
Barriers to healthcare coordination in market-based and decentralized public health systems: a qualitative study in healthcare networks of Colombia and Brazil

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Abstract

Although integrated healthcare networks (IHNs) are promoted in Latin America in response to health system fragmentation, few analyses on the coordination of care across levels in these networks have been conducted in the region. The aim is to analyse the existence of healthcare coordination across levels of care and the factors influencing it from the health personnel' perspective in healthcare networks of two countries with different health systems: Colombia, with a social security system based on managed competition and Brazil, with a decentralized national health system. A qualitative, exploratory and descriptive–interpretative study was conducted, based on a case study of healthcare networks in four municipalities. Individual semi-structured interviews were conducted with a three stage theoretical sample of (a) health (112) and administrative (66) professionals of different care levels, and (b) managers of providers (42) and insurers (14). A thematic content analysis was conducted, segmented by cases, informant groups and themes. The results reveal poor clinical information transfer between healthcare levels in all networks analysed, with added deficiencies in Brazil in the coordination of access and clinical management. The obstacles to care coordination are related to the organization of both the health system and the healthcare networks. In the health system, there is the existence of economic incentives to compete (exacerbated in Brazil by partisan political interests), the fragmentation and instability of networks in Colombia and weak planning and evaluation in Brazil. In the healthcare networks, there are inadequate working conditions (temporary and/or part-time contracts) which hinder the use of coordination mechanisms, and inadequate professional training for implementing a healthcare model in which primary care should act as coordinator in patient care. Reforms are needed in these health systems and networks in order to modify incentives, strengthen the state planning and supervision functions and improve professional working conditions and skills.

Key words: Brazil, care coordination, care integration, Colombia, decentralization, integrated delivery systems, managed competition, qualitative research

Key Messages

- Poor healthcare coordination is one of the main obstacles to effective healthcare.
- Empirical studies on healthcare coordination determinants are scarce.
- Results highlight organizational factors related to health systems and networks.
- Policymakers should consider them to design effective healthcare coordination policies.

Introduction

Poor coordination across healthcare levels is considered to be one of the main obstacles to attaining effective healthcare in many healthcare systems around the world, leading to difficulties in access to care, poor technical quality, discontinuity of care and inefficiencies in the use of resources (World Health Organization 2008; Montenegro *et al.* 2011). These weaknesses are particularly relevant in the care of patients with chronic conditions that require coordination across different settings and providers. Healthcare for these conditions is becoming an increasingly significant challenge to health services in middle and low income countries due to demographic and epidemiological changes (National Institute on Aging, National Institutes of Health and World Health Organization 2011).

In response to the challenge of achieving coordination of healthcare, international agencies and governments in Latin America, including those of Colombia and Brazil, have promoted the introduction of integrated healthcare networks (IHN), despite the scarce evidence of their impact (Herrera *et al.* 2007; Montenegro *et al.* 2011; Vilaça 2011). IHNs are defined as a network of organizations that provides or arranges to provide a coordinated continuum of services to a defined population and is willing to be held clinically and fiscally accountable for the health status and outcomes of the population served (Pan American Health Organization 2010). Theoretically, the integration of healthcare delivery contributes to more efficient, equitable and higher quality health services (Banks 2004) through an intermediate goal: the improvement of care coordination (Vázquez *et al.* 2009). Care coordination should help to avoid wasteful duplication of diagnostic testing, perilous polypharmacy, inappropriate referrals, and conflicting care plans (Bodenheimer 2008); thus the effects of care coordination extend beyond cost reduction to improving quality of care (Banks 2004; Ovretveit 2009; 2011).

The type of IHN promoted varies according to the health system of the country. Colombia has its General System of Social Security in Health (SGSSS), a managed competition model made up of two insurance schemes: the contributory, that covers formal sector employees and those able to pay and is financed by mandatory contributions; and the subsidized, that covers people who are unable to pay and receives funding from the contributory scheme and other sources, such as taxes (Figure 1) (República de Colombia 1993). Healthcare insurers were introduced for managing the contributory and subsidized schemes (the EPS and the EPS-S). They were to compete for the enrolment of the population and received a capitation payment per enrollee to cover a benefits package, known as the Obligatory Health Plan (POS). Until they were brought level in 2012, the benefits package of the subsidized scheme (POS-S) was greatly inferior to that of the contributory scheme (POS) (República de Colombia 2012). Competition for contracts with the insurers was also introduced among public and private healthcare providers. The SGSSS envisages *enrolment-based healthcare networks* organized by insurers. These may provide services directly through integration

with providers, although this method is restricted to the contributory scheme and limited to a maximum of 30% of insurers' healthcare expenses (República de Colombia 2007b). Otherwise, they contract services from private and public healthcare providers. Insurers establish different payment mechanisms for the services contracted (e.g. per capita payment, case-based reimbursement, fee-for-services, etc.) (República de Colombia 1993; 2007a). Furthermore, insurers are not required to organise their networks on a geographical basis. They are only required to provide low complexity health services in the enrollee's municipality of residence (República de Colombia 2007a). The lion's share of the insurance market is held by relatively few large companies: in the contributory scheme, 8 insurers (out of a total 17) hold 86% of the market, with an average of 2 237 033 enrollees per insurer, and in the subsidized scheme, 10 insurers (out of a total 36) hold 86% of the market, with an average of 1 609 156 enrollees per insurer (Ministerio de Salud y la Protección Social 2015). The uninsured population, 8.9% (Ministerio de Salud y Protección Social. República de Colombia 2012), receives care in public healthcare networks, which are delimited geographically and organized by regional and local health authorities.

Brazil, on the other hand, has the Unified Health System (SUS), a national health system with universal coverage which is decentralized into the federal, state and municipal levels of government (Presidência da República Federativa do Brasil 1998). The SUS is financed by taxes, levied mostly at the federal level and transferred to specific municipal and state funds depending on the health services they manage: for primary care and drugs the budget allocated is based on capitation, and for secondary care it is based on the activity produced (Ministério de Saúde da República Federativa do Brasil 2006). Stewardship, both in health policy formulation and in the planning, control and evaluation of healthcare, is also a shared responsibility developed by each level of government within its scope of influence. Debate and negotiation takes place in bipartite intergovernmental commissions (CIB), with the representation of municipal and state secretaries, and tripartite commissions (CIT), also with federal representation (Lobato and Burlandy 2001). Finally, healthcare provision is the responsibility of municipalities, with states as subsidiaries (Ministério de Saúde da República Federativa do Brasil 1990; 2006) and is carried out by public and private providers.

The SUS envisages the organization of health services into *regional-based networks* (*regiões*) that cover a geographically defined population at the supra-municipal level, made up of public and contracted private providers (profit or non-profit). The municipalities, in coordination with their states, are responsible for organizing the healthcare network for their populations (this includes the purchase and evaluation of services, co-ordination of patient access, etc.), providing primary care and guaranteeing specialist care through direct provision or agreements (*'pactos'*) with other municipalities (Ministério de Saúde da República Federativa do Brasil 2006).

