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Title

Role distribution and collaboration between specialists and rural general practitioners in long-term chronic care: A qualitative study in Switzerland

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Abstract

Introduction

This study explores general practitioners' (GPs) and medical specialists' perceptions on role distribution and collaboration in care for patients with chronic conditions, exemplified by spinal cord injury.

Methods

Semi-structured interviews with GPs and medical specialists caring for individuals with spinal cord injury in Switzerland. The physicians we interviewed were recruited as part of an intervention study. We used a hybrid framework of inductive and deductive coding to analyze the qualitative data.

Results

Six GPs and six medical specialists agreed to be interviewed. GPs and specialists perceived the role of specialists similarly, namely as an expert and support role for GPs in case of specialized questions. Specialists' expectations of GP services and what GPs provide differed. Specialists saw the GPs' role as complementary to their own responsibilities, namely as the first contact for patients and gatekeepers to specialized services. GPs saw themselves as care managers and guides with a holistic view of patients, connecting several healthcare professionals. GPs were looking for relations and recognition by getting to know specialists better. Specialists viewed collaboration as somewhat distant and focused on processes and patient pathways. Challenges in collaboration were related to unclear roles and responsibilities in patient care.

Conclusion

The expectations for role distribution and responsibilities differ among physicians. Different goals of GPs and specialists for collaboration may jeopardize shared care

models. The role distribution should be aligned according to patients' holistic needs to improve collaboration and provide appropriate patient care.

Keywords: interface, collaboration, role distribution, primary care, secondary care

Main text

Introduction

Collaboration between healthcare professionals (HCPs) is important for the effective and safe delivery of care. Healthcare professionals working together can tackle the burden of chronic diseases. Furthermore, each professional can add relevant skills and knowledge to assess patients (1). In particular, good collaboration between specialists and general practitioners (GPs) is essential for meeting patients' needs. GPs see persons with chronic health conditions often as the first point of contact providing medical and psychosocial care, but patients also require specialized services and referrals. A lack of collaboration and coordination between primary and secondary care often leaves the patient be the only person to have an overview of services provided (2). Factors that influence the quality of coordination and collaboration are often organizational such as information exchange and communication between professionals. Especially, in Switzerland implementation of interprofessional and interdisciplinary information exchange technologies seems to be difficult (3).Personal factors are related to each other's knowledge and skills and having a collaborative attitude (1, 4). This list is not all-inclusive but highlights the complexity of collaborative care. Frequently, complex chronic conditions further complicate care. Patients might present a challenging interplay of health conditions and existing treatment approaches that need to be considered (2). Therefore, especially patients transiting the primary-secondary care interface benefit from enhanced information exchange and simplified

communication enabled by collaborative care between physicians (5). Evidence for certain chronic conditions showed that collaborative care is superior to usual care (6).

Individuals with spinal cord injury are an excellent example of persons with chronic conditions requiring life-long primary and secondary care. Along with the functional impairments of the condition itself, secondary conditions such as spasticity, chronic pain, sexual dysfunction, bowel and bladder problems, and pressure injuries are often untreated (7). Due to medical advances, the individuals' life expectancy increased and the average age of individuals in Switzerland is 58 years (8, 9). Especially in rural areas where specialist services are unavailable, individuals with spinal cord injury are more likely to substitute them with GP services (10). However, GPs might lack spinal cord injury-specific knowledge (11). In line with research suggesting introducing small outpatient clinics or outreach services to meet healthcare needs (10), selected rural GPs might fill this gap. Those GPs providing additional services do not need to become experts for spinal cord injury because this patient population is small (12). However, GPs need to be well connected with specialized physicians and other HCPs who are more experienced to meet specific needs. Research shows that most of the GPs are inexperienced in the topic of spinal cord injury but care for most of the secondary conditions of this patient population (13-15).

This qualitative study explores the perceptions of GPs and medical specialists willing to engage in care for patients with chronic spinal cord injury on role distribution and collaboration. The study aims to contribute to a better understanding of 1) the role distribution, 2) facilitators and barriers to collaboration and 3) potential improvement possibilities. The questions are applicable in care for patients with chronic conditions in general.

Methods

Setting and participants

We followed the 32-item COREQ checklist as a reporting guideline (16) which can be found in appendix table 1.The ethical approval was sought and awarded by the Ethics Committee of Northwest and Central Switzerland (EKNZ; # 2019-01527-2). We conducted individual semi-structured interviews with rural GP's and medical specialists for spinal cord injury participating in the SCI-CO intervention study. The study protocol for the intervention may be consulted for details (17). In short, 120 GPs were asked to participate in the intervention study of which we anticipated ten agreeing to participate. Regarding the specialists, we anticipated 16 specialists employed in the four specialized centers to participate.

Figure 1 shows where the participating physicians are located. Eight GPs, who agreed to participate in the intervention, are shown with their catchment area. All GP practices are located in rural, primarily alpine areas of Switzerland, with a minimum 60-minute distance by car to a specialized center for spinal cord injury (18). Six red pentagons on the map mark specialized centers for spinal cord injury care that offer inpatient and outpatient services. The thirteen specialists, who agreed to participate in the intervention study are employed in these centers.

Figure 1 Location of GP practices and specialized service providers for spinal cord injury in Switzerland

[Figure 1 here]

Colorful areas depict the participating practices' catchment areas. Four red pentagons mark the specialized centers for spinal cord injury in Switzerland. Two faded red pentagons mark external ambulatory service units, where patients can receive outpatient services (e.g., annual check-ups) from specialists traveling regularly to these locations. Map data from OpenStreetMap, openstreetmap.org/copyright.

Data collection

Individual semi-structured interviews were conducted with an interview guide to explore experiences, perceptions, and opinions. As a framework, we followed Fereday's approach, who developed an analysis based on "descriptive and interpretive theory of social action that explores subjective experience within the taken-for-granted, "commonsense" world of the daily life (19)." The guide's content was informed by other qualitative studies exploring collaboration between HCPs. Questions were taken from the studies' questionnaires and adapted to our context. Our interview guide with its respective sources can be found in table 1.

Table 1 Interview guide with templates from literature

[Table 1 here]

One researcher contacted the physicians by e-mail or telephone to inform them about the study's aim and conducted the individual interviews. The interviews were conducted between the 21st of April 2020 and the 3rd of May 2021. A doctoral student trained in qualitative research (RT) conducted the interviews in person and via video chat in German. The interview length ranges from 20 minutes to 60 minutes, with an average length of 37 minutes. At the beginning of the interview, the researcher informed participants about the study's objective, the aim for recording the interview, and the measures taken to ensure confidentiality of the data. Participants gave verbal consent for participation and recording of the interviews. The interviews were transcribed verbatim with the audio recording.

Data analysis

The interviews with GPs and specialists were analyzed successively. First, all transcripts were read to become familiar with the data. Second, a hybrid method of inductive and deductive coding, according to Fereday (19), was applied. MAXQDA

141 software supported the organization of data and coding. The researcher who
142 conducted the interviews coded the transcripts and discussed them in meetings with
143 the research team. The team constantly reviewed transcripts to ensure that the
144 identified codes sets were applied to all transcripts. Relevant codes for each physician
145 group were then summarized, and sub-themes were formulated. Overarching themes
146 similar to the structure of the interview guide were used to combine sub-themes of GPs
147 and specialists. We chose to present the results in this manner to highlight any
148 differences or similarities between the two groups in keeping with the purpose of this
149 study. The quotes identified as the most meaningful by the researchers were translated
150 into English.

151 Physicians brought up sub-themes that were not directly related to the structure of the
152 interview guide. Examples of those sub-themes include: practicing in rural areas and
153 the impact on care; political and system-related factors that have influenced the
154 development of primary care in Switzerland; and the impact of media and the internet
155 on patient behavior and preferences for care. The last two sub-themes did not provide
156 information to answer our research questions. Thus, the data on these sub-themes
157 were dropped.

158 ## Results

159 *Participants*

160 Six GPs, 75% of GPs participating in the intervention study and six medical specialists,
161 81% of specialists participating in the intervention study agreed to be interviewed. Time
162 constraints were the reason for physicians to decline an interview. Two GPs and one
163 medical specialist were female. Four of the six interviewed GPs were new to the topic
164 of spinal cord injury and answered the questions based on their experiences with
165 chronic conditions. The specialists had a background in general internal medicine with

specializations such as urology or physical medicine and rehabilitation. They had extensive experience in care for spinal cord injury and worked in specialized centers. More characteristics can be found in Table 2. The results are structured according to the overarching themes. A detailed overview of overarching themes and sub-themes can be found in appendix table 2 and appendix table 3.

Table 2 Physicians' characteristics

[Table 2 here]

Different perceptions on GPs' roles and responsibilities

GPs perceived their role as holistic managers and guides. They considered this role important for their patients because *"almost nobody knows what they need and where to get it in today's medical jungle." (GP2).* Accordingly, they had an overview of the social situation, comorbidities, and medications, requiring broad medical knowledge. Due to this managerial role, most GPs were responsible for documenting information and sharing it with other HCPs. Additionally, GPs reported knowing patients' expectations and their preferences for care. This knowledge seemed critical for them to fulfill their role as gatekeepers to specialized care. Accordingly, GPs used their holistic patient view and broad medical knowledge to decide whether to refer a patient to a specialist. Several GPs highlighted recognizing the boundaries of their knowledge and the moments when a referral is necessary. *„I perceive the GP to be the hub of everything. Because the specialist is usually only interested in the specialized field, I am the one who looks at everything. Moreover, in the end, I am the one with the most information and who coordinates. If there are others, I am not the one to command, but I know where threads come together and who does what." (GP5)*

Specialists perceived the GPs role as the first contact person for patients with chronic spinal cord injury. As illustrated by this quote, many specialists reported that individuals with spinal cord injury value and trust their GP. *“They [the patients] have a great relationship to the GP. Especially in rural areas, there still is the family doctor, and that is great.” (SP3)* Concerning the GPs responsibilities, this specialist explained that GPs should be contacted for general care. *“You need to distinguish between «Is this issue directly related to the spinal cord injury?»* W*ith these issue*s*, GPs are overtaxed because they don't have the specialized knowledge. And then I think there are health problems where the spinal cord injury doesn't play a role.” (SP3) This specialist perceived GPs to be gatekeepers “[…] to avoid that people call with trivial problems on a Sunday.” (SP4)* Furthermore, specialists wanted GPs to document patient information and to keep track of patients’ medication in particular. They described that it is helpful to receive a medication list before consulting a patient. Additionally, specialists explained that GPs should prescribe medication or therapeutic interventions such as physiotherapy and monitor patients’ progress. Some specialists illustrated arrangements with GPs in which expensive medication was prescribed by the specialist to not *“weigh down” (SP5)* the GPs’ budget.

Specialists as experts and support for GPs

All specialists perform regular check-ups for persons with a spinal cord injury in the specialized centers and are explained to be an information source and support for GPs. The specialists should be contacted for spinal cord injury-related questions, for which they provide additional information or advice. *„You are identified as the qualified person, who has the solution, but it is still within the competencies of the GP. And the only thing missing is the quick input on spinal cord injury.” (SP3)* On the contrary, the specialists’ responsibilities seemed to differ. While most specialists reported caring for

patients within the range of their medical discipline, this specialist specified that the role is more like a specialized GP. *“I think it’s about being a GP for the specific population to care for special issues that the GPs don't know anything about.” (SP3)*

All GPs explained that the decision to refer the patient to a specialist is related to their own skills and knowledge. This GP summarizes the relation of the two roles as follows “*There are aspects where I feel very confident, where I go very far with care and when I realize I reached my limit, […] I quickly seek the specialist’s advice.” (GP6)* GPs expected specialists they collaborate with to provide or confirm information. *“It's always good if you are confirmed in your approach, or if you are confirmed in your uncertainty […]. (GP4)* Additionally, this GP explained that it is important to be informed about the patient after a referral. *“If you think about the definition of a referral, then it is actually not only to support the patient but also to support the one who initiates the consultation, namely us, the GPs. This means that not only the patient and the specialist should continue working together, but the GP must also remain in the boat.” (GP2)*

Knowing each other as a facilitator for collaboration and the perceived importance of collaborating. Both GPs and specialists concluded that patients could be best cared for collaboratively. Collaboration was essential in a highly complex situation requiring multidisciplinary or interprofessional care. *„I think, the longer the patient is chronically ill or, the higher the level of suffering, the better communication between physicians and therapists must be.” (GP6).* In addition, patients' satisfaction with services and their care seemed to be a crucial aspect of physicians' collaboration. As this GP explained, perceived satisfaction resulted from the physicians' shared or agreed-upon care goals. *“One can tell that the patient is satisfied because he/she sees that GP and specialist pull in the same direction.” (GP4)*

Physicians reported that knowing each other personally was the leading facilitator for good collaboration. Building a relationship led to an awareness of each other's competencies, skills, and preferences. Therefore, knowing each other was a crucial component in allocating roles and tasks, as explained by this specialist. *"I think it is more like a togetherness. However, it is not easy, if you don't know somebody, to realize how much the colleague wants to do themselves and how much they want us to do. Moreover, I think this is an arrangement. It is difficult initially, but if it is sorted out, it is clear… everybody has a role, and it works." (SP5)* Furthermore, GPs and specialists reported that knowing each other enriched communication, namely that communication was easier, enabled discussions on an equal basis, and enhanced cooperative behavior. *"As a GP, this is the most important requirement to know that you have colleagues, with whom collaboration works, information exchange works and you do not dread to tell them «Hey, you are wrong and I see it totally differently». And this needs to work cooperatively and without too much effort". (GP2)*

Different communication styles and preferences

GPs and specialists used communication and chose the communication channel differently. While specialists saw it as necessary for appropriate patient care, GPs mentioned personal benefits from a direct exchange with specialists. This specialist elaborated what is valued in communication with the GP, namely the urgency and content of information. *„It depends on how urgent the information is. If it truly is something that needs to happen the next day, we have to talk to each other; you have to call. But if it is not important, a letter is sufficient if one can do it within the next two or three weeks. […] A telephone call is a last resort." (SP2)* It was valuable for GPs to receive a timely update from the specialist as part of the referral process, as well. This GP relied on medical reports and emphasized that they must be precise in providing

services and recommendations for the next steps. *„I don't think there are any standards. I believe everybody does it as they think it is right, and one can feel if it fits for yourself or not. For example, I worked with two cardiologists. I always knew that one formulated rather vague statements, and the other gave exact and concise statements. And then you rather want to work with the one giving precise statements instead of the one who hides behind general propositions." (GP6)*

Some GPs described direct communication (e.g., via telephone) as an important information exchange and discussion platform for which it is worth taking time and resources. This GP illustrated how specialists' phone calls are incorporated into daily practice. *"We have the order in the practice that specialists' phone calls will always be put through. Even if I'm in a patient consultation, I just quickly go outside to my computer, I am updated, and I enter the information. Alternatively, the psychiatrist calls «I have seen this patient, and it doesn't look too good.» And then you might have a short exchange. Or you discuss medication changes if you want to prescribe a medication where the specialist knows a better alternative. This way you simultaneously learn something." (GP1).* While GPs wanted to learn from a direct exchange, this specialist described it as a tool to "align" GPs with their expectations or suggestions for the patients' care plan. *"I call [the GP] and explain why we did, what we did, even if it was against the expectations, to ensure that the procedure is not stopped or changed in primary care. Therefore, it is great to contact the GPs and explain why something has to be done this way." (SP4)*

Unclear role distributions and uncooperative behavior as barriers to collaboration

Barriers to good collaboration described by physicians were related to challenges in the distribution of responsibilities and past collaborative experiences. Specialists explained to appreciate a clear division of roles to ensure that patients' needs were

met. Accordingly, the main barrier to collaborating was uncertainty about who would take on tasks and responsibilities. Two relevant barriers to collaboration for GPs were lack of information sharing and lack of counter-referrals by specialists. GPs reported that they value precise and timely information on the patients' situation after a referral.

On the one hand, this included information on the provided services, their results, and specific suggestions. On the other hand, GPs expected a short update whenever the specialist referred the patient to another specialist. Without this update, this GP experienced losing the patient. *"If a specialist refers to another specialist, and another specialist… and by the second specialist, the GP is no longer listed on the medical record and receives no information." (GP2)*

Most GPs reported that past collaborative experiences influenced patient care. In particular, referring patients to a specialist again depended on previous experiences. If GPs lacked information or specialists did not counter-refer patients, GPs were unlikely to refer more patients to that specialist. *"And we can say: All right, there are other competitors in neurology, whom we can refer our patients to and where it works better." (GP1).* Multiple GPs reported experiences with specialists who did not counter-refer the patients. GPs hypothesized that the reasons might be selfish and pecuniary specialists or specialists' thoughts that the GP was not able to care for the patient. Regardless of the reasons, this GP described the consequences of this experience. *"If that occurs, one talks to GP-colleagues and these [specialists] will no longer get referrals. They are on their own with the patients they attracted for themselves." (GP1)*

Rural practice locations influence collaboration and patient care

Although this sub-theme was not part of the questionnaire, both physician groups raised it. It is about practicing in rural areas of Switzerland, which seemed to have particular implications for care provision and collaboration. Firstly, one implication

concerned the population's perception of the GP. According to the GPs, patients from urban areas can seek second opinions easily and thus behave differently towards physicians. One GP explained that people from rural areas no longer have the *"faith in the white coat anymore, as it was 50 years ago" (GP2*), but still value the GPs opinion, unlike city dwellers. As mentioned and confirmed before, specialists shared their patients' experiences thinