length of the actual recording[7,12]. 45 interviews were transcribed, representing approximately 62 hours of recording, onto 312 pages of text with 1.5 spacing, 12-point Times New Roman font in Microsoft Word 2007, carried out in a period of 73 days. It is useful to emphasize that the organization and selection of UBS units were arranged in a random way, and were identified during the work as UBS1, UBS2, UBS45 etc. with the intention of protecting the identity of those interviewed and the confidentiality of information specific to each UBS, as we informed them at the time of data collection.

In the effort to reduce the vast quantity of material into major units of analysis, we broke down the material into a structural model of codification[12,13]. In the proposed method of analysis, not all communications were considered, only those passages that related to the categories of analysis. The passages that constituted the recorded units were tagged with codes that serve as an index for the frequency of the categories, according to Chart 1.

In this research we used a manual form of coding, structured concomitantly with a related database alongside its tabulation. For this activity, the computer program Microsoft Office Excel 2007 was used, wherein we created a database that included as entries all the significant units identified in the interviews. It is salient that in choosing the categories for a construction of a framework of analysis to to use for evaluation, much care was taken to select representative and trustworthy factors. We resorted to categories that we chose to call "convenient"[14], named for their lesser degree of uncertainty, and at times we discarded other more complex or subjective dimensions. Since this was an exploratory investigation, we noted the necessity of guiding the control of collected data in the most incisive way, or rather with the most objectivity in the grouping together of different stages for the reduction of data. Hence, the narratives of the interview subjects followed a structure proposed by the research technique, but were not called upon for verification. In gathering such a quantity of significant information in this qualitative analysis, we identified difficulties in assembling all the elements involved, since the characteristics of service delivery in healthcare behave heterogeneously in their final result.

Nevertheless, it is necessary to emphasize that the application of due scientific rigor is not dependent on the choice of method utilized, and even in adopting this qualitative approach we must attend to the principles that accompany each of the methods involved[14] – including cognizance of questions related to ethics in the practice of research. Therefore, ethical principles were followed during all phases of the development of the research, with approval by the Committee of Ethics In Research of the Nossa Senhora de Pompéia Hospital, as well as submission to Plataforma Brazil - Brazil's electronic network of ethics boards which oversee research involving human subjects - in accordance with the institutional norms of the university.

Results

The characteristics and traits of the county relating to their UBS are presented in Table 1. The UBS comprise the APS of the town of Caxias do Sul (RS), possess a physical structure that ranges from 350m2 to 600m2 and business hours of twelve hours a day. For the populations served by the UBS units in the county, seven are located in the countryside and 38 are located in urbanized areas of the county of Caxias do Sul. Currently 22 UBS possess ESF and 10 UBS possess ESB. We can observe that those UBS which contain ESF and ESB had the largest total number of identified innovations, between product, process, mar-

Chart 1. Definition of themes, analytical categories, and entry codes.

Theme	Theoretical Foundation	Operational Definition	Classifcation	Definition of Classification
Identification of innovation	OCDE[1], AHMED[15], DAMANPOUR et al.[16]; HIGGINS[17]; TIDD et al.[18]	Implementation of a new or significantly improved product (goods or services), process, new marketing method, new organizational method in the practice of management and business, or in the organization of the workplace or external relations.	IPROD	Introduction of a new good or service, or of one that is significantly improved regarding is characteristics and intended uses.
			IPROC	Introduction of a new or significantly improved method of production or distribution. Includes significant changes in techniques and equipment.
			IMARK	Introduction of a marketing method with significant changes to the concept of a product or service, its positioning, or its promotion.
			IORG	Introduction of an organizational method in the management practices of a company, the organization of its workplace, or its external relations.
			TAS	The absence of any occurrence of innovation.
Categories of Analysis	**Theoretical Foundation**	**Operational Definition**	**Code**	**Definition of the code**
Motivation (Cause)	OCDE[1]; DAMANPOUR et al.[16]; TIDD et al.[18]; MENDES[2,19]; BRAZIL[4]	Cluster of factors and elements that generate a necessity, which interact with each other, and determine the behavior and form of a change with the aim of improving the process analyzed.	GES	Management
			DMP	Demand of the population
			INK	Healthcare information and knowledge
			AGA	Speed of service
			APO	Access by the population
			COR	Coordination of service
			HZA	Humanization
State/Condition (How)	STARFIELD[20]; MENDES[2,19]; GAULD et al.[21]; GIOVANELLA[22]; CHREIM et al.[23] BRAZIL[4]	Resources used to achieve the change.	AQT	Acquisition of technology
			AES	Expansion of a physical, material or personal structure.
			ANL	Analysis of the space according to workers and population.
			CER	Certification in relation to federal laws, norms, and ordinances.
Sectors / Location (Where)	STARFIELD[20]; MENDES[19]; GAULD et al.[21]; CHREIM et al.[23] GIOVANELLA[22]; BRAZIL[4]	Units where the changes occurred.	NAU	In the UBS
			POU	In the specified population
			SAL	In the County Secretariat of Health

it continues

Ciência & Saúde Coletiva, 20(10):3073-3086, 2015

Chart 1. continuation

Categories of Analysis	Theoretical Foundation	Operational Definition	Code	Definition of the code
Extension	OCDE[1]; TIDD et al.[18]	The intensity and extension of the change caused by the scope of the innovation. A radical innovation is that in which the changes are greater and more extensive compared with their initial state, An incremental innovation is when the changes occur along an incremental gradation of sequential innovations.	RAD	Radical
			INC	Incremental
			MER	Market
Novelty	OCDE[1]; TIDD et al.[18]	To be considered an innovation, the minimum requirement is that the introduced change is new to the organization, regardless of whether it has been implemented by other organizations: we are concerned only with innovation in this organization, An innovation is considered new to the market when the organization is the first to introduce it to its own market, which is defined as the organization and its competitors, and can include a geographic region or a product line, Thus the geographic region which is new to the market is subject to the view of the organization itself about its market of operation, and can include national or international organizations.	ORG	Organization

Source: Author's research

keting, and organization, as well as retaining the largest consolidated investment.

In Table 2, the results pertinent to the identification and classification of the elements proposed in the methodology are emphasized. 56 total innovations are identified, of which eighteen were found to relate to the theme of product innovation, accounting for 32% of total innovations. Of these, five innovations occurred in all the UBS, while thirteen innovations were introduced in different UBS. In the theme of process innovation, fifteen innovations were found, representing 27% of the total innovations. Of these, four innovations occurred in all the UBS, and eleven innovations were introduced in different UBS. There were twelve innovations in marketing identified in forty-five UBS, representing 21.5% of total innovations. In relation to the theme of organizational innovation, eleven innovations in all were found, representing 19.5%

Table 1. Characteristics of Basic Healthcare Units (UBS).

Unit	Number of innovations identified	ESF teams	ESB teams	Number of registered patients (with SUS card)	Number of Micro-areas	Total employees*	Total investment by UBS in 2012**
			0				
UBS1	15	0	0	2,014	4	7	613,991
UBS2	16	0	0	4,567	4	9	674,980
UBS3	15	0	0	1,092	5	10	895,091
UBS4	21	0	0	5,078	0	10	897,638
UBS5	24	0	1	14,326	9	17	1,501,099
UBS6	41	2	0	18,439	14	28	2,740,698
UBS7	21	1	0	8,790	0	8	1,102,234
UBS8	20	0	0	10,548	9	16	1,391,235
UBS9	15	1	1	1,021	5	6	178,859
UBS10	39	2	0	16,734	5	25	2,245,679
UBS11	15	0	0	1,032	0	9	796,639
UBS12	15	0	0	0,980	4	9	492,069
UBS13	18	0	0	5,343	0	9	972,660
UBS14	16	0	1	0,875	4	14	738,968
UBS15	29	2	0	17,748	10	28	1,863,422
UBS16	16	0	0	0,986	0	7	896,123
UBS17	19	1	0	8,564	0	12	1,018,734
UBS18	18	1	0	14,768	8	12	1,321,456
UBS19	15	0	0	3,421	0	7	902,310
UBS20	16	0	1	10,876	0	9	984,980
UBS21	22	2	1	17,874	13	16	1,679,907
UBS22	26	2	0	21,326	12	18	1,917,817
UBS23	17	0	1	3,290	0	8	884,532
UBS24	20	1	1	11,943	9	21	1,212,347
UBS25	22	1	0	10,765	0	21	1,493,959
UBS26	15	0	0	5,104	0	8	658,752
UBS27	15	0	0	4,112	0	7	764,213
UBS28	18	0	0	1,098	5	9	862,623
UBS29	21	1	0	6,329	0	15	1,092,987
UBS30	13	0	0	2,003	0	8	287,325
UBS31	17	1	0	9,256	0	13	1,193,456
UBS32	16	0	0	4,045	0	9	599,702
UBS33	27	2	0	12,769	9	24	1,456,232
UBS34	23	1	0	18,345	8	27	1,351,639
UBS35	20	0	0	1,876	0	13	1,005,712
UBS36	19	1	0	1,009	0	12	1,122,129
UBS37	21	2	0	1,432	0	11	1,223,422
UBS38	25	1	0	5,127	0	8	1,115,622
UBS39	18	0	1	1,873	0	8	937,098
UBS40	49	4	1	23,745	13	51	5,647,549
UBS41	29	2	0	14,923	10	34	1,757,547
UBS42	15	0	0	3,987	0	8	961,622
UBS43	15	0	0	1,034	0	7	824,981
UBS44	17	2	1	10,220	7	20	1,289,944
UBS45	51	3		17,234	8	32	3,032,936

Source: National Registry of Healthcare Institutions[24].
* Public servants and contract workers; ** In millions of Reais (R$).

of total innovations. It should be noted that these results were identified using the narratives of those interviewed, namely the directors of the UBS, as detailed in the methodology section. Nonetheless, the limitations of the research can be identified concerning verification in a wid-

Ciência & Saúde Coletiva, 20(10):3073-3086, 2015

Table 2. Summary of the frequency of entries for category codes, by type of innovation.

	Cause / Motive			State / Condition			Sector / Location			Expansion			Novelty		
Product Innovation (N = 18 /32%)	**Code**	**Entries**	**%***	**Code**	**Entries**	**%***	**Cód.**	**Entries**	**%***	**Cód.**	**Entries**	**%***	**Cód.**	**Entries**	**%***
	GES	121	37	AQT	9	5	NAU	98	40	RAD	0	-	MER	164	74
	DMP	71	22	AES	52	31	POU	127	52	INC	193	100	ORG	55	25
	INK	49	15	ANL	89	54	SAU	19	7						
	AGA	13	5	CER	14	8									
	APO	48	14												
	COR	3	1												
	HZA	17	6												
Process Innovation (N = 15 /27%)	**Cause / Motive**			**State / Condition**			**Sector / Location**			**Expansion**			**Novelty**		
	Code	**Entries**	**%***	**Code**	**Entries**	**%***	**Cód.**	**Entries**	**%***	**Cód.**	**Entries**	**%***	**Cód.**	**Entries**	**%***
	GES	64	27	AQT	7	15	NAU	17	65	RAD	0	-	MER	6	22
	DMP	58	25	AES	9	20	POU	9	35	INC	19	100	ORG	21	78
	INK	10	4	ANL	28	63	SAU								
	AGA	6	2	CER	0	-									
	APO	1	0,4												
	COR	93	40												
	HZA	7	3												
Marketing Innovation (N=11 /21,5%)	**Cause / Motive**			**State / Condition**			**Sector / Location**			**Expansion**			**Novelty**		
	Code	**Entries**	**%***	**Code**	**Entries**	**%***	**Cód.**	**Entries**	**%***	**Cód.**	**Entries**	**%***	**Cód.**	**Entries**	**%***
	GES	0	-	AQT	0	-	NAU	5	23	RAD	0	-	MER	8	34
	DMP	2	7	AES	0	-	POU	16	76	INC	16	100	ORG	15	66
	INK	22	78	ANL	19	100	SAU	0	100						
	AGA	0	-	CER	0	-									
	APO	0	-												
	COR	3	10												
	HZA	1	3												
Organizational Innovation (N=8 /19,5%)	**Cause / Motive**			**State / Condition**			**Sector / Location**			**Expansion**			**Novelty**		
	Code	**Entries**	**%***	**Code**	**Entries**	**%***	**Cód.**	**Entries**	**%***	**Cód.**	**Entries**	**%***	**Cód.**	**Entries**	**%***
	GES	0	-	AQT	0	-	NAU	16	64	RAD	0	-	MER	7	50
	DMP	0	-	AES	3	17	POU	9	36	INC	9	100	ORG	7	50
	INK	0	-	ANL	15	83	SAU								
	AGA	7	27	CER	0	-									
	APO	0	-												
	COR	19	73												
	HZA	0	-												

Source: Author's research.

* Average, expressed as a percentage, of the total entries identified in the interview transcripts.

er sense, in spite of the research method having been validated by specialists[11].

Discussion

Innovation in Products and/or Services

The innovations in products are distributed in three major groups. The first group corresponded to the introduction of products such as exams, medications, and materials inserted in the context of prevention, early diagnosis, and treatment for the healthcare coverage of the population. In the case of exams, the main changes occurred in terms of access, in the sense of making available exams that were conducted in centralized laboratories such as those for detecting carcino-embryonic antigens, spermograms, and bacilloscopy for the diagnosis and control of

tuberculosis. In the same way, highly complex exams were made according to a hierarchy and were customarily only carried out after consultations with specialists. In relation to the diversity of medications introduced, many of the drugs that are not in the Handbook of Essential Medications (RENAME) authorized by the Ministry of Health[25] – such as, for example, 500 mg ampicillin capsules, 12 mcg formoterol inhalant capsules, 25 mg levomepromazine in pill form, and 25 mg imipramine in pill form, among others – are considered innovations. The introduction of hepatitis C treatment encouraged the loyalty of the end-user client to the UBS, linking the on-site infectologist to the UBS where the tests were realized. In the same way, an introduction of parenteral diets for gastrostomy were financed directly with resources available to the UBS, according to a previous assessment of the user by a team of UBS professionals.

The second group of product innovations consisted of the introduction of new services in agreement with the social, cultural, economic, and epidemiological characteristics of the population at hand. These services were offered via partnerships with other institutions of a public, private, and non-governmental (NGO) nature. One example of such a partnership is the fitness program with the Municipal Secretariat of Sports and Leisure (SMEL): the training of participants aims to improve their employability in the marketplace. The ESB was also considered a product innovation in the context of the USBs, as it was a new service available to the population, characterized as an innovation for the market. In other words, although the establishment of the ESB by the Ministry of Health already existed, for the county municipality it was regarded as something new, with different and relevant characteristics, expertise, and skills made available in that community context[23,26,27].

The third group of product innovation responded to the introduction of highly-educated professionals from different backgrounds who, along with academic and technical interns, were providing access to new services. In the case of interns in physiotherapy and nutrition, both groups were reinforced by links to educational institutions in the county that aimed to promote their teaching practices. With the interns, different initiatives regarding continued engagement and treatment in the spread of services with the community were observed, as was already observed in established practices[28,29]. In the same way, the introduction of health professionals with different backgrounds – such as training in speech pathology, psychology, and social work – also facilitated access to services at the UBS which were, to various degrees, previously available as specialized consultations.

When analyzing the document of RENASES, it appears that some product innovations fall within the actions and services of APS components[4]. However, other product innovations that we found are classified as additional components of RENASES. Although the rules of access in the RENASES document do not mention APS as an available, freely accessible service to the user (to avail themselves of the innovations identified in the third paragraph of the fifth section of his article), we can identify some flexibility regarding the offer of actions and services. In other words, the possibility of the integration and alteration of health technologies, through their supplementation by RENASES, obliges the states and municipalities to inform the National Commission on the Incorporation of Health Technologies (CONITEC) about new services offered in their regions.

As we consider the groupings of product innovations, we can emphasize that all the references are coded. The most referenced code for the cause of these innovations pertains to management (GES), followed by demand from the community (DMP). In the second group of product innovations related to the introduction of services, we obtained references to the codes for humanization (HZA, healthcare information and knowledge (INK), and management (GES). These introduced services resulted in mobilizing healthcare workers in conjunction with those characteristic aspects of the community that promoted social inclusion by way of job training, which was characterized as humanization, or in other words the capacity to create better life conditions for the population[30,31].

The third group corresponds to the introduction of professionals with different types of training, as well as interns, in which we obtained significant references to the code for management (GES), following by the code for healthcare information and knowledge (INK). It can be assumed that the organizational character of educational institutions will be enabled by the management of the SMS in their goal of establishing teaching and research practices. In addition, the capability of financial and human resources defined by SMS management, who designate the allocation of health professionals to different areas, is linked to the code for management[19].

Ciência & Saúde Coletiva, 20(10):3073-3086, 2015

The analytical category for state and condition – that is to say, how innovations were introduced – considers the resources utilized for the execution of a change and improvement. The most referenced code for the three groups that constitute product innovations was for the local analysis made by health workers and population (ANL), the expansion of the physical, material, and personal infrastructure (AES), and the certification regarding laws, norms, and ordinances (CER). The unit of customer service closest to the community – the first point of contact – establishes links and knowledge concerning the principle health problems present in the population[20,21]. In this way the resources utilized in the change of an offered service were part of a professional relationship with the user.

In the category of the sectors and locales in the introduction of product innovations – where they were implemented – the most frequent entry was the code referring to the population (POU), representing the greatest percentage for ten of the eighteen product innovations. Subsequently, the second most frequent code was to the UBS (NAU), and the last was to the SMS (SAU). This shows that in this aspect of analyzing the production of services, it is during the contact between the end-user and the organization, in the exact moment when the service provider and the user interact – the place where service is established – is determined by this analysis to be most evident for the community[15].

Furthermore, we can identify the intensity and extent of the change caused by the reach of the innovation. All of the encountered and analyzed innovations we found were classified as taking place in gradual and sequential increments, while none of them were categorized with the code for a radical expansion (RAD)[18,32]. Regarding the degree of novelty in product innovations, we found in our analysis mention of the code for market novelty (MER), and for organizational novelty (ORG) in the case of UBS. Once again, in this category it was possible to identify evidence of the inseparability of production from the consumption of a service[32]. The end-user actively solicits the intervention by which the provider utilizes his skills in their favor, thereby determining the nature of the analysis of health service innovation.

Innovation of Processes

When we consider the definition of process innovation in light of what was encountered in the empirical evidence, elements were identified which mobilize and modify the coordination of the production of a service, which in the context of UBS includes significant changes in relation to techniques and equipment.

One example is the innovations that incorporate the addition of new equipment in the production of a service, such as the autoclave, which allows the UBS to perform its own sterilization of all the material used. This is in contrast to the way the process was previously done, wherein all the material was collected by each individual UBS and transported to a sterilization site, causing delays in delivery and loss of instruments and material.

Process innovations constitute significant changes in the production techniques of a service, shifting activities and functions to the UBS as the efficient location for the provided service. As one example, we have the collection of laboratory data and tests conducted in the household, which brings equipment and staff to the house of the patient. This avoids moving the patient to other facilities, minimizing the high absenteeism that for financial reasons is related to the moving of the user, and avoids the discontinuation of treatment. Another process innovation was the regulation of additional shifts of family visits by the ESF, established under systematic control for the special needs of the UBS population, currently carried out with the assistance of five automobiles and one home service team (SAD) together with an ambulance.

The matrix support method of mental health was identified by ten UBSs as a process innovation. Two or more teams with different professional training, together in a collaborative project with the UBS, created a proposal for a therapeutic educational intervention in an approach with the family, according to the mental disturbances of the patient. Formerly, individuals were transferred to specialists according to their specific needs. In light of this change, according to the analysis of the interviews, patients persisted in their therapy with recurring participation, as did the families who were responsible for guiding their everyday activities.

When considering the groupings of process innovations, we can emphasize that all of them were given reference codes. The most frequently referenced code regarding the cause of these innovations – the necessity for change in a given behavior – was for service coordination (COR), followed by management (GES) and community demand (DMP). The analytical category of

state and condition – how the innovations were introduced – resulted in the most frequent reference to the code for local analysis on the part of workers and the community (ANL), present in eight of the fifteen innovations, followed by the expansion of the physical, material, and person infrastructure (AES) and the acquisition of technology (AQT). The utilization of resources listed in this category to achieve process innovations originated with employees and the community that are involved in the production of the health service. In other words, the relation of the service that yields the result in the form of changes, improvements, and even innovations, involves direct interactions all throughout the productive process which require the participation of the end-user as an essential element[15,19,32].

In the category of where these process innovations take place, we observe the highest rate of incidence in the UBS (NAU) for ten out of fifteen innovations, followed by four instances that occurred in the community (NAU). In considering the analysis as a whole, in which a large portion of the UBS is shown to be a cause for the coordination of services (COR), it becomes plausible to assert that the sector or locale where this improvement took place was the UBS. However, it should be evident that the final objective would be the quality of service delivered to the community. In addition, we identify that the intensity and extension of change are caused by the scope of process innovation with frequent references to all the innovations as incremental (INC).

Regarding the degree of novelty in process innovations, we find only two major frequent references to the market code (MER), which refers to innovations in nutritional education for school meals with the support of the SME, and education in physiotherapy at the neighborhood NGOs for the inclusion of treatment by the UBS of patients with movement disabilities that can benefit from the long-term maintenance of treatment. Two innovations – dispensation of continuous prescription drugs for patients with hypertension and diabetes portioned into separate bags with labels specifying the quantity and interval of dosage, and the monitoring of diabetic insulin depending on home application and disposal using sharp-edged instruments – were considered changes introduced for the market and organization. The majority of the references in the remaining innovations were to the code for novelty to the organization (ORG) representing changes in only an institutional context.

Innovation in Marketing

In observing the final results found in marketing innovations, we identified systematic activities in an organization, in the case of UBS, oriented toward the search for and execution of exchanges related to an environment, in this case of the population, or aiming for specific benefits, in the case of the increase in demand for customer service and the consumption of services. The innovations corresponded to the activities carried out by the UBS and oriented to an external public. In this sense, we can establish that there is a marketing innovation in the publicizing of services in association with religious institutions where, within the setting of religious congregations near the local communities, there is a diffusion of actions, campaigns, and the administration of the population's needs by the UBS. In this same line of thinking, we verified the use of research with the Local Health Council, seeking to identify and address the deficiencies and weaknesses pointed out by the community in the context where the USB is embedded.

Another innovation listed was the educational activity of companies in the county. As a result of the current climate of growth of manual labor in civil construction in the county, an educational booklet was created, aiming at the prevention of work accidents and work-related disabilities. Health professionals were shifted within their work areas, developing initiatives for education and prevention of the factors associated with the augmented risk of these activities. The cost of these accidents is enormous, as much for the individual as for the companies and for society[33,34].

There were innovations identified that related to the activities of creation, publicity, and communication inside the UBS structure, evidently oriented towards its users. Of these, we cite the activities of radio publicity of actions and campaigns by the UBS aimed at those waiting for an appointment or looking for medication medication, as a means of communication with its users. In addition, activities that stimulated the population toward maintenance and preventive health measures were observed, as in the case of the campaigns, "Perfect Smile" and "Healthy Baby."

In relation to the overview of the rate of entries of analysis by code in the first category, or rather the motive for occurrences of these marketing innovations, the majority of references are to the healthcare knowledge and information

Ciência & Saúde Coletiva, 20(10):3073-3086, 2015

(INK) in a continuous process of creation, communication, and distribution of value, understood here as services offered.

In relation to the second category of analysis, referring to the resources utilized to make the change possible, we obtained mentions of the ANL code for all the innovations found related to this theme. In this way, implemented marketing innovations begin with health workers' identification and understanding of the necessity of new approaches in their services, and of opportunities to leverage improvements that establish stronger links with the population, as for example in work developed with the elderly.

The third category of analysis, which sought to identify the location of the occurrence of these innovations, showed references to the codes for the population (POU) and the UBS (NAU). If we are to consider that marketing innovations presented are improvements made according to the health workers with and for the population, it is suitable to identify their occurrence within these units.

Regarding the fourth analytical category about the scope of change, all the references were to the corresponding code for incremental innovation (INC). In the analysis of transcriptions, it is observed that the interviewed subjects describe the intensity of change in terms of the different sequential stages that culminate in a process of consolidated change[18,32], apparently well represented in the case of innovations like "Perfect Smile," "Healthy Baby", and "Guidebook for Civil Construction – Risk Prevention and Healthcare."

In conclusion, in the category of novelty, marketing innovations presented references to the codes for the market (MER) for three innovations: in the publicity for UBS services carried out in association with religious institutions, and in the campaigns "Perfect Smile" and "Healthy Baby", where in the transcript analysis the interview subjects remarked that there did not exist similar or better practices, even within the private healthcare market in the county, for these types of actions. Regarding organizational novelties, we obtained references to eight innovations.

Organizational Innovations

In the organizational innovations introduced, we identified methods of improvement in the organizational practices of the workplace and in management (OCDE, 2005). Those practices related to organizational improvements in the workplace corresponded to innovations such as restructuring that provided different age groups better access to the physical space for consumption of UBS services, and the structuring of an observation room for cases in the most fragile states of health that need monitoring. An elaboration of standards of operational procedures (POP) was also considered an organizational innovation, as it established a standardization and balancing of medical staff and other high-level professionals that attended various UBS, who sometimes bring their own mental models to the work process.

The mapping of UBS users by address consisted in a standardization of actions determined by microareas of specified user groups, characterized by similar needs, for referral to ACS teams in an optimized form seeking rapid resolution, understood here as principles of efficiency and efficacy in quality of healthcare[35]. The family medical chart was also identified as an organizational innovation in some UBS, where a model was elaborated for the collection and control of all information relevant to a family. This method permits the elaboration of strategies in guiding the proposal of services based on the ESF model, strengthening the link between users and the actions and services of the UBS.

Another organizational innovation encountered refers to computerization (SIS.SAP) for scheduling units and material storage, present in forty-one UBS. This innovation was classified as organization although the control mechanisms already existed, with only a change to the mental model of utilizing digital information. This was a significant change in the thinking of managers, which brought as a consequence an improvement in the various difficulties confronted by the UBS, such as the misuse of the SUS card in duplicate withdrawals of monthly medications, difficulty in scheduling special procedures, and others.

The online organization of patient referrals to the hospital, by way of the Hospital Bed Database, was also considered an innovation, as it permitted transparency of action not only for the health workers that comprise the UBS, but also for the patients who consult the UBS as their first contact in the search for information about the process of hospitalization. In the end, the permanent healthcare education, achieved and strengthened weekly by professionals and advancing different training, aimed at the improvement in the handing of customer service in the proposal of actions and services. It was identified that these actions permit the establishment of analysis based on improvements demonstrated

in the management practices of UBS with other levels of hierarchy in RAS, as already occurs in international contexts and work practices[31,36,37]. Furthermore, in the example of the county we cite the flux in scheduling of high-risk groups such as diabetics or patients with hypertension that is done via telephone with UBS, giving these patients priority in terms of local medical service.

As a motive for organization innovation, we found five innovations representing the most frequent references to the code for coordination of services (COR, *coordenação do serviço*), followed by the code for rapid patient attendance (AGA, *agilidade no atendimento*). If we consider that the identified activities have as their objective the optimization of organizational methods and management, it is therefore appropriate for the interview subjects to consider that these changes were motivated by the necessity of coordination that facilitates the advancement of the process, which consists of servicing the population.

The second category of analysis – which is concerned with how these innovations occurred, or rather, which resources were necessary to make such changes viable – the most frequent factor mention in the analyzed interview transcripts was the local analysis made by health workers and the population found in seven innovations, followed by the physical, material, and personal expansion (AES). Once again, for this theme we obtained an identification of the necessity for improvement based on the viewpoint of the actors involved in the process of innovation in health services. In the category of divisions/locations of the occurrence of changes, we obtained the most references to NAU in six innovations, and references to code POU in four. All the innovations were considered incremental by the analysis of the extension category. For the degree of novelty in the organizational innovations, we encountered in the analysis of the whole group that six innovations obtained mentions to two of the proposed codes, however none of the innovations presented a major rate of referral to the code MER, which presupposes that these changes remained new for the organization, a requirement to categorize them as an innovation according to the literature[1,18,32].

Final considerations

Innovation is synonymous with change and, in the organizations that develop them, offering services and setting new processes in motion. The APS represents one of the most relevant interventions of the SUS[38,39], in contexts of great social, economic, and demographic diversity mediated by technical, ethical, and political injunctions that make possible the organizational success and, consequently, the effectiveness of the intervention. In this sense, the different forms of identifying innovations are in some fashion related to characteristics of their production. The study of innovations in a product and/or service, process, organization, or in marketing corroborates our understanding of the dynamics of innovation and interlocutions in the trajectory of APS.

According to our research, the innovations occur principally at the organizational level, and in this environment, the innovations are emphasized due to their capacity to find the best ways of doing things or taking up challenges, in spite of what are often very limited resources. The innovation in APS represents the capacity for adaptation, of the development of a culture of excellent and of continuous improvement in search of quality[21,34]. The analysis of productivity in APS is one determining factor in the evolution of health systems at the local, regional, and national level.

It is worth highlighting that in the interpretation of innovations found in the four proposed dimensions, the process of innovation is identified as continuous, being constituted by a series of incremental changes in the organizational environment. These changes span improvements in the intended function, as a new or improved disposition; a technological procedure; an administrative tool that furnishes a variation in production; in the delivery of health services; or in the instruments necessary to their delivery. Hence any characterization of the process of innovation should initially begin with the concept of innovation as a response of the organization to the pressures of the environment in which it exists. Therefore, starting with the motivating factors of innovation, we find elements associated with these responses, such as the necessity of onsite management, coordination, demand from the population, and the generation of information and knowledge. However, while understanding that there exist APS structures in other Brazilian counties that have already considered actions and services identified in this research, for the researched counties these were emphasized as differential, aside from being highlighted in the literature and official documents as innovative practices.

Thus, studies that highlight and have as their object the innovation of the basic health network can optimize changes in the form of services de-

livered to the population, serving as a basis for larger changes in the formulation of public health policies and, crucially, for very important questions to the scientific community that could be an agent of transformation in the way that these services are conceived and planned, impacting the improvement of the healthcare system. This study produced findings about a theme with few empirical studies, from the standpoint of innovation in APS, however it is limited to pointing out the possibility of the identification of limitations. Given the importance of the theme, especially for those responsible for the management of labor in the SUS, the conducting of complementary studies is necessary, with the aim of elucidating opportunities and discussing technology in the process of health work, especially in APS.

In spite of the fact that the research aims to encompass the population of the UBS that represents the APS of the county, it can be emphasized that this does not allow generalizations, sine the results found in this exploratory research are not always the same as those found in a different field situation where there are often unforeseen variables and elements that can impact the results. For this reason, the conclusions remain restricted to the research environment; however, they suggest an orientation for conducting works based on these researched themes, by the rigor in the description of the methodological stages that represent a necessary characteristic of exploratory and qualitative research.

In the same way, while the empirical results of this article suggest some limits to their reach, in the sense that they involve an exploratory study of a county APS, the empirical evidence reinforces the central supposition of the research: that there are actions and services considered new practices offered by the basic healthcare unit to the community, which therefore constitute innovations and consequently a local development. As a proposal for future research based on the results, and with the aim of refining and complementing the findings, we suggest expanding the research to other municipalities in the state. Since the characteristics regulated by the government are considered as guidelines, yet also establish the local implementation of healthcare actions, we find that it is at the local, county level of responsibility that there is an effort to furnish information contributing to the development and incorporation of these actions on a national level.

Collaborations

CH Nodari, ME Camargo, PM Olea, ECH Dorion and SM Claus participated equally in every stage of preparation of this article.

Acknowledgements

Thanks to the National Postdoctoral Program in the Coordination for the Improvement of Higher Education Personnel (PNPD – CAPES) for funding this research.

References

1. OECD, Eurostat. *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data*. 3ª ed. Paris: OECD Publishing; 2005.
2. Mendes EV. *As redes de atenção à saúde.* Brasília: Organização Pan-Americana da Saúde; 2011.
3. Brasil. Ministério da Saúde (MS). Secretaria de Atenção em Saúde. Departamento de Atenção Básica. *Manual do instrumento de avaliação da atenção primária à saúde: primary care assessment tool-PCATool-Brasil.* Brasília: MS; 2010.
4. Brasil. Ministério da Saúde (MS). *Relação Nacional dos Serviços em Saúde-RENASES.* Brasília: MS; 2012.
5. Brasil. Conselho Nacional de Secretários de Saúde (CONASS). *Sistema Único de Saúde*. Brasília: CONASS; 2011.
6. Conill EM, Fausto MCR. Análisis de la problemática de la integración APS em el contexto actual: causas que inciden en la fragmentación de servicios y sus efectos en La cohesión social. Proyecto EUROsocial Salud, Intercambio "Fortalecimiento de la Integración de la Atención Primaria con otros Niveles de Atención". Documento técnico. Rio de Janeiro: IRD; 2007. [acessado 2013 jan 10]. Disponível em: http://www5.ensp.fiocruz.br/biblioteca/dados/arq6952.pdf.