In both countries, care is organized by levels of complexity, with primary care as the entry point and patient's care coordinator and

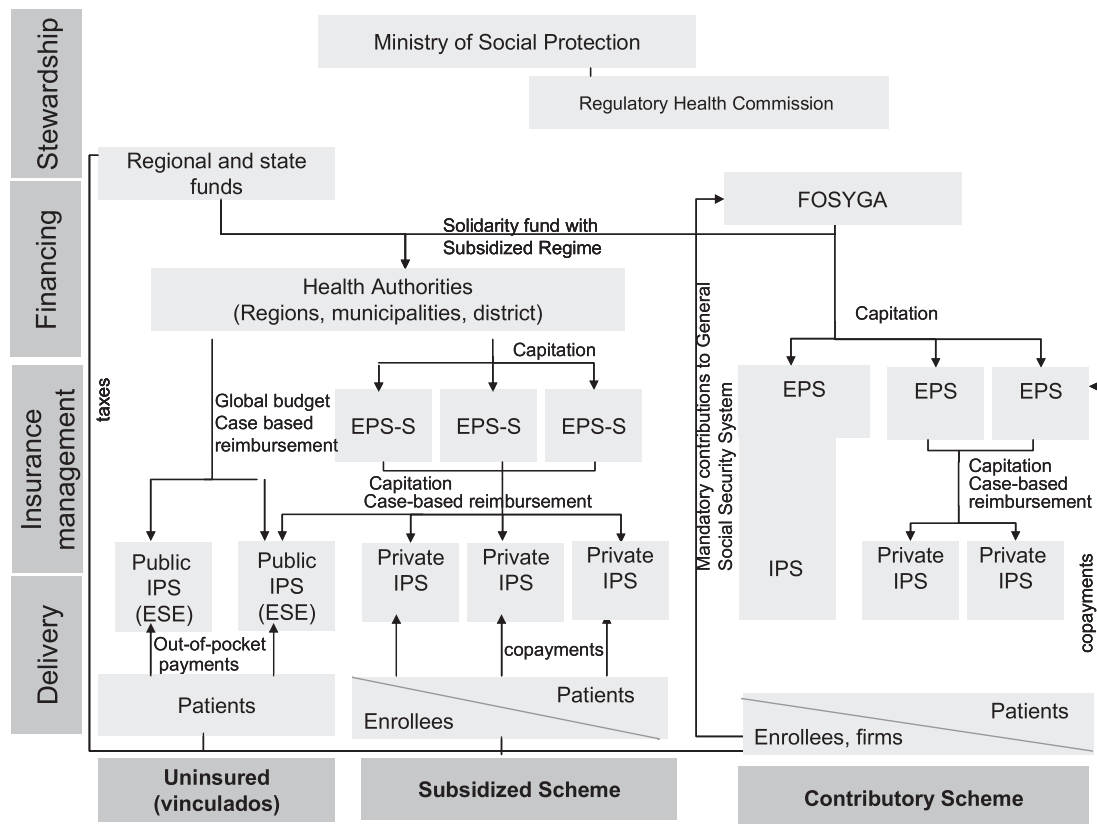


Figure 1. Model of managed competition in the Colombian healthcare system. FOSYGA: Fondo de Solidaridad y Garantía (National Health Fund); EPS: Empresa Promotora de Salud (Insurance Company for the Contributory Scheme); EPS-S (Insurance Company for the Subsidized Scheme), now called EAPB: Empresas Administradoras de Planes de Beneficios (Administrators of Benefits Plans Companies); IPS: Instituciones Prestadoras de Servicios de Salud (Healthcare Provider); ESE: Empresa Social del Estado (Public Health Provider). —Monetary flows. Source: adapted from Vargas *et al.* 2010

the secondary level in a supporting role (República de Colombia 1993; Ministério de Saúde da República Federativa do Brasil 1990). In order to restructure primary healthcare, in 1996 Brazil introduced the Family Health Program (PSF), which works through family healthcare teams (EqSF), made up of one family doctor, one nurse, one auxiliary nurse and four to six community health workers. Nearly half of all Brazilian households reported that they were enrolled in an EqSF in a survey conducted in 2008 (Giovannella and de Mendonça 2015).

Neither Colombia nor Brazil have defined the specific content of the *coordination function* of the actors responsible for organizing the network (the insurers in the former and the municipalities and states in the latter). Colombia only establishes that the insurers are responsible for organizing the referral and counter-referral system in their networks (Carrioni *et al.* 2007; República de Colombia 2007a), whilst Brazil declares in a generic way that the organization and running of the networks will be agreed between municipalities and states (Presidência da República Federativa do Brasil 2011), without defining rules on the organization and operation of the networks (Vargas *et al.* 2014).

Care coordination, an intermediate outcome of IHNs (Vázquez *et al.* 2009), is defined here as the harmonious connection of the different health services needed to provide care for a patient throughout the care continuum in order to achieve a common objective without conflicts (Terraza-Núñez *et al.* 2006). It is differentiated from *care integration*, considered the highest degree of coordination (Shortell *et al.* 2000), and from *continuity of healthcare*, that refers to how patients experience the coordination of care received (Reid

et al. 2002). Three types of care coordination can be distinguished: *information coordination*, or the transfer and use of the patient clinical information needed to coordinate activities between providers; *clinical management coordination*, or the provision of healthcare in a sequential and complementary way (Reid *et al.* 2002) and *administrative coordination*, or the coordination of patient access to the continuum of health services according to their needs (Vargas *et al.* 2015).

The analysis of the factors influencing coordination across care levels is limited. This is due, first, to the scarce development of theoretical frameworks to guide the analysis and the limited application of existing frameworks (Ovretveit 2011). The theoretical frameworks currently available come mainly from analyses of other phenomena (access to or quality of care) (McDonald *et al.* 2007) or refer to very concrete aspects of care coordination, such as team work (Gittell 2000; Van Houdt *et al.* 2013). In order to be used in an analysis of coordination across healthcare levels, they would require further adaptation based on a comprehensive review of the literature on healthcare coordination. In the existing frameworks, three types of determining factors are taken into consideration (Gittell 2000; McDonald *et al.* 2007): (1) *organizational factors*, such as payment mechanisms for health professionals, or the presence of coordination mechanisms, shared objectives or an organizational culture and leadership based on collaboration; (2) *factors related to professionals*, i.e. having a value system which predisposes them to collaborate with each other, conditioned by training and skills or previous experiences in healthcare coordination and (3) *factors related to the type of healthcare required*: the type of

Table 1. Final composition of the informant sample

Study IHNs	Healthcare professional		Administrative personnel		Managers		Total
	I level	II, III level	Insurers	Providers	Insurers	Providers	
<i>Colombia</i>							
Soacha - Network 1-S	8	7	2	12	5	6	40
Soacha - Network 4-C	5	7	0(*)	12	0(*)	3	27
Bogotá - Network 2-S	7	10	1	8	4	6	36
Bogotá - Network 3-C	11	8	4	9	5	2	39
<i>Brazil</i>							
Recife - Network 1	10	11	-	6	-	9	36
Paulista - Network 2	8	7	-	7	-	8	30
Caruaru - Network 3	6	7	-	5	-	8	26

(*)The informants refused to participate in the study.

interdependencies between the professionals involved in the care, degree of uncertainty and level of specialization of the tasks required.

Second, empirical studies that analyse health professionals' experiences on coordination across healthcare levels and its associated factors in a comprehensive manner are practically non-existent (Henao *et al.* 2009; Price and Lau 2013). Most studies, mainly from North America and Europe, focus on a single pathology: cancer (Wood 1993; Walsh *et al.* 2010; Klabunde *et al.* 2013), diabetes (Mc Hugh *et al.* 2013; Raaijmakers *et al.* 2013) and mental health problems (Lucena *et al.* 2002; Gask 2005; Benzer *et al.* 2012; Fleury *et al.* 2012; Russ *et al.* 2013). Others focus on the use of a specific healthcare coordination mechanism: electronic medical records (Pare *et al.* 2001; MacPhail *et al.* 2009; Murray *et al.* 2011), care pathways (Gache *et al.* 2014), or on a specific aspect of coordination such as the appropriateness of referrals (Martinussen 2013). These studies highlight some of the organizational and individual factors included in theoretical frameworks.

In the two study countries, the evidence is even scarcer. For Colombia, there are no evaluations of coordination between healthcare levels available. Whilst for Brazil there are some, the studies tend to be limited—with a few exceptions (Almeida *et al.* 2010)—to the analysis of just one type of healthcare coordination or the use of a single mechanism (Figueiredo *et al.* 2009; Pinto *et al.* 2012). Very few of these studies go into greater depth on the factors associated with coordination (Harris *et al.* 2007).

The aim of this article, which presents partial results from a wider study (Garcia-Subirats *et al.* 2014a,c; Vargas *et al.* 2014; 2015) is to analyse the existence of healthcare coordination across care levels and the factors influencing it from the perspective of health personnel in healthcare networks of Colombia and Brazil.

