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Original Article

Understanding communication breakdown in the outpatient referral process in Latin America: a cross-sectional study on the use of clinical correspondence in public healthcare networks of six countries

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Abstract

An adequate use of referral and reply letters—the main form of communication between primary care (PC) and out-patient secondary care (SC)—helps to avoid medical errors, test duplications and delays in diagnosis. However, it has been little studied to date in Latin America. The aim is to determine the level and characteristics of PC and SC doctors' use of referral and reply letters and to explore influencing factors in public healthcare networks of Argentina, Brazil, Chile, Colombia, Mexico and Uruguay. A cross-sectional study was conducted through a survey of PC and SC doctors working in public healthcare networks (348 doctors per country). The COORDENA questionnaire was applied to measure the frequency of use and receipt of referral and reply letters, quality of contents, timeliness and difficulties in using them. Descriptive analyses were conducted and a multivariate logistic regression model was generated to assess the relationship between frequent use and associated factors. The great majority of doctors claim that they send referral letters to the other level. However, only half of SC doctors (a higher proportion in Chile and Mexico) report that they receive referral letters and <20% of PC doctors receive a reply from specialists. Insufficient recording of data is reported in terms of medical history, tests and medication and the reason for referral. The factor associated with frequent use of the referral letter is doctors' age, while the use of reply letters is associated with identifying PC doctors as care coordinators, knowing them and

trusting in their clinical skills, and receiving referral letters. Significant problems are revealed in the use of referral and reply letters which may affect quality of care. Multifaceted strategies are required that foster a direct contact between doctors and a better understanding of the PC-based model.

Keywords: Communication, integration, primary health care, referral system, health services research, multivariate analysis, survey

Key Messages

- PC reported not receiving or receiving too late the reply letter in all networks analysed.
- SC doctors reported receiving the referral letter more frequently, although there are significant shortfalls, except in networks of Chile and Mexico.
- PC and SC doctors reported insufficient recording of data, in terms of medical history, tests and medication and the reason for referral in.
- SC doctors' frequent use of the reply letters is associated with identifying PC doctor as care coordinator, knowledge and trust, while PC doctors use only with age.

Introduction

The referral and reply letter is the most common means of communication and exchange of patient information between primary care (PC) and outpatient secondary care (SC) doctors (Vermeir *et al.* 2015b); and in some contexts, such as most public healthcare networks in Latin America, it is the only existing mechanism for communication. Its adequate use—the timely exchange of relevant information on the patient (Gandhi *et al.* 2000)—is considered vital to ensure quality of care, especially in health systems in which primary care plays the role of gatekeeper and care coordinator across the care continuum (Starfield 1998). The adequate exchange of information helps to avoid medical errors, omission of needed services, unnecessary repetition of tests, unnecessary referrals and delays in diagnosis (Stille *et al.* 2006; Kaelber and Bates 2007; Vermeir *et al.* 2015b).

The use of referral and reply letters is one of the most frequently evaluated aspects of coordination between care levels, which is defined in this study as the harmonious connection of the different services needed to provide care to a patient along the care continuum in order to achieve a common objective without conflicts (Longest and Young 2000). Even in PC-based health systems where use of the referral and reply letter is well established (Canada, UK, the Netherlands, Nordic countries), significant shortfalls are reported in terms of exchange and clarity of information (Grol *et al.* 2003; Campbell *et al.* 2004; Durbin *et al.* 2012; Martinussen 2013). Although there are numerous studies available, particularly for North America and Europe, the majority focus on analyzing the quality of information through audits (Grol et al. 2003; Campbell *et al.* 2004; Vermeir *et al.* 2015b) and in some cases, through surveys of doctors (Berendsen *et al.* 2009; Martinussen 2013; Vermeir *et al.* 2015a). Very few studies analyse other elements of the process, such as timeliness in sending referral or reply letters (O'Malley and Reschovsky 2011; Vermeir *et al.* 2015b); associated factors (Stille *et al.* 2006; O'Malley and Reschovsky 2011), or barriers to their use (Vermeir *et al.* 2015a, b). Some qualitative studies highlight significant barriers such as lack of time to fill in the forms and, in the case of specialists, lack of direct contact or lack of confidence in the skills of PC doctors (Muzzin 1991; Harris *et al.* 2007; Smith *et al.* 2007; Vargas *et al.* 2016), elements that require further analysis and that may shed light on how to improve the coordination of information between levels.

Although the use of referral and reply letters has been analysed more frequently in Latin America than other aspects of coordination between care levels, the data are still limited and are mainly focused on referrals rather than on referral replies (Omaha *et al.* 1998; Bustos-Córdova *et al.* 2001; Sansó Soberats 2002; Terrazas Uria 2007; Pardo *et al.* 2008; Almeida *et al.* 2010; Aronna *et al.* 2011; Korkes *et al.* 2011; Carneiro *et al.* 2014; da Silva *et al.* 2014). Studies on other aspects of the process or barriers to its use are limited (Harris *et al.* 2007; Vargas *et al.* 2016). Most of these studies highlight problems in the quality of referrals and the lack of reply to referral letters. To the barriers described in international studies we can add, in the Latin American context, the part-time or temporary employment of doctors, which appears to contribute to less importance being given to quality of care and thus to coordinating with the other level.

This study is part of a wider research project (Vazquez *et al.* 2015) which conducted the first large survey of doctors, to comprehensively analyse care coordination across healthcare levels in public healthcare networks of six Latin American countries: Argentina, Brazil, Chile, Colombia, Mexico and Uruguay. A previous paper presented an analysis of the level of clinical coordination between PC and SC experienced by doctors (Vazquez *et al.* 2017). The aim of this second paper is to determine the level and characteristics of PC and SC doctors' use of referral and reply letters and to explore influencing factors.

Although the study countries have different health system models, as described in the previous paper (Vazquez *et al.* 2017), they are all segmented by population groups according to socioeconomic or employment status (Atun *et al.* 2015), with a public subsystem and a private one. The financing of the public sector, which is the focus of this study, is through social security contributions and/or taxes and is mainly intended for the lower income population and/or those without social security. The proportion of population covered by the public sector ranges from the highest levels in Chile (FONASA) and Brazil (SUS), with 73 and 75% respectively, to the

lowest in Argentina (provincial and municipal health departments) and Uruguay (ASSE), both with 36%. At an intermediate level, we find Mexico (Health Department/public health insurance) with 58.4%, and Colombia with 53.7% (covering both the uninsured population and subsidized scheme enrollees) (INDEC 2010; INEGI 2014; Ministerio de Salud y Protección Social. Colombia 2015; ANS 2016; Ministerio de Salud Uruguay 2016).

The public healthcare subsystems in the study countries have many features in common. They all have national policies or programs promoting integrated healthcare networks, although with varying degrees of ambition and detail (Vazquez *et al.* 2015). Healthcare provision is organized in networks of providers, mainly public (except in Colombia), but also private (except in Mexico). In all six countries, PC is the entry point to the healthcare network and the coordinator of patient care (Giovanella *et al.* 2015).

All the study countries, with the exception of Argentina and Uruguay, have regulations for the use of referral and reply letters (República de Colombia 2007; Ministério de Saúde Brasil 2008; Ministerio de Salud Chile 2009; Gobierno del Estado de Veracruz México 2014b) and in some of them—Chile, Colombia and Mexico—their use is obligatory for referring patients to secondary care. Only Colombia and Mexico have a specific form—defined at national/state level—for PC and SC doctors to send information on patients (Gobierno del Estado de Veracruz México 2014a; República de Colombia Ministerio de Salud y Protección Social 2012), while in the remaining countries the responsibility lies with the networks.

Methods

Study design and study areas

A cross-sectional study was carried out based on a survey of doctors in six Latin American countries: Argentina, Brazil, Chile, Colombia, Mexico and Uruguay. In each country, the study area consisted of two public healthcare networks: Argentina, south/southern and north/north-western districts of Rosario; Brazil, Districts III and VII in Recife and the urban area of Caruaru; Chile, the southern and northern networks of Santiago, encompassing three districts; Colombia, south-western and southern district networks of Bogotá; Mexico, state networks of Xalapa and Veracruz; Uruguay, two networks of the western region, encompassing seven districts (see Supplementary Table S1). The following criteria were applied in the selection of networks: (1) provision of a continuum of health services including at least PC and SC; (2) provision of care to a defined population; (3) mainly covering urban areas of low or medium-low socioeconomic status; (4) willingness to participate. There were no refusals to participate from any of the networks contacted. As the study networks were relatively small, nearly all of their health services were included.

Study population and sample

The study population consisted of PC and SC doctors whose daily practice involves contact with doctors of the other care level (i.e. through the patients' referral process) and who had been working for at least 3 months in the study network. A sample size of 348 doctors in each country (174 per network) was estimated to ensure the detection of a 15% variation between networks in professionals' use of care coordination mechanisms on the basis of 80% power and a confidence level of 95%. The sampling frame was drawn from a list of doctors working in the health services, provided by the study networks themselves. Only doctors of the second and third levels that did not have regular contact with the first level of care were excluded, i.e. those that only performed medical tests (radiology, ultrasound, etc.) and therefore did not receive referrals or send reply letters/discharge reports to primary care. As the study networks all had a relatively low number of doctors, they were all invited and encouraged to take part in the survey if they met the criteria. The percentage of contacted doctors that refused to participate ranged from 2.6% in Colombia to 7.6% in Uruguay.

Questionnaire

A questionnaire was drawn up for the analysis of clinical care coordination across levels of care (COORDENA; www.equity-la.eu). Its design was based on the study's conceptual framework (Vazquez *et al.* 2015), a review of the relevant literature and current tools, and previous qualitative research (Vargas *et al.* 2016). An analysis of the content validity, acceptability and comprehensibility of the questionnaire was conducted by means of discussion with experts, a pretest, and a pilot test in each country (details in Vazquez *et al.* 2017).

The final questionnaire is organized into 11 different sections. The first includes 13 items to measure clinical care coordination across levels of care experienced by doctors. Following this is a section on doctors' interactional factors. The third and fourth, which are the focus of this paper, establish their knowledge and use of the care coordination mechanisms in the networks (frequency of use, purpose, usefulness, difficulties). The number of sections on use of mechanisms varies between 2 and 8, depending on the number of available mechanisms in each network; however, the referral and reply letter is one that is found in all of the networks selected. After these, there is a section on suggestions for improving coordination between levels of care. The penultimate section addresses organizational and employment factors and job-related attitudes, and the final one, demographic characteristics.

Data collection and quality

Data collection was carried out through face-to-face interviews conducted by specifically trained interviewers in each study country from May to October 2015 (in Uruguay to June 2016). Strategies to ensure the quality and consistency of data included close supervision of interviewers in the field, a review of all questionnaires, and re-interviewing 20% of participants selected at random. Inconsistencies during data entry were controlled using the double-entry method.

Variables

The *outcome variables* were the levels of use and receipt of the referral and reply letter, and barriers to their use. Levels of use and receipt were analysed based on the response categories 'always' and 'often', in answer to the following questions: '*When you send a patient to the other care level, how often do you issue a referral letter* (PC doctor)*/reply letter* (SC doctor)*?*', and '*When you attend to a patient sent by a doctor from the other care level, how often do you receive a referral* (SC)*/reply* (PC) *letter?* Barriers to use of the mechanism were elicited by means of two open-ended questions: '*Why do you think you don't always receive a referral/reply letter?' and 'What difficulties have you found in the use of referral/reply letters?'*.