7. Gil AC. *Métodos e técnicas de pesquisa social.* São Paulo: Atlas; 2007.
8. Instituto Brasileiro de Geografia e Estatística (IBGE). *Economia em Saúde*. [página na internet]. [acessado 2012 dez 12]. Disponível em: http://downloads.ibge.gov.br/downloads_estatisticas.htm
9. Claus SM, Capra MLP. *Potencializando a Gestão para organizar o SUS a partir da Rede Básica.* Porto Alegre: Dacasa; 2002.
10. Prefeitura Municipal de Caxias do Sul. Secretaria do Desenvolvimento Econômico. [página na internet]. [acessado 2013 jan 12). Disponível em: http://www.caxias.rs.gov.br
11. Nodari CH, Olea PM, Dorion, E, Severo EA. Innovations in primary care management: a Brazilian Experience. *World Review of Entrepreneurship, Management and Sust. Development* 2012; 8(2):165-180.
12. Flick U, Gibbs G. *Análise de dados qualitativos.* Porto Alegre: Bookman; 2005.
13. Bardin L. *Análise de conteúdo*. Lisboa: Edições 70; 2006.
14. Creswell J. *Projeto de Pesquisa: métodos qualitativo, quantitativo e misto*. Porto Alegre: Bookman; 2009.
15. Ahmed PK. *Benchmarking Innovation Best Practice.* Europe Centre of Total Quality Management. Bradford: University of Bradford; 2001.
16. Damanpour F, Szabat P, Evan CJ. The relationship between types of innovation and organizational performance. *Journal of Management Studies* 1989; 26(6):45-98.
17. Higgins JM. *Innovate or evaporate: Test & Improve Your Organization's IQ: Its Innovation Quotient*. United States: New Management Pub. Co.; 1995.
18. Tidd J, Bessant J, Pavitt K. *Managing Innovation: Integrating Technological, Market and Organizational Change.* England: John Wiley & Sons; 2005.
19. Mendes EV. As redes de atenção à saúde. *Cien Saude Colet* 2010; 15(5):2297-2305.
20. Starfield B. *Atenção primária: equilíbrio entre necessidades de saúde, serviços e tecnologia*. Brasília: Unesco, Ministério da Saúde (MS); 2002.
21. Gauld R, Blank R, Burgers J, Cohen AB, Dobrow MK, Ikegami NKI, Kwon S, Luxford K, Milett C, Wendt C. The World Health report 2008-Primary healthcare: How wide is the gap between its agenda and implementation in 12 high-income health systems? *Health Policy* 2012; 7(3):38-58.
22. Giovanella LA. Atenção Primária à Saúde nos países da União Européia: Configurações e Reformas Organizacionais na década de 1990. *Cad Saude Publica* 2006; 22(5):951-963.
23. Chreim S, Williams BE, Janz L, Dastmalchian A. Change Agency in a Primary Health Care Context: The Case of Distributed Leadership. *Health Care Manag Rev* 2010; 35(2):187-199.
24. Brasil. Secretaria de Atenção à Saúde. Cadastro Nacional de Estabelecimentos em Saúde-CNESNet. [página na internet]. [acessado 2012 dez 8]. Disponível em: http://cnes.datasus.gov.br.
25. Brasil. Ministério da Saúde (MS). Portaria nº 533, de 29 de março de 2012. *Diário Oficial da União* 2012; 30 jul.
26. Greenhalgh T, Robert G, Macfarlane F, Bate P, Kyriakidou O. Diffusion of innovations in service organizations: Systematic review and recommendations. *Milbank Quarterly* 2004; 82(4):581-629.
27. Yarnall KSH, Pollak KI, Østbye T, Krause KM, Michener JL. Primary Care: Is there enough Time for Prevention? *Am J Public Health* 2003; 93(4):635-641.
28. Grumbach K, Bodenheimer T. Can Health Care Teams Improve Primary Care Practice? *JAMA* 2004; 291(10): 1246-1251.
29. Parfitt BA, Cornish F. Implementing family health nursing in Tajikistan: From policy to practice in primary health care reform. *Soc Sci Med* 2007; 65(8):1720-1729.
30. Barnett J, Vasileiou K, Djemil F, Brooks L, Young T. Understanding innovators experiences of barriers and facilitators in implementation and diffusion of healthcare service innovations: A qualitative study. *BMC Health Services Research* 2011; 11(2):987-1001.
31. Roblin DW, Vogt TM, Fireman B. Primary health care teams: Opportunities and challenges in evaluation of service delivery innovations. *J Ambul Care Manage* 2003; 26(1):22-35.
32. Gallouj F. *Innovation in the service economy.* London: Edward Elgar Publishing; 2002.
33. Brasil. Ministério da Saúde (MS). *More health: a right for everyone: 2008-2011*. Brasília: MS; 2008.
34. Canadian Health Services Research Foundation. *Casebook of Primary Healthcare Innovations.* Montréal: Government of Canada; 2010.
35. Brasil. Ministério da Saúde (MS). Portaria nº 4.279, de 30 de dezembro de 2010. *Diário Oficial da União* 2010; 12 jan.
36. Mitton C, Dionne F, Masucci L, Wong S, Law S. Innovations in health service organization and delivery in northern rural and remote regions. *International Journal of Circumpolar Health* 2011; 70(5):460-472.
37. Charles-Jones H, May C, Latimer J, Roland M. Telephone triage by nurses in primary care: What is it for and what are the consequences likely to be? *Journal of Health Services Research and Policy* 2003; 8(3):154-159.
38. Ohira RHF, Junior LC, Nunes EFPA. Análise das práticas gerenciais na Atenção Primária à Saúde nos municípios de pequeno porte do norte do Paraná, Brasil. *Cien Saude Colet* 2014; 19(11):4439-4448.
39. Mitre SM, Andrade EIG, Cotta RMM. Avanços e desafios do acolhimento na operacionalização e qualificação do Sistema Único de Saúde na Atenção Primária: um resgate da produção bibliográfica do Brasil. *Cien Saude Colet* 2012; 17(8):2071-2085.

Article submitted 10/09/2014
Approved 15/05/2015
Final version submitted 17/05/2015