Methods

Study design and area

A qualitative, exploratory and descriptive–interpretative study was carried out based on case studies of healthcare networks in Colombia and Brazil. A case study approach was designed to provide extensive information on the phenomenon of study—healthcare coordination across levels of care—in countries with different healthcare systems, based on individual cases (Depoy and Gitlin 1994; Yin 1994).

The study was carried out in two areas of Colombia: the locality of Kennedy (Bogotá, D.C.) and the bordering municipality of Soacha; and three areas in Brazil: the state capital of Pernambuco, Recife, an adjacent municipality, Paulista, and a municipality of the

state's interior, Caruarú. The areas were selected for being densely populated urban spaces with a high proportion of the population belonging to the low or medium-low socioeconomic strata as representing the living conditions of the majority of the population.

Sample of informants

A theoretical sample was selected in three stages.

- Cases: The study case is defined as the network of health services responsible for the care of the enrolled/resident population. The following common selection criteria were applied: networks which provide at least primary and secondary care for a defined population. In Colombia: (1) insurers (EPS/EPS-S) with their own and/or contracted network of providers, (2) of both schemes: contributory and subsidized; and in Brazil: (1) municipalities with full management of the health services or of extended primary care, (2) different proportion of the population covered by the Family Health Program (PSF). In Colombia, all the insurers operating in the study areas were contacted and invited to participate by means of a letter addressed to the manager. Most of them refused to participate in the study (22 out of 27). Four networks were finally selected in Colombia (one per insurance scheme in each area) and three in Brazil, corresponding to the public healthcare network in each area.
- Providers: of different care levels (primary, secondary and tertiary care) providing care for patients from the study areas. Also, in Colombia, with different levels of integration with the insurer (own and contracted), and in Brazil, with different travel distances to secondary/tertiary care. Contributory networks in Colombia include *ambulatory care centres* which offer primary and outpatient secondary care.
- Informants, of different groups to provide variation in discourse: (1) healthcare professionals and (2) administrative personnel, both with at least six months of experience and (3) managers of providers and insurers. For the selection of informants, an institutional contact provided a list of possible candidates according to the above criteria. The final sample size was between 26 and 40 informants per network, depending on when information saturation was reached (Table 1).

Data collection

Individual semi-structured interviews were conducted with a topic guide with one common and one specific section for each informant group. The latter included opinions on care coordination across care levels (primary, secondary and tertiary care) and elements that

Table 2. Categories and sub-categories that emerged in data analysis

Analysis categories	Analysis sub-categories	
	Colombia	Brazil
Opinions on the coordination of healthcare across care levels in the networks	<ul style="list-style-type: none"> Limited, except in ambulatory care centres Lack of coordination of clinical information 	<ul style="list-style-type: none"> Limited coordination of care Lack of coordination of clinical information Limited access of patients to the appropriate care level Inappropriate patient transfer between care levels
Factors that influence healthcare coordination in the networks	<p><i>Related to health system characteristics</i></p> <ul style="list-style-type: none"> Search for economic profitability Fragmentation of POS-S <p><i>Organizational factors</i></p> <ul style="list-style-type: none"> Temporary/part-time work vs Permanent full-time contracts Insufficient time for the use of existing care coordination mechanisms Fee-for-service payment of professionals Existence/Non-existence of care coordination mechanisms Location of PC and SC in the same centre Inadequate training of healthcare professionals 	<p><i>Related to health system characteristics</i></p> <ul style="list-style-type: none"> Economic incentives in conflict with the configuration of networks Poorly qualified municipal technical teams Interference of partisan political interests <p><i>Organizational factors</i></p> <ul style="list-style-type: none"> Temporary/part-time work vs Permanent full-time contracts Insufficient time for the use of existing care coordination mechanisms Fee-for-service payment of professionals Existence/Non-existence of care coordination mechanisms Location of PC and SC in the same centre Inadequate training of healthcare professionals

PC, primary care; SC, secondary care;

POS-S, Obligatory Health Plan for the Subsidized Regime.

influence it. The interviews, mostly conducted in the workplace, lasted between 1 and 2 hours and were audio-recorded and fully transcribed. Field work took place between October 2009 and February 2011.

Data analysis and quality of information

A thematic content analysis (Miles and Huberman 1994) was conducted using the Atlas-ti software. Data were segmented by case, informant group and themes. The process of category generation was mainly inductive, emerging from the data. Themes were identified, coded, re-coded and classified, identifying common patterns by looking at regularities, convergences and divergences in data, through a process of constant comparisons, going back and forth between data. To identify the different categories of the factors influencing healthcare coordination across care levels, first, the reasons that informants attributed to the identified presence or absence of the different types of healthcare coordination were analyzed and extracted; second, similar causes were grouped (e.g., related to the existence of healthcare coordination mechanisms or work contract type) while maintaining the connection given with the perceived presence or absence of the different types of care coordination; and third, the identified causes were classified into factors related to the system, organization and professionals. Table 2 shows the list of final categories that emerged during the analysis.

In order to ensure quality of data, the information was triangulated. Results of different groups of informants were contrasted with one another and with the literature. In addition, six analysts worked collaboratively on the analysis: differences were discussed until an agreement was reached. These analysts had different backgrounds and in-depth knowledge of qualitative methods, the research topic and the context. Researchers gained awareness of their assumptions and preconceptions through reviewing the literature, seeking critique from experts in the subject under investigation, and recording and discussing their assumptions throughout the research process.

Ethical considerations

Conditions of study procedure, risk and benefit evaluation, confidence and privacy, and informed consent were approved by the ethical committees in the participating countries. In addition, confidentiality agreements were signed with all participating institutions. Free and informed consent was obtained from every interviewee. The recordings and transcripts were coded in such a way that the individual origin could not be identified, and appropriately stored.

Results

Opinions on the coordination of healthcare in the networks

In both countries, and from the discourse of all informant groups, the limited coordination across the care levels in their networks emerged:

It's one of the system's biggest weaknesses, care coordination (...) there are a lot of flaws in coordination between levels' (Insurer manager, Network 2-S Colombia); I think coordination is still very limited, very fragile. We try to run a network with all the services coordinated, but we haven't managed it yet... (Primary care professional, Network 3 Brazil).

The only exception to this was in ambulatory care centres of the contributory networks of Colombia, where coordination of healthcare was considered to be good.

The intensity with which coordination problems arise differs notably between countries. In the Colombian networks, the lack of coordination of clinical information prevails, whilst in Brazil, although this problem is also present, deficiencies in the coordination of access between levels and in the coordination of clinical management are also highlighted.

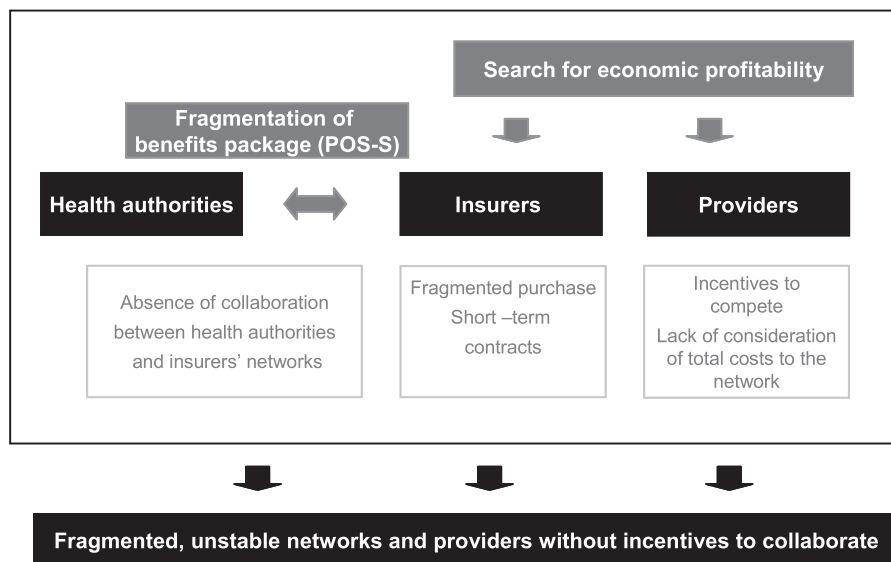


Figure 2. Health system factors that hinder Integrated Healthcare Networks configuration in the General System of Social Security in Health Colombia. POS-S, Plan Obligatorio de Salud del régimen subsidiado=subsidized scheme mandatory benefits package

In Colombia, the main problem to arise is the limited transfer of clinical information, mainly between primary and specialist outpatient care. Informants report that insufficient information is recorded in referral and counter-referral forms and shared clinical records. This hinders the primary care doctors’ follow-up of patients as they do not have access to the final diagnosis and treatment. It can also lead to the specialist restarting the diagnostic procedure, thus duplicating tests and delaying treatment:

There are other things you don’t know . . . if it was to try for two or three months to see whether it went well or not; or if they were going to keep increasing the dose or reducing it gradually. (. . .) you end up feeling a bit lost (Primary care professional, Network 4-C Colombia).

The lack of coordination of patient access across care levels, on the one hand, and of coordination of clinical management, on the other, emerges more markedly in Brazil than in Colombia. The former is reflected in the limited access of patients to the appropriate care level (primary, secondary or tertiary), and the latter, in the inappropriate referral of patients to secondary care and also in the follow-up of patients in secondary care which should be carried out in primary care:

It almost turns into a type of war: the primary care professional refers too much to the specialist, who feels overloaded with problems which should have been solved in primary care. But at the same time, many specialists continue to attend to the patients, don’t they? There they are, hanging on, in specialist care, as if that was the patient monitoring service (Administrative professional, Network 1 Brazil).

Factors that influence healthcare coordination across levels of care in the networks

From the informants’ discourse, two types of factors emerge which influence coordination across care levels. First, there are characteristics of the health system that generate vested interests in the different actors involved which act in conflict with the configuration of integrated healthcare networks. Second, there are factors related to the organization of services and the training of professionals which either facilitate or hinder healthcare coordination. The relationship

between the emerging factors, the actors involved in each healthcare system upon which these factors act and, the consequences for the configuration of the networks and for healthcare coordination are graphically represented in Figures 2–4.

Factors related to health system characteristics

In terms of characteristics of the health system which hinder the creation of integrated healthcare networks, in Colombia the main factors to emerge were the presence of market incentives in conflict with healthcare coordination and the segmentation of the benefits package (POS-S) in the subsidized scheme (Figure 2). Most informants point out that the *search for economic profitability*, the basis of the managed competition model, incentivizes insurers to establish short-term contracts and buy services in a fragmented way, splitting a single episode of illness into multiple ones to be contracted with different providers to get the best price, and encourages providers to compete with each other instead of collaborating. The severe fragmentation of provision and instability of the networks hinders the transfer of clinical information, direct communication and collaboration between providers:

(. . .) nobody’s going to work as a network because everyone will just look to their own financial benefit. So if it means I can save myself some costs, sending the patient to primary care, even if it doesn’t meet the guidelines, I’ll send him to have it done there and they can deal with it . . . (Provider manager, Network 2-S Colombia).

For the subsidized scheme, the *segmented design of the benefits packages* means that care for a single episode of illness is provided in parallel networks. The insurer network provides the POS-S services and the local authority network, the non-POS-S services. This arrangement, coupled with the search for profitability, discourages health authorities and insurers from collaborating in establishing common care criteria and in transferring patients between networks, in order to avoid assuming the costs of the care (Box 1).

In Brazil, economic incentives working against integration into networks also emerge, along with the insufficient capacity of municipalities to exercise their duties in the organization of networks and partisan political interests (Figure 3). These factors lead to a failure to

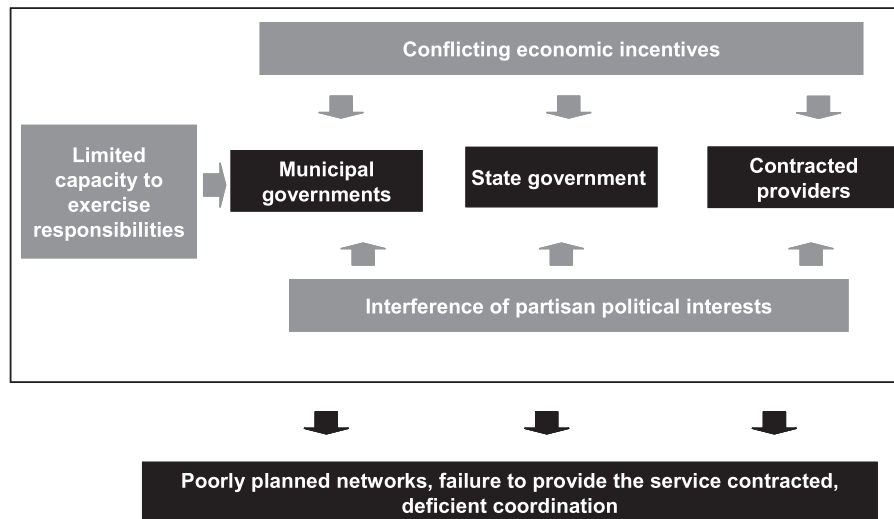


Figure 3. Health system factors that hinder Integrated Healthcare Networks configuration in the Unified Health System Brazil.

carry out the contracted activity and badly planned networks, both important obstacles to coordination between healthcare levels. The existence of strong *incentives* for healthcare providers, both public and contracted private, for not providing the healthcare activity for which they were contracted by the public funder emerges from the discourse of many informants. First, the mechanism of fund allocation to the municipalities for secondary care, based on the activity produced in the health services they manage, together with the lack of penalties, encourages the municipalities of referral for secondary and tertiary care in the network to offer more services than their true capacity allows in order to receive more funds, and the rest of the municipalities to refer patients inappropriately to reduce costs:

Sometimes the municipalities offer services they don't even have set up, you know? Or sometimes, they offer services which don't even cover the needs of the municipality itself. And they say: I have enough services available, even to attend to patients from other municipalities. (Provider manager, Network 2 Brazil).

Second, according to some informants, private providers' search for profitability, together with the absence of formal contracting and evaluation on the part of the public funder, result in the breach of agreements on care activity. The *insufficient and poorly qualified technical teams in the municipal health departments*, a factor mostly related to networks outside the capital (Paulista - Network 2 and Caruaru - Network 3), limits the planning and organization of the network, the appointment and evaluation of private providers and the implementation of mechanisms for coordination between levels. This is attributed to insufficient funding of the municipalities, bureaucratic barriers to accessing federal funds to improve these functions and, in the interior of the state, difficulties in recruiting qualified professionals. These two factors, economic incentives and limited technical competence, emerge in close association with a third factor: the *interference of partisan political interests*, which leads, first, to the haphazard growth of services, because the different levels of government compete for investment in new services for electoral purposes, thus contributing to the parallel development of uncoordinated services and duplicating resources. Second, it interferes with the coordination and supervision tasks of the state governments due to their unwillingness to penalize municipal governments which share their political interests, and also with municipalities' control of private providers, due to their reluctance

to cause problems for those who finance their political campaigns. Thirdly, in general terms, it leads to the discontinuity of policies and of the technical capacity of health authorities due to the rotation of technical teams with each change of government:

(...) the last government opened 4 hospitals, went from 5 to 42 primary care centres and a lot of specialist care services were put in place (...) but it wasn't done in an organized way, was it? (...) and when a service is put in place in a disorganized way, we don't have the resources we need to run it, so we don't manage to maintain a good level of health problem solving (Provider manager, Network 3 Brazil).

Factors related to the organization of the healthcare networks

The organizational factors that influence coordination are similar in the networks of both countries, with only a few differences in the ambulatory care centres of Colombia's contributory networks. These factors relate to four areas: working conditions, care coordination mechanisms, location of services and training of professionals (Figure 4).

Inadequate employment and working conditions for coordination across care levels.

Three elements influencing care coordination related to working conditions emerged from the informants' discourse: contract type, time available and economic incentives for collaboration.

First, there are two **work contract models** which have opposite consequences: the permanent full-time contract (in Colombia, although in the minority, more common in public providers and ambulatory care centres, and in Brazil, more often found in primary care) and various types of temporary and/or part-time contracts, which are widespread. According to informants, short-term and/or part-time contracts lead to job instability, pluri-employment (having more than one job at a time) and also, in Colombia, low salaries. It is considered to demotivate doctors and contribute to their understanding of care as an isolated act, with no relevance attributed to coordination in order to provide continuity and quality of care (Box 2). Moreover, the instability generates staff rotation, which hinders the awareness and use of coordination mechanisms.

When we assess the situation, we find all kinds, professionals who comply strictly [with the clinical guidelines] and, in most

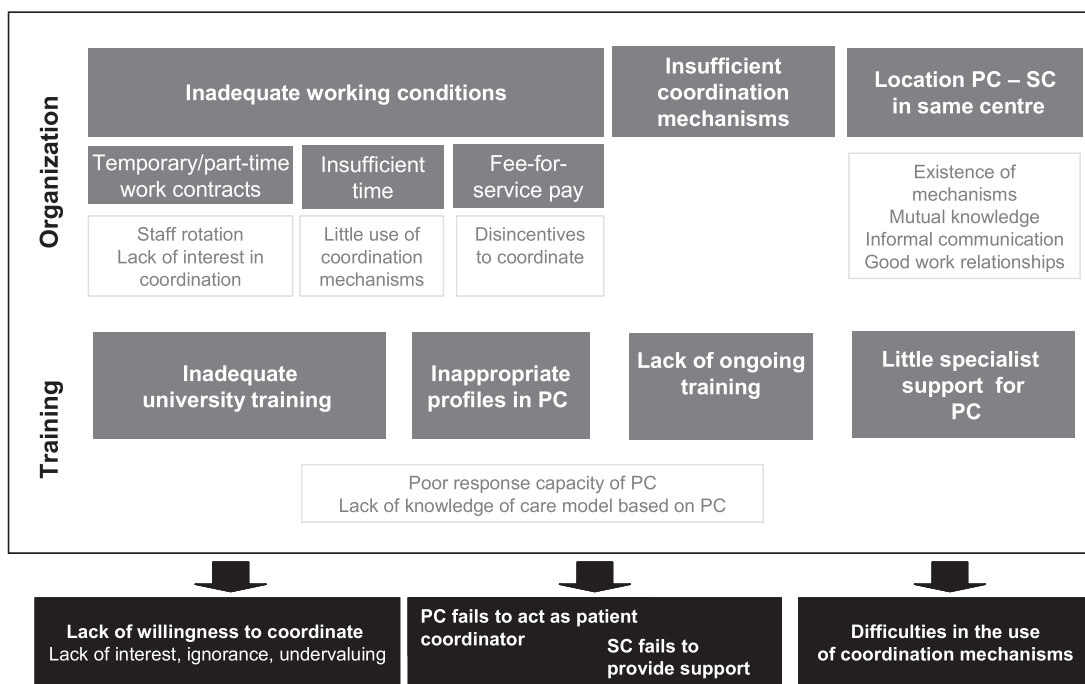


Figure 4. Organizational factors that influence coordination in the healthcare networks of Colombia and Brazil. PC, primary care; SC, secondary care

cases, others that don't, but that's due to the constant flow of staff (Provider manager, Network 2-S Colombia)

In all networks, **insufficient time for the use of existing mechanisms** stands out as a problem, although this is attributed to different factors depending on the country: in Brazil, to the excessive work load due to insufficient human resources, exacerbated by absenteeism due to pluri-employment; in Colombia, to the payment of professionals according to production (fee-for-service payment), which incentivizes reducing patient consultation times and fails to remunerate time spent on using care coordination mechanisms, such as referral and counter-referral forms or clinical guidelines:

(...) there are a lot of patients, a lot of examinations (...). We end up very short of time, and priority is given to what one considers most important. And it's clear that filling out a piece of paper justifying what was done to the patient for another colleague isn't considered to be particularly important (Primary care professional, Network 3 Brazil).

Moreover, **fee-for-service payment of specialists** in the subsidized networks of Colombia and in one of the Brazil networks is highlighted as an obstacle for care coordination in the sense that it discourages specialists from counter-referring patients to primary care so as not to lose income. For its part, in Colombia, the **capitation payment system** emerges as a facilitator in the contributory networks, as it disassociates income from the healthcare activity performed.

Existence of coordination mechanisms across care levels.

Almost exclusively in the discourse on the ambulatory care centres of the contributory network informants, the presence of coordination mechanisms emerges as a facilitator of coordination between primary and outpatient secondary care. Informants cite the use of electronic health records, clinical guidelines and expert systems (joint cases review, clinical sessions) as examples of mechanisms which foster the exchange of clinical information, improvements in primary care response capacity and a consensus in shared care. For the same reasons,

their absence is perceived as a barrier to coordination with the other healthcare levels of the network. In Brazil, on the other hand, most interviewees consider the patient referral centres (*centrais de regulação*), which act as liaison hubs to coordinate patient referrals across care levels, to be an obstacle due to the way they are run: no provision of information on which unit to go to, thus obliging patients themselves to find a centre to treat them; lack of or inadequate scheduling of appointments; referral of patients to the wrong centres; long waiting times; and no coordination between the different referral centres which exist within the same network:

Referral centres? My dear, that's just a joke. On paper, the centre functions brilliantly. But in practice, it's a nightmare to get a place [appointment or bed] for the patient ... (Secondary care professional, Network 3 Brazil).

Location of primary care and outpatient secondary care in the same building.

In Colombia, according to the majority of informants for ambulatory care centres of the contributory networks, the provision of primary and secondary care in the same establishment favours care coordination. Whilst managers attribute this to the implementation of coordination mechanisms being easier, professionals believe this is because it favours informal communication, team work, close working relationships and mutual knowledge and, as a result, the willingness of professionals to communicate and collaborate:

Here the way we relate to each other is very friendly and respectful, with a lot of team work, (...) for any query, any concern, we give our colleagues a call (...) (Primary care professional, Network 3-C Colombia).

Training of health professionals.

Inadequate training of professionals emerges as a factor hindering clinical coordination in the networks of both countries. First, there is insufficient training at university of primary care doctors in acting as coordinators of patient care. According to informants in Brazil

and those of the subsidized networks in Colombia, this is then exacerbated by a lack of ongoing training in the form of official programs or specialist support in the networks and, particularly in Brazil, by the presence of inappropriate professional profiles at the primary care level (secondary care doctors such as cardiologists or gynaecologists working as family doctors). This leads to inappropriate referrals to secondary care for the diagnosis and control of low-complexity chronic illnesses due to the uncertainty of primary care professionals, and also to the failure of specialists to counter-refer patients due to their lack of confidence in the monitoring capacities of general doctors:

The doctors refer everything, don't they? They don't feel trained to resolve certain things and anything they don't know about, they refer (Administrative professional, Network 1 Brazil).

Furthermore, some informants believe that high specialization in medicine leads to primary care doctors being less capable of resolving problems and specialist doctors not understanding and/or undervaluing the role of primary care, which does not predispose them to lend support, share information and counter-refer patients for monitoring:

The specialists (...) they think that primary care is really like a tool, (...) not an important actor in the system, but rather a tool for the second and third levels, like a prescriber, the one that's going to write the prescription for me and that's it (Provider manager, Network 2-S Colombia).

Discussion

Although healthcare coordination across care levels is considered a priority in healthcare, few studies have analyzed it in the Latin American region. The main contribution of this exploratory qualitative study is the in-depth analysis of the barriers encountered by professionals and managers of healthcare networks in Colombia and Brazil when trying to coordinate patient care across healthcare levels and how the organization of the health systems and of the healthcare networks influences this process. It does not aim to generalize the results from a statistically representative sample, but rather from the process of generation of ideas that stem from the specificities of concrete cases (Gilson 2012).

In both countries, insufficient clinical information transfer between healthcare levels emerges as an obstacle to coordination, and in the Brazilian networks, difficulties in the coordination of access across care levels and of clinical management are also highlighted. The poor perception of coordination of access in Brazil is consistent with the use of alternative entry points offered by emergency services and direct access to specialists (Garcia-Subirats *et al.* 2014b). It seems to be related to the presence of entry barriers to primary care, such as not being covered by the Family Health Program (PSF), or the lack of doctors in primary care units, and to long waiting times for secondary care (Garcia-Subirats *et al.* 2014c). Furthermore, the particular emphasis on inadequate patient referrals and monitoring in primary care in Brazil seems to point to its low quality in the networks studied, a factor also highlighted by other studies in Brazil (Lima *et al.* 2009; Korke *et al.* 2011).

Organizational model of the health system, a determinant for care coordination

The results reveal several factors related to the type of organization of the health system (market-based in Colombia and decentralized to municipal level in Brazil) hindering the configuration of *integrated healthcare networks*. These difficulties lead to fragmented

and unstable networks in Colombia and to weakly planned networks in Brazil, unfavourable contexts for the coordination of care across healthcare levels. First, a factor common to both models is the existence of *economic incentives in conflict with care coordination*. In both countries, the structure and organization of the networks are determined by voluntary agreements for purchasing and selling health services (in Colombia, between insurers and providers and in Brazil, between municipalities and states) and not through appropriate planning by a health authority. This means that the actors, motivated by criteria of profitability or individual financial sustainability, combined in Brazil with partisan political interests and resource allocation based on care production, compete rather than collaborate to provide coordinated care.

In the Brazil networks, the *limited fulfilment of basic responsibilities in the development of networks* on the part of states and municipalities also emerges. First, the inability of many municipalities to exercise functions such as the purchase and evaluation of services and the implementation of coordination mechanisms in their healthcare networks, due to both difficulties in attracting qualified professionals to their technical teams and their frequent rotation as a result of clientelism in a context of political instability, also described by other authors (Silva and Bezerra 2011). Second, the states' failure to perform their role as coordinators, focusing instead on the direct provision of health services for electoral benefit. These results question the advisability of decentralizing such complex functions to the municipalities, especially the smaller ones: 45.2% of the 5565 Brazilian municipalities have populations of under 10 000 (Instituto Brasileiro de Geografia e Estatística 2010). They also highlight the need to strengthen the role of states in planning the whole set of networks and to separate it from the provision of services (Vargas *et al.* 2014).

Inadequate employment and working conditions for care coordination

Studies exploring the relationship between care coordination and working conditions are scarce (Henaar *et al.* 2009; Ham and Smith 2010; McEvoy *et al.* 2011). The results of this study show that in both countries the working conditions of health professionals are the most important organizational obstacle to care coordination when work contracts are mostly temporary and/or part-time, when they are remunerated based on productivity and when professionals are overloaded. These conditions create barriers as they generate staff rotation which produces a loss of qualified human resources. Together with professionals' lack of time, they also lead to a limited awareness and use of available coordination mechanisms and a lack of interest to coordinate. This is also cited in Brazil as the reason for specialists failing to record information in counter-referrals (Harris *et al.* 2007). Lastly, financial disincentives to collaborate with other healthcare levels are also highlighted, in keeping with other studies (Ham and Smith 2010; Yau *et al.* 2011), due to fee-for-service payments which do not remunerate time spent on out-of-office work, or payment methods which incentivize professionals to retain patients in secondary care.

Although the consequences of temporary and/or part-time work contracts for care coordination are similar in the networks of both countries, the factors which bring them about appear to be different: in Colombia, they are more related to the cost control strategies of insurers and providers (Carrioni *et al.* 2007) and in Brazil, to the use of more flexible forms of work contract by public health services managers facing difficulties in using professionals. Some Brazilian studies attribute this problem to the shortage of human resources,

particularly of doctors (Machado and Pereira 2002), and to professionals' interest in holding posts in both the public and private sector in order to increase income ('*individual income topping-up strategies*'), which is possible, due to the lack of regulation of the job market in the sector (Harris *et al.* 2007).

In the Colombian contributory networks, the inadequate conditions for coordination seem to be palliated in the ambulatory care centres, where the better perception of care coordination appears to be related to the presence of several organizational factors not encountered in the rest of the network: permanent work contracts, long-term capitation contracts, etc. However, the results also indicate that co-location favours other important elements for coordination such as informal communication, mutual knowledge and the establishment of interpersonal relationships and coordination mechanisms, also described in other studies (Parker *et al.* 2010; Henao *et al.* 2009). Nonetheless, the co-location model could turn out to be inefficient if there is a lack of adequate planning taking into account the population size needed for economies of scale to exist, or if specialists fail to take on the role of 'experts', supporting primary care doctors to improve outcomes. This does not seem to be the case in the establishments analysed, in which expert system strategies have been extensively developed.

Inadequate training to implement IHNs based on primary care

Despite the fact that health policies in both countries (Ministério de Saúde da República Federativa do Brasil 2006; República de Colombia 2011) promote the creation of IHNs based on primary care, in which the first level of care takes on the role of coordinator in the care of patients throughout the care continuum, the marked lack of professional training in the networks of both countries presents an obstacle to putting this into practice. This factor contributes not only to primary care doctors failing to adequately exercise their responsibilities, but also to specialists being unwilling to collaborate due to their lack of awareness of the model and the little value and trust they place in the primary care level.

There is, therefore, a clear need not only to improve medical education, but also to implement and/or improve coordination

mechanisms in the network based on direct communication between professionals (expert systems, multidisciplinary working groups, instruments for informal communication). This is a strategy which, in addition to improving the diagnostic and monitoring capacity of primary care, serves to create spaces for mutual knowledge and direct relationships to foster the values of collaboration and team work (Kornacki and Silversin 1998; Henao *et al.* 2009).

Policy lessons for national and international policymakers

The findings of this study show that care coordination across health-care levels depends not only on health professionals' skills and attitudes towards collaboration, and on organizational factors that affect their ability to coordinate with each other (Gittel 2000; McDonald *et al.* 2007), but also on health system characteristics. All factors should be taken into account by policymakers and healthcare network decision makers, in these and other contexts, when designing policies or interventions to foster healthcare coordination.

Despite the fact that the organizational structure of the Colombian and Brazilian health systems is different, as is the type of healthcare network promoted, two sets of common reforms are needed to remove the obstacles to care coordination. These may also be relevant to other countries that have introduced healthcare networks in response to health system fragmentation. First, in the organization of the health system, the economic incentives should be changed in order to foster collaboration instead of competition between the actors in the networks and to strengthen the planning of the network rather than allowing it to depend on a negotiation process. In Brazil, moreover, with its health system decentralized to the municipal level, the functions of network planning and organization should be concentrated at the state level to overcome the limited capacities of local governments and to mitigate political instability in the health system. Second, in the organization of the health service networks, improvements are required in professionals' employment and working conditions, and in their skills and motivation to coordinate with each other. This could be achieved through promoting permanent contracts, reducing workloads, remunerating out-of-office coordination activities and implementing mechanisms for coordination across care levels.

Box 1. Examples of the category 'Factors of the health system that hinder IHN configuration'

– Fragmentation of POS-S

'The [Health] Authority has certain guidelines, we as an EPS have our guidelines (...), so each one manages their monitoring of user care independently' (Insurer manager, Network 1-S Colombia).

– Economic incentives in conflict with the configuration of networks

'These days it's easier for him [municipal Health Secretary] to put them on a bus to find care outside the municipality than to have a doctor in their town (...). Every day there's an average of forty, fifty buses parked up here that come from all the municipalities. All the patients come to Recife' (Secondary care professional, Network 2 Brazil)

'as we can't get around to auditing all the [private] providers we have, the providers present us with a bill for a certain amount, right? ... but they do less [healthcare activity]. And as we don't regulate some of them ... as we don't officially contract them, we can't sanction them' (Provider manager, Network 2 Brazil).

– Interference of partisan political interests

'We [the state] don't communicate with the services of the municipality. These days we live in the shadow of a dispute, a big dispute from a political point of view, yeah? Between states and municipalities. And that's prevented there being any progress in the integration of the network, yeah?' (Provider manager, Network 3 Brazil).

'updating the PPI [Integrated and Negotiated Programming in health care] means interfering with funding, with the financial ceilings of the municipalities. I think that in this, too, political matters also get in the way, don't they? If they get involved in all that, they'll have to take money off someone to give it someone else, right? And sometimes the one who stands to lose money has political influence... political influence within the state' (Provider manager, Network 2 Brazil)

Box 2. Examples of the category 'Organizational factors that influence coordination'

– Temporary/part-time work contracts

'(...) I see a lot of people who come here saying "I've got my set working hours, I come, I attend to my patients, and I leave, I go to another job" (...) Often you call them to a meeting, but they don't take part' (Provider manager, Network 1 Brazil)

– Fee-for-service payment of professionals

'It's also a bit related to the payment mechanism. They're often paid per consultation or per procedure, so that allows specialists to earn more. I think that's another reason why the patient is, shall we say, retained by the specialist' (Provider manager, Network 3-C Colombia).

'Here, the capitation payment system creates interest in a more integrated management and we don't want the specialist to hold on to the patient' (Provider manager, Network 3-C Colombia)

– Existence of care coordination mechanisms

'One of the positive things is that we have academic meetings with them once a month, so it's great to share with them [specialist physicians], interact, clear up any doubts, comment on cases' (Primary care professional, Network 4-C Colombia)

Limitations of the study

In Colombia, most of the insurers operating in the study area refused to participate. This may lead us to expect that the four networks that were finally selected perform better. However, the results indicate significant difficulties in healthcare coordination in these networks. The lack of previous studies on care coordination across care levels and the factors influencing it in Colombia and Brazil makes it difficult to contrast the results with other studies. These limitations should be taken into account in the interpretation of results and their transferral to other contexts.

Conclusion

This study reveals poor perceived coordination across healthcare levels in the analysed healthcare networks of Colombia and Brazil. The significant hindrances to care coordination identified, related to both the health system model and healthcare network organization, indicate that reforms are required at both levels. More research on the determinants of care coordination is needed at international level to further develop conceptual frameworks to guide the analysis of this challenging phenomenon for health system effectiveness.

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References

- Almeida PF, Giovannella L, Mendonca MH, Escorel S. 2010. Challenges for healthcare coordination: strategies for integrating levels of care in large cities. *Cadernos De Saude Publica* 26: 286–98.
- Banks P. 2004. *Policy framework for integrated care for older people*. London: King's Fund.
- Benzer JK, Beehler S, Miller C *et al.* 2012. Grounded theory of barriers and facilitators to mandated implementation of mental health care in the primary care setting. *Depression Research and Treatment* 2012: 597157.
- Bodenheimer T. 2008. Coordinating care—a perilous journey through the health care system. *The New England Journal of Medicine* 358: 1064–71.
- Carrioni CA, Hernández ML, Molina MG. 2007. Autonomy of health care facilities: it is more an ideal than an institutional reality. *Revista Facultad Nacional De Salud Pública* 25: 75–84.
- Depoy E, Gitlin L. 1994. *Introduction to Research. Multiple strategies for Health and Human Services*. London: Mosby.
- Figueiredo EN, Vianna LA, Peixe MB *et al.* 2009. The challenge of the reference and counter-reference system in the prenatal assistance to pregnant women with infectious diseases. *Anais Da Academia Brasileira De Ciências* 81: 551–8.
- Fleury MJ, Grenier G, Bamvita JM *et al.* 2012. Determinants associated with the utilization of primary and specialized mental health services. *Psychiatric Quarterly* 83: 41–51.
- Gache K, Leleu H, Nitenberg G *et al.* 2014. Main barriers to effective implementation of stroke care pathways in France: a qualitative study. *BMC Health Services Research* 14: 95.
- Garcia-Subirats I, Vargas I, Mogollón-Pérez AS *et al.* 2014a. Inequities in access to health care in different health systems: a study in municipalities of central Colombia and north-eastern Brazil. *International Journal for Equity in Health* 13: 10.
- Garcia-Subirats I, Vargas I, Mogollón-Pérez AS *et al.* 2014b. Determinants of the use of different healthcare levels in the General System of Social Security in Health in Colombia and the Unified Health System in Brazil. *Gaceta Sanitaria* 28: 480–8.
- Garcia-Subirats I, Vargas I, Mogollón-Pérez AS *et al.* 2014c. Barriers in access to healthcare in countries with different health systems. A study in municipalities of central Colombia and north-eastern Brazil. *Social Science & Medicine* 106: 204–13.
- Gask L. 2005. Overt and covert barriers to the integration of primary and specialist mental health care. *Social Science & Medicine* 61: 1785–94.
- Gilson L. 2012. Introduction to Health Policy and Systems Research. In: Gilson L (ed). *Health Policy and Systems Research: a Methodology Reader*. 1st edn. Geneva: WHO, Alliance for Health Policy and System Research, pp.19–39.

- Giovanella L, de Mendonça MHM. 2015. Atenção Primária à Saúde. In: Giovanella L et al. (ed). *Políticas e sistema de saúde no Brasil*. Rio de Janeiro: Editora Fiocruz, pp. 493–545.
- Gittell JH. 2000. Organizing work to support relational co-ordination. *The International Journal of Human Resource Management* 11: 517–39.
- Ham C, Smith J. 2010. *Removing the Policy barriers to Integrated Care in England*. London: The Nuffield Trust.
- Harris M, Ferreira A, Moraes I et al. 2007. Reply letter utilization by secondary level specialists in a municipality in Brazil: a qualitative study. *Revista Panamericana De Salud Pública* 21: 96–110.
- Henaio D, Vázquez ML, Vargas I. 2009. Factors influencing coordination among healthcare levels according to the opinion of healthcare managers and health professionals. *Gaceta Sanitaria* 23: 280–6.
- Herrera MM, Rodriguez N, Nebot C, Montenegro H. 2007. A network to promote health systems based on primary health care in the Region of the Americas. *Revista Panamericana De Salud Pública* 21: 261–73.
- Instituto Brasileiro de Geografia e Estatística. 2010. *Censo Demográfico*. Available at: http://www.ibge.gov.br/home/estatistica/populacao/censo2010/default_sinopse.shtm.
- Klabunde CN, Han PK, Earle CC et al. 2013. Physician roles in the cancer-related follow-up care of cancer survivors. *Family Medicine* 45: 463–74.
- Korkes F, Chicoli F, Bes P, Pompeo A. 2011. Why are patients referred to urological consultation? Critical analysis of referrals in São Bernardo do Campo. *Arquivos Brasileiros De Ciências Da Saúde* 36: 24–8.
- Kornacki MJ, Silversin J. 1998. How can IDSS integrate conflicting cultures? *Health Care Financing Management* 52: 34–6.
- Lima SM, Portela MC, Koster I et al. 2009. Use of clinical guidelines and the results in primary healthcare for hypertension. *Cadernos De Saude Publica* 25: 2001–11.
- Lobato L, Burlandy L. 2001. The context and process of health care reform in Brazil. In: Fleury S et al. (ed). *Reshaping Health Care in Latin America: A Comparative Analysis of Health Care Reform in Argentina, Brazil, and Mexico*. Ottawa: IDRC Books, pp.79–101.
- Lucena RJ, Lesage A, Elie R et al. 2002. Strategies of collaboration between general practitioners and psychiatrists: a survey of practitioners' opinions and characteristics. *Canadian Journal of Psychiatry* 47: 750–8.
- Machado MH, Pereira S. 2002. Human resources and the health system in Brazil. *Gaceta Sanitaria* 16: 89–93.
- MacPhail LH, Neuwirth EB, Bellows J. 2009. Coordination of diabetes care in four delivery models using an electronic health record. *Medical Care* 47: 993–9.
- Martinussen PE. 2013. Referral quality and the cooperation between hospital physicians and general practice: the role of physician and primary care factors. *Scandinavian Journal of Public Health* 41: 874–82.
- Mc Hugh S, O'Mullane M, Perry IJ, Bradley C. 2013. Barriers to, and facilitators in, introducing integrated diabetes care in Ireland: a qualitative study of views in general practice. *BMC Open* 3: e003217.
- McDonald KM, Sundaram V, Bravata DM et al. 2007. Care coordination. Vol.7. In: Shojania KG et al. (ed). *Closing the Quality Gap: A Critical Analysis of Quality Improvement Strategies. Technical Review* 9. Rockville, MD: Agency for Healthcare Research and Quality.
- McEvoy P, Escott D, Bee P. 2011. Case management for high-intensity service users: towards a relational approach to care co-ordination. *Health & Social Care in the Community* 19: 60–9.
- Miles MB, Huberman AM. 1994. *Qualitative Data Analysis: An Expanded Sourcebook*. Thousand Oaks: SAGE Publications, Inc.
- Ministerio de Salud y la Protección Social. 2015. *Base de Datos Única de Afiliados (BDUA) - Sistema Integral de Información de la Protección Social (SISPRO) diciembre 2011-2014*. Available at: <http://www.sispro.gov.co/>.
- Ministerio de Salud y Protección Social. República de Colombia. 2012. *Dirección de Operación del Aseguramiento. Afiliados cargados en BDUA a diciembre 31 de 2012*. Available at: <http://www.minsalud.gov.co/salud/Paginas/CoberturasdelR%c3%a9gimenSubsidiado.aspx>.
- Ministério de Saúde da República Federativa do Brasil. 1990. [Law no. 8080, 19th September 1990. *Regulates the conditions for the promotion, protection and recovery of health, the organization and functioning of the corresponding services and other measures*] Brasília: Diário Oficial da União.
- Ministério de Saúde da República Federativa do Brasil. 2006. [Order no. 699/GM, 30th March 2006. *Regulates the operational guidelines of pacts for life and administration*]. Brasília: Diário Oficial da União.
- Montenegro H, Holder R, Ramagem C et al. 2011. Combating health care fragmentation through integrated health service delivery networks in the Americas: lessons learned. *International Journal of Integrated Care* 19: 5–16.
- Murray E, Burns J, May C et al. 2011. Why is it difficult to implement e-health initiatives? A qualitative study. *Implementation Science* 6: 6.
- National Institute on Aging, National Institutes of Health and World Health Organization. 2011. *Global Health and Aging*. Available at: http://www.who.int/ageing/publications/global_health/en/.
- Ovretveit J. 2009. *Does Improving Quality Save Money?* London: Health Foundation.
- Ovretveit J. 2011. *Does Clinical Coordination Improve Quality and Save Money?* London: Health Foundation.
- Pan American Health Organization. 2010. *Renewing Primary Health Care in the Americas. Concepts, Policy Options and a Road Map for Implementation in the Americas*. Washington DC: Pan American Health Organization.
- Pare G, Sicotte C. 2001. Information technology sophistication in health care: an instrument validation study among Canadian hospitals. *International Journal of Medical Informatics* 63: 205–23.
- Parker G, Corden A, Heaton J. 2010. *Synthesis and Conceptual Analysis of the SDO Programme's Research on Continuity of Care*. Southampton: National Institute for Health Research Service Delivery Organization.
- Pinto AG, Jorge MS, Vasconcelos MG et al. 2012. Matrix support as an instrument of primary healthcare in mental health: multiple views and devices for resolution. *Ciência & Saúde Coletiva* 17: 653–60.
- Presidência da República Federativa do Brasil. 2011. [Decree 7508 of June 28, 2011, which regulates Law 8080 of September 19, 1990, to provide for the organization of the Universal Health System (SUS), health planning, health care, the structure among the federation and other measures]. Brasília: Casa Civil. Subchefia para Assunto Jurídicos.
- Presidência da República Federativa do Brasil. 1998. [Constitution of the Federative Republic of Brazil].
- Price M, Lau FY. 2013. Provider connectedness and communication patterns: extending continuity of care in the context of the circle of care. *BMC Health Services Research* 13: 309.
- Raaijmakers LG, Hamers FJ, Martens MK et al. 2013. Perceived facilitators and barriers in diabetes care: a qualitative study among health care professionals in the Netherlands. *BMC Family Practice* 14: 114.
- Reid R, Haggerty J, McKendry R. 2002. *Defusing the Confusion: Concepts and Measures of Continuity of Healthcare*. Ottawa: Canadian Health Services Research Foundation.
- República de Colombia. 2011. [Law 1438 of 2011, by which reforms are introduced in the SGSSS (Sistema General de Seguridad Social en Salud) and other provisions are stated]. Bogotá: Diario Oficial n° 47.957.
- República de Colombia. 1993. [Law 100 of 1993, by which the Integral Social Security System is created and other provisions are stated]. Bogotá: Diario Oficial n° 41.148.
- República de Colombia. 2007a. [Decree 4747 of 2007, regulates certain aspects of relations between health service providers and the entities responsible for payment of the health services of the population in their charge, and other provisions are stated]. Bogotá: Diario Oficial n° 46.835.
- República de Colombia. 2007b. [Law 1122 of 2007, by which some modifications are made to the General Social Security System in Health and other provisions are stated]. Bogotá: Diario Oficial n° 46.506.
- República de Colombia. 2012. [Agreement 032 of 2012, by which the Mandatory Health Plans unify the contributory and subsidized nationwide]. República de Colombia: Comisión de Regulación en Salud.
- Russ TC, Calvert L, Morling JR. 2013. Attitudes to shared care for patients with dementia: a survey of general practitioners. *Dementia (London)* 12: 606–18.
- Shortell SM, Gillies RR, Anderson DA et al. 2000. *Remaking Health Care in America. The Evolution of Organized Delivery Systems*. 2nd edn, San Francisco: The Jossey-Bass Health Care Series.
- Silva KS, Bezerra AF. 2011. The conception of administrators regarding the formation of a healthcare consortium in Pernambuco, Brazil: a case study. *International Journal of Health Planning and Management* 26: 158–72.

- Terraza-Núñez R, Vargas I, Vázquez ML. 2006. Coordination among health-care levels: systematization of tools and measures. *Gaceta Sanitaria* 20: 485–95.
- Van Houdt S, Heyrman J, Vanhaecht K *et al.* 2013. An in-depth analysis of theoretical frameworks for the study of care coordination. *International Journal of Integrated Care* 13: e024.
- Vargas I, Mogollón-Pérez AS, De Paepe P *et al.* 2015. Do existing mechanisms contribute to improvements in care coordination across levels of care in health services networks? Opinions of the health personnel in Colombia and Brazil. *BMC Health Services Research* 15: 213.
- Vargas I, Mogollón-Pérez AS, Unger JP *et al.* 2014. Regional-based Integrated Healthcare Network policy in Brazil: from formulation to practice. *Health Policy and Planning* 30: 705–17.
- Vargas I, Vázquez ML, Mogollón AS, Unger JP. 2010. Barriers of access to care in a managed competition model: lessons from Colombia. *BMC Health Serv Res.* 10: 297.
- Vázquez ML, Vargas I, Unger JP *et al.* 2009. Integrated health care networks in Latin America: toward a conceptual framework for analysis. *Revista Panamericana De Salud Pública* 26: 360–7.
- Vilaça E. 2011. *As redes de atenção à saúde*. Brasília: Organização Pan-Americana da Saúde.
- Walsh J, Harrison JD, Young JM *et al.* 2010. What are the current barriers to effective cancer care coordination? A qualitative study. *BMC Health Services Research* 10: 132.
- Wood ML. 1993. Communication between cancer specialists and family doctors. *Canadian Family Physician* 39: 49–57.
- World Health Organization. 2008. *Integrated Health Services – What and Why?* Geneva: WHO.
- Yau GL, Williams AS, Brown JB. 2011. Family physicians' perspectives on personal health records: qualitative study. *Canadian Family Physician* 57: e178–84.
- Yin RK. 1994. *Case Study Research. Design and Methods*. 2nd edn, London: SAGE.