The *explanatory variables* were: (1) demographic: sex, age; (2) employment conditions: years working in the centre; type of contract; contracted hours per week, complementary work in the private sector; (3) organizational factors: time per patient, time for care coordination; (4) attitude towards the job: satisfaction with the job,

plan to change job in the following 6 months, satisfaction with the salary; (5) doctors' interactional factors: identification of PC doctor as coordinator of patient care across levels, knowing doctors of the other care level and trusting in their clinical skills; and (6) receipt of the letter from the other level of care.

Analysis

Univariate analyses were performed to describe each of the explanatory variables by country and bivariate analyses were performed to describe the frequent use of referral and reply letters and associated factors by country and level of care. Following this, a logistic regression model was generated to assess the relationship between frequent use of referral and reply letters and associated factors. Robust covariance adjustments—employing the country variable—were used to account for correlated observations due to clustering. Percentages and adjusted odds ratios (OR) were calculated for the frequent use of the referral and reply letters.

To obtain the final model, the variables were added by group: first, demographic; second, employment conditions; third, organizational; fourth, attitude towards the job; fifth, doctors' interactional factors and lastly, receipt of the form from the other level of care. In cases where none of the variables in a group were significant, at least one was left in. This allowed us to ascertain the impact of different types of variables on adjusting the model. Multicollinearity between explanatory variables was tested using the variance inflation factor (VIF), which was found to be insignificant (VIF values fall below 1.5). Statistical analyses were performed using Data Analysis and Statistical Software (STATA), version 12.

Ethical considerations

Ethical approval was granted by the ethical committees in the participating countries. Participation in the survey was entirely voluntary, and an informed consent was signed by all doctors interviewed. Informants had the right to refuse to participate or withdraw from the survey. Anonymity, confidentiality and protection of data were all guaranteed.

Results

The highest proportion of young doctors was found in the Colombian sample (52.1%) and of doctors over 50 years of age in Mexico (51.5%); the age distribution was similar in the remaining samples. The majority of doctors had been working in their centres for more than 3 years in Argentina, Mexico and Uruguay, while the proportion of doctors with less than 1 year's experience was high in Brazil, and higher yet in Chile and Colombia. Doctors in Chile and Colombia worked the highest number of contracted hours per week (from 20 to >40), whereas in Brazil and Uruguay, about half of them were contracted for under 20 h. In Colombia and Mexico, doctors had more time per patient (>15 min). The majority of doctors in all six countries were satisfied with the job. Most PC doctors in all countries identified themselves as coordinator for the patients through the care continuum, but a considerably lower percentage of SC doctors acknowledged the PC doctor's role as care coordinator, with the exception of Argentina (62.7%). The number of doctors that knew the professionals of the other care level in person was generally low (under 20%), apart from in Uruguay (72.0%) and, to a lesser extent, in Argentina (32.6%). Over half the doctors interviewed claimed to have confidence in the clinical skills of doctors working in the other care level, with the highest percentages in Argentina (76.0%) and Uruguay (81.9%), although there were also clear differences between care levels: the levels of trust in the other care level were generally lower among SC doctors, especially in Chile and Mexico (only 40%) (Table 1).

Almost all doctors of both levels are aware of the existence of referral and reply letters, except in Brazil and Uruguay, where SC doctors are particularly unaware (PC 78.0%, SC 54.8% in Brazil and PC 50.5%, SC 48.5% in Uruguay) (Table 1).

Levels of use and receipt of referral and reply letters and associated factors

In all six countries, the great majority of PC doctors who are aware of referral letters report that they frequently send them to the other level (Figure 1). However, it is only in Chile (90.8%) and Mexico (72.3%) that the majority of SC doctors report that they frequently receive them, whilst in the other countries it is only around half (slightly more in Colombia, with 62.4%). For their part, most of the SC doctors who know about reply letters report that they send them: around 80% in Argentina, Colombia and Uruguay, and a lower percentage in the other countries. Yet less than 20% of PC doctors report that they receive them, with even lower percentages in Colombia and Mexico (around 5%).

The factors associated with frequent use of referral and reply letters vary considerably according to care level. For primary care doctors, only age—being over 50—was associated with frequent use of referral letters. However, the regular use of reply letters on the part of SC doctors was associated with various factors of interaction with PC doctors: firstly, with identifying the PC doctor as coordinator of patient care across care levels, knowing the PC doctors, and trusting in their clinical skills, and secondly, with frequently receiving referral letters (Table 2).

When doctors are asked why they think they do not always receive a letter from the other level, the reasons are generally similar, although with a few differences across levels and countries (Table 3). The first reason is that doctors of the other level do not fill in/send the form, which is cited particularly by PC doctors with regard to reply letters. In Brazil and Uruguay, this is also cited in reference to referrals (23.4 and 33.7%, respectively). Lack of interest and time are often given as a reason, especially with respect to sending reply letters. The patient failing to deliver it is another frequent reason cited for referral letters in all six countries, and also for reply letters in Chile (24.7%) and Colombia (30.7%). Lastly, in the case of referrals, the use of the documents for administrative purposes in Colombia (27.0%), the patient not being referred by the primary level in Mexico (57.5%), and failures in administrative procedures in Chile (71.4%), are also often cited.

Content, timing and barriers to use of referral and reply letters

Doctors of both care levels and in all six countries report that they receive referral and reply letters with incomplete content, although with some differences between levels (Table 4). Most PC doctors report that they regularly receive information on diagnosis and treatment, but to a much lesser extent on clinical history or tests performed. With regard to referrals, less than half of the specialists in the study countries state that they regularly receive information on clinical history, treatments or tests performed, with the exception of Argentina where the percentages are slightly higher (60.6, 55.6 and 50.0%, respectively). Another striking result is the low proportion of doctors who say they receive the reason for referral in Chile (33.3%), Brazil (48.8%), and México (54.7%).

Table 1. Characteristics of the study sample

	Argentina ($n = 350$) *n* (%)	Brazil ($n = 381$) *n* (%)	Chile ($n = 348$) *n* (%)	Colombia ($n = 363$) *n* (%)	Mexico ($n = 365$) *n* (%)	Uruguay ($n = 353$) *n* (%)
Sex						
Male	106 (30.3)	161 (42.3)	182 (52.3)	237 (65.3)	202 (55.3)	161 (45.6)
Female	244 (69.7)	220 (57.7)	166 (47.7)	126 (34.7)	163 (44.7)	191 (54.1)
Age						
24–35 years	78 (22.3)	104 (27.3)	133 (38.2)	189 (52.1)	38 (10.4)	60 (17.0)
36–50 years	160 (45.7)	155 (40.7)	126 (36.2)	94 (25.9)	139 (38.1)	166 (47.0)
>50 years	112 (32.0)	118 (31.0)	89 (25.6)	78 (21.5)	188 (51.5)	121 (34.3)
Care level						
Primary care	157 (44.9)	109 (28.6)	141 (40.5)	118 (32.5)	156 (42.7)	109 (30.9)
Secondary care	193 (55.1)	272 (71.4)	207 (59.5)	245 (67.5)	209 (57.3)	244 (69.1)
Years working in the centre						
Less than 1 year	47 (13.4)	73 (19.2)	117 (33.6)	120 (33.1)	27 (7.4)	35 (9.9)
From 1 to 3 years	61 (17.4)	112 (29.4)	61 (17.5)	98 (27.0)	40 (11.0)	54 (15.3)
More than 3 years	242 (69.1)	196 (51.4)	170 (48.9)	145 (39.9)	298 (81.6)	264 (74.8)
Type of contract						
Stable	267 (77.0)	292 (76.6)	129 (37.7)	73 (20.5)	295 (81.0)	258 (73.1)
Temporary	80 (23.1)	89 (23.4)	213 (62.3)	283 (79.5)	69 (19.0)	83 (23.5)
Contracted hours per week						
<20 h	54 (15.4)	165 (43.3)	34 (9.8)	41 (11.3)	2 (0.6)	203 (57.5)
20–40 h	279 (79.7)	187 (49.1)	173 (49.7)	119 (32.8)	351 (96.2)	118 (33.4)
>40 h	17 (4.9)	29 (7.6)	141 (40.5)	203 (55.9)	11 (3.3)	32 (9.1)
Working in private sector						
Yes	119 (34.0)	211 (55.4)	200 (57.5)	131 (36.1)	178 (48.8)	306 (86.7)
No	231 (66.0)	170 (44.6)	148 (42.5)	230 (63.4)	186 (51.0)	42 (11.9)
Time per patient						
Primary care						
15 min or less	68 (43.3)	54 (49.5)	103 (73.1)	6 (5.1)	9 (5.8)	88 (80.7)
More than 15 min	89 (56.7)	55 (50.5)	38 (27.0)	112 (94.9)	145 (94.2)	19 (17.4)
Secondary care						
15 min or less	102 (52.8)	215 (79.3)	123 (60.0)	75 (31.1)	37 (19.2)	198 (81.2)
More than 15 min	64 (33.2)	56 (20.7)	82 (40.0)	166 (68.9)	156 (80.8)	46 (18.9)
Enough time for clinical coordination during consultation[a]						
Yes	107 (30.6)	139 (36.5)	49 (14.1)	61 (16.8)	95 (26.0)	137 (38.8)
No	234 (66.9)	236 (61.9)	298 (85.6)	302 (83.2)	259 (71.0)	191 (54.1)
Knows doctors of the other level of care[b]						
Primary care	49 (31.2)	13 (11.9)	14 (9.9)	9 (7.6)	18 (11.5)	69 (63.3)
Secondary care	65 (33.7)	29 (10.7)	19 (9.2)	17 (6.9)	24 (11.5)	180 (73.8)
Total	114 (32.6)	42 (11.0)	33 (9.5)	26 (7.2)	42 (11.5)	249 (70.5)
Trust in the clinical skills of doctors of the other level of care[b]						
Primary care	127 (80.9)	74 (67.9)	118 (83.7)	98 (83.0)	123 (78.8)	98 (89.9)
Secondary care	139 (72.0)	123 (45.2)	64 (30.9)	106 (43.3)	59 (28.2)	191 (78.3)
Total	266 (76.0)	197 (51.7)	182 (52.3)	204 (56.2)	182 (49.9)	289 (81.9)
Knowledge of the referral and reply letter mechanism						
Primary care						
Yes	154 (98.1)	85 (78.0)	141 (100.0)	118 (100.0)	155 (99.4)	55 (50.5)
No	3 (1.9)	24 (22.0)	0 (0.0)	0 (0.0)	1 (0.6)	52 (47.7)
Secondary care						
Yes	171 (88.6)	149 (54.8)	207 (100.0)	245 (100.0)	206 (98.6)	119 (48.8)
No	21 (10.9)	115 (42.3)	0 (0.0)	0 (0.0)	3 (1.4)	118 (48.4)

[a]Yes: always, very often; No: sometimes, rarely, never.

[b]Categories were grouped into; yes= always and very often; No =sometimes, rarely, never. Here the results for the first category (yes) are shown.

Although the majority of PC doctors consider that reply letters respond to the reason for referral (around half in Colombia, 54.3%), the proportion of those who consider that they receive them in within a useful time frame to make decisions about the patient is far lower (from around half in Argentina and Uruguay to less than a third in the other countries, with only 20% in Colombia).

Lastly, with regard to barriers to the use of referral and reply letters, around half the doctors of both levels report difficulties, with

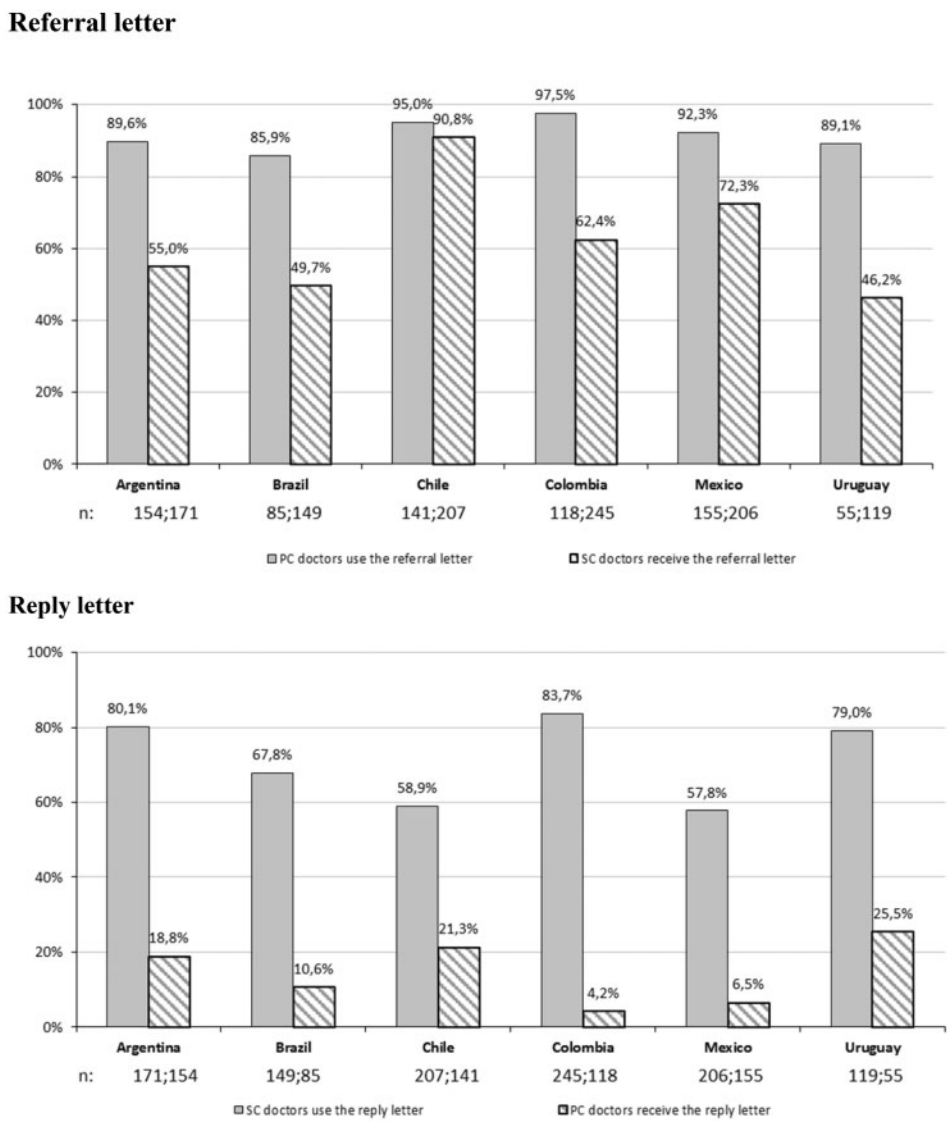

Figure 1. Frequent use and receipt of referral and reply letters by primary and secondary care doctors. Results correspond to the categories always and very often.

the highest number in Colombia (66.4%). The main difficulty is that the doctor of the other level does not send the letter or that the information is incomplete, erroneous or illegible. In some cases they report obstacles related to organizational factors, such as lack of time to fill in the forms, the forms being unavailable or their layout being inadequate.

Discussion

This study contributes to improving our understanding of the use of referral and reply letters in Latin America, a mechanism which has been little studied in the region despite being the main—or often the sole—means of communication and exchange of information on the patient between PC and SC doctors. Moreover, it addresses one of the most unknown aspects in the international state of the art, the determinants of use of the mechanism. The results show that there is no particular study network with a better overall performance in the set of elements analysed: the level of use of referral and reply letters, content quality and timeliness in their use. They also confirm empirically the importance of interactional factors in the Latin American context, which should be taken into consideration when implementing strategies to improve SC doctors' use of reply letters.

Shortfalls in the receipt and content of referral and reply letters

In models of care in which primary care plays the role of gatekeeper and care coordinator across the care continuum, such as the networks in this study, doctors are expected to use referral or reply letters every time they send a patient to the other care level, in order to provide relevant clinical information in a timely manner to contribute to quality of care (Gandhi *et al.* 2000; Stille *et al.* 2006; Durbin *et al.* 2012). It should inform PC doctors of the definitive diagnosis and the correct follow-up treatment, and SC doctors of the reason for referral, test results and prescribed medication, avoiding delays in diagnosis and treatment, medical errors, and unnecessary repetition of tests (Mehrotra *et al.* 2011). However, the results show that the reply letter in particular is often not received or is received too late in all the networks analysed, confirming what other studies in some of these Latin American countries have suggested (Harris *et al.* 2007; Carneiro *et al.* 2014; Vargas *et al.* 2016). The most important differences between countries are related to the level of

Table 2. Factors associated with the frequent use of referral and reply letters

	Primary care doctors ($n = 718$)		Secondary care doctors ($n = 883$)	
	n (%)	aOR (95% CI)	*n* (%)	aOR (95% CI)
Age				
24–35 years	183 (80.3)	1	224 (60.9)	1
36–50 years	245 (79.8)	1.51 (0.5–4.2)	295 (56.1)	1.08 (0.73–1.60)
> 50 years	221 (88.8)	**3.4 (1.2–9.7)**	256 (57.1)	1.00 (0.61–1.62)
Contracted hours per week				
<20 h	64 (64.7)	1	193 (50.0)	1
20–40 h	413 (82.3)	1.03 (0.58–1.86)	414 (57.7)	0.91 (0.58–1.43)
>40 h	175 (94.1)	1.15 (0.64–2.06)	171 (69.2)	0.84 (0.54–1.32)
Time per patient				
≤15 min	249 (76.2)	1	372 (50.7)	1
>15 min	399 (87.5)	1.00 (0.44–2.22)	373 (65.7)	1.24 (0.72–2.14)
Satisfaction with the job				
No	94 (72.9)	1	153 (50.0)	1
Yes	555 (84.7)	1.57 (0.99–2.51)	623 (60.1)	0.94 (0.68–1.28)
Identifies PC doctor as coordinator of patient care across care levels				
No	128 (81.0)	1	379 (53.9)	1
Yes	520 (83.3)	0.95 (0.57–1.60)	368 (62.6)	**1.41 (1.03–1.93)**
Knows doctors of the other care level				
No	491 (86.6)	1	519 (57.1)	1
Yes	115 (67.7)	0.50 (0.20–1.28)	183 (55.8)	**1.51 (1.15–1.98)**
Trusts in clinical skills of doctors of the other care level				
No	120 (82.8)	1	344 (54.0)	1
Yes	527 (82.9)	0.92 (0.58–1.49)	411 (61.3)	**1.85 (1.45–2.36)**
Receives the referral form				
No			256 (69.0)	1
Yes			516 (72.4)	**1.97 (1.36–2.86)**

aOR: odds ratio adjusted for all variables jointly including the country variable. CI: confidence interval.
Statistically significant OR are shown in bold. CI was calculated at 95% significance.

Table 3. Reason for not always receiving a referral/reply letter according to secondary and primary care doctors

	Referral letter (secondary care doctors)[a]						Reply letter (primary care doctors)					
	Argentina ($n = 131$)	Brazil ($n = 107$)	Chile ($n = 77$)	Colombia ($n = 137$)	Mexico ($n = 113$)	Uruguay ($n = 89$)	Argentina ($n = 147$)	Brazil ($n = 83$)	Chile ($n = 130$)	Colombia ($n = 117$)	Mexico ($n = 153$)	Uruguay ($n = 50$)
The patient doesn't hand it over	25 (19.1)	18 (16.8)	19 (24.7)	42 (30.7)	23 (20.4)		17 (11.6)	6 (7.2)	51 (39.2)	27 (23.1)	22 (14.4)	
Lack of time to fill it in	24 (18.3)	6 (5.6)				5 (5.6)	33 (22.5)	14 (16.9)	16 (12.3)	14 (12)	25 (16.3)	4 (8)
Don't fill it in/don't send it	23 (17.6)	25 (23.4)	4 (5.2)	33 (24.1)	27 (23.9)	30 (33.7)	55 (37.4)	14 (16.9)	69 (53.1)	60 (51.3)	68 (44.4)	24 (48)
Don't think it's necessary/lack of interest/can't be bothered/forgot	23 (17.6)	10 (9.4)			8 (7.1)		61 (41.5)	25 (30.1)	15 (11.5)	12 (10.3)	27 (17.7)	4 (8)
Lack of forms	16 (12.2)	11 (10.3)				7 (7.9)						
Failures in administrative procedures/lack of coordination in the system		10 (9.4)	55 (71.4)	21 (15.3)				5 (6)	11 (8.5)		21 (13.7)	3 (6)
Used for administrative/bureaucratic purposes				37 (27.0)								
Not referred from primary level					65 (57.5)							
Information sent by other means						8 (9)						
Not a requirement of the organization						1 (1.1)				6 (5.1)		
Does not know or value the function of PC								11 (13.3)				
Patient remained in SC for treatment										6 (5.1)		
Only sent for pregnant women											11 (7.2)	
Others[b]	25 (19.1)	24 (22.4)	8 (10.4)	25 (18.3)	13 (11.5)	20 (22.5)	10 (6.8)	17 (20.5)	25 (19.2)	23 (19.6)	19 (12.4)	10 (20)

[a]Countries listed in alphabetical order. Answer categories listed in descending order of frequency for Argentina (SC doctors on referral letters). Various answers possible.
[b]The category 'others' groups together all categories with percentages of <5%. These include: haven't acquired the habit of filling it in; don't know how to send it/fill it in; and no knowledge of the mechanism.

The empty cells mean that doctors in this country did not report this category or it is included in 'others' because its percentage is <5%.

Table 4. Characteristics of the content of referral and reply letters and difficulties in their use

	Argentina *n* (%)	Brazil *n* (%)	Chile *n* (%)	Colombia *n* (%)	Mexico *n* (%)	Uruguay *n* (%)
Referral letter	**(*n* = 160)**	**(*n* = 125)**	**(*n* = 204)**	**(*n* = 222)**	**(*n* = 201)**	**(*n* = 96)**
Information usually received						
Clinical history	97 (60.6)	62 (49.6)	75 (36.8)	95 (42.8)	108 (53.7)	47 (49.0)
Referral reason	126 (78.8)	61 (48.8)	68 (33.3)	160 (72.1)	110 (54.7)	64 (66.7)
Suspected diagnosis	95 (59.4)	57 (45.6)	163 (79.9)	192 (86.5)	138 (68.7)	43 (44.8)
Treatment	89 (55.6)	32 (25.6)	33 (16.2)	109 (49.1)	70 (34.8)	45 (46.9)
Medical tests	80 (50.0)	24 (19.2)	52 (25.5)	103 (46.4)	74 (36.8)	30 (31.3)
Reply letter	**(n = 148)**	**(n = 52)**	**(n = 121)**	**(n = 35)**	**(n = 126)**	**(n = 47)**
Information usually received						
Clinical history	42 (28.4)	15 (28.9)	15 (12.4)	17 (48.6)	31 (24.6)	18 (38.3)
Diagnosis	115 (77.7)	38 (73.1)	97 (80.2)	27 (77.1)	97 (77.0)	37 (78.7)
Treatment	127 (85.8)	42 (80.8)	113 (93.4)	31 (88.6)	114 (90.5)	40 (85.1)
Medical tests	84 (56.8)	14 (26.9)	20 (16.5)	14 (40.0)	34 (27.0)	15 (31.9)
The reply letter addresses the reason for referral						
Yes	116 (78.4)	35 (67.3)	87 (71.9)	19 (54.3)	111 (88.1)	37 (78.7)
Reply letter is received in good time to make decisions						
Yes	74 (50.0)	16 (30.8)	35 (28.9)	7 (20.0)	40 (31.8)	25 (53.2)
Difficulties detected in use of referral and reply letters[a]	**171 (52.6)**	**56 (23.9)**	**198 (56.9)**	**242 (66.4)**	**151 (41.8)**	**78 (44.8)**
Don't fill them in/send them	94 (55.0)	10 (17.9)	30 (15.2)	46 (19.1)	22 (14.6)	44 (56.4)
Incomplete/erroneous data	49 (28.7)	22 (39.3)	97 (49.0)	111 (46.1)	67 (44.4)	12 (15.4)
Illegible handwriting	22 (12.9)	3 (5.4)	50 (25.3)	61 (25.3)	20 (13.3)	–
No forms available	14 (8.2)	4 (7.1)	–	–	13 (8.6)	9 (11.5)
Lack of time to fill them in	13 (7.6)	5 (8.9)	11 (5.6)	13 (5.4)	–	–
Inadequate layout of forms	–	6 (10.7)	21 (10.6)	48 (19.8)	21 (13.9)	6 (7.7)
Bureaucratic problems	–	6 (10.7)	–	–	–	–
Arrive too late	–	3 (5.4)	21 (10.6)	–	11 (7.3)	–
Administrative/bureaucratic use	–	–	–	14 (5.8)	–	–
Others[b]	26 (15.2)	7 (12.5)	50 (25.3)	29 (12.0)	19 (12.6)	18 (23.1)

[a]Countries listed in alphabetical order. Answer categories listed in descending order of frequency for Argentina. Various answers possible.

[b]The category 'others' groups together all categories with percentages of <5%.

The empty cells mean that doctors in this country did not report this category or it is included in 'others' because its percentage is <5%.

knowledge and receipt of the referral letter. In Brazil and Uruguay, the level of knowledge of this mechanism is low, which may be related to the fact that not all the networks studied have a specific standardized form to fill in. The referral letter is received more frequently than the reply letter, although there are still significant shortfalls with the exception of Chile and, to a lesser degree, Mexico, probably because their use is obligatory for referring patients to secondary care.

A limited use of referral and reply letters (Forrest *et al.* 2000; Stille *et al.* 2006; O'Malley and Reschovsky 2011; Vermeir *et al.* 2015a) and delays in receiving replies (Gandhi *et al.* 2000; Berendsen *et al.* 2009; Vermeir *et al.* 2015a) have also been described in studies based on surveys of doctors in other regions such as North America and Europe. Nevertheless, the levels reported in this study for receiving reply letters are both striking and worrying, as they are considerably lower than those found in the abovementioned studies, especially if we take into account that they only refer to those doctors who claim to be aware of the mechanism, not to the entire sample.

The differences detected between PC and SC doctors' reports on sending and receiving referrals and replies, also found in other studies (Berendsen *et al.* 2009; O'Malley and Reschovsky 2011), may be due—apart from a possible overstatement of sending behaviours and understatement of receipt (O'Malley and Reschovsky 2011)—to the presence of organizational barriers in the networks that prevent the letter from reaching the doctor to whom it was sent. In fact, the doctors identify some of these barriers as reasons for not receiving the letter: the patient (the main mechanism for sending clinical correspondence between care levels in most countries) failing to hand it over and in Colombia, providers and insurers using the documents for administrative purposes (e.g. to authorize or invoice the clinical services), which would be contrary to the norms (República de Colombia Ministerio de Salud y Protección Social 2012).

As regards content, PC doctors appear to perceive greater quality of information in the reply letters they receive. Furthermore, in almost all of the countries, they confirm that the reply letters address the reason for referral, in keeping with studies conducted in other contexts (Berendsen *et al.* 2009; Vermeir *et al.* 2015a). However, shortfalls were reported for both referral and reply letters regarding the transfer of information on other aspects that doctors consider important (Gandhi *et al.* 2000; Campbell *et al.* 2004), such as the patient's clinical history, test results or prescribed medication. Many studies show the same shortfalls in recording information, both in high income countries (Forrest *et al.* 2000; Gandhi *et al.* 2000; Grol *et al.* 2003; Campbell *et al.* 2004; Durbin *et al.* 2012; Martinussen 2013; Vermeir *et al.* 2015b) and in middle and low income ones (Jarallah 1998; Smith *et al.* 2007; Orimadegun *et al.* 2008). In this study, however, it is also surprising how low the percentage is of specialists who report that they receive the reason for referral in their referral letters, especially in countries like Chile, Brazil and Mexico, when this is the most important information that a referral letter should contain (Durbin *et al.* 2012). This may indicate that doctors are using the form mostly as an administrative mechanism to direct the patient to the required medical specialty area and not as a mechanism for sharing information (Vargas *et al.* 2015).

Different factors associated with the use of referral and reply letters

One of the most relevant findings of this study is the association between SC doctors' frequent use of reply letters and interactional factors: knowing the PC doctors personally, trusting in their clinical skills, and recognizing their role as coordinators of patient care across levels. Although studies on the determinants of using referral and reply letters do not tend to consider these, several qualitative studies have already highlighted their influence on use of the mechanism (Muzzin 1991; Berendsen *et al.* 2006; Vargas *et al.* 2016) or on coordination between levels in general (Vazquez *et al.* 2017). Knowing the professionals from the other care level personally strengthens 'mutual knowledge', i.e. understanding that tasks are interdependent and that the actions of one affect the rest (Fussell and Krauss 1992; Gittell 2011), which together with trust in the skills of doctors of the other care levels, are key aspects for communication (Muzzin 1991). Furthermore, SC doctors who recognise the PC doctor as care coordinator may be more aware of the importance of replying to their referral letter to enable them to fulfil their role in the follow-up of patients.

In contrast, PC doctors' use of referral letters is not associated with interactional factors, but rather with their age. The limited evidence available on the association with age or years of practice is inconclusive (Stille *et al.* 2006; O'Malley and Reschovsky 2011). Although further research is required, one possible explanation for this is that there are more regulations established for referral letters (e.g. in some countries their use is obligatory for referring patients to secondary care) and that there is less awareness of the regulations among younger and less experienced doctors. Another is the possibility that young doctors feel less confident about writing a referral note to specialties in which they have not had additional training, as a qualitative study has pointed out (Muzzin 1991).

Another relevant finding is that feedback is created in the use of the two types of correspondence. In more specific terms, use of the reply letter is associated with receipt of the referral letter. Some qualitative studies provide a possible explanation: in contexts where specialists do not receive any communication from referring physicians, they often assume a lack of interest or competence on the part of the referrer (Muzzin 1991).

Finally, the analysis of barriers to use of the mechanism also points to other organizational factors, such as inadequate layout of the forms, their lack of availability in the workplace and a lack of time to fill them in. The time factor coincides with the results of qualitative studies conducted in some of the study countries (Harris *et al.* 2007; Vargas *et al.* 2016) and in other contexts (Gandhi *et al.* 2000; Smith *et al.* 2007; O'Malley and Reschovsky 2011). However, no statistically significant association was found in the logistic regression model between time per patient and use of the mechanism. Transferring the relevant information undoubtedly takes time and further analysis of this aspect is required, but these results also invite us to reflect on whether lack of time is used as a '*standard excuse*' for not carrying out certain tasks—more so when the times per patient seem adequate—and whether it would be more relevant to focus on doctors' potential interest in communicating and how it is conditioned by other factors detected, such as adherence to the PC-based model, trust or mutual respect.

Policy lessons for national and international healthcare managers and policymakers

The results of this study highlight the need to implement strategies for improving the use of referral and reply letters in the networks studied, given their importance as almost the only mechanism available for information exchange. The strategy that is now being discussed in other health care systems (Berendsen *et al.* 2009; Durbin *et al.* 2012; Vermeir *et al.* 2015 b), which is also relevant for the study countries, is the promotion/introduction of this mechanism through multifaceted interventions that include standardized forms, guidelines, performance feedback for doctors, on-site training and active organizational support for changes in practice through the involvement of stakeholders. For the networks studied, changes in administrative procedures should also be added to the list, in order to avoid using the patient as the means of delivery and ensure timely receipt of the information.

However, this study also highlights the importance of acting on the factors that determine the use of the mechanism, both in the study countries and other contexts. These factors are also relevant for the implementation of new IT-based tools for communication between levels, such as shared electronic medical records or virtual consultations. Firstly, therefore, measures should be taken to improve understanding, trust and adherence to the health model based on PC as the care coordinator. This can be achieved by instructing SC doctors in the PC model, but also by improving the training of PC doctors, not only to boost the quality of their referrals but also to help foster specialists' confidence in them. Secondly, strategies are required to facilitate direct personal contact between PC and SC doctors (e.g. participation in joint clinical sessions to discuss roles, follow-up plans, etc.), which can transform anonymous professional relationships into working partnerships (Muzzin 1991).

Limitations of the study

Further studies are required to compare our results—based on self-reporting by doctors—on frequency of use, receipt and content quality of referral and reply letters, with other information sources, e.g. clinical records. We were unable to explore associations with other types of organizational factors through a multi-level analysis, which would require a larger sample of networks. Moreover we did not consider factors related to the patients seen by the surveyed doctors (severity, etc.), which also influence use of the referral and reply letter.

Conclusion

This study highlights significant problems in the use of referral and reply letters in the public networks studied in six Latin American countries: the infrequent or late receipt of reply letters, and in some countries also referral letters, as well as the low quality of data recording in them. Although further research is required, it is likely that these problems are negatively impacting quality of care, and thus require multifaceted strategies that take the factors determining the use of the mechanism into account.

Supplementary data

Supplementary data are available at *Health Policy and Planning* online.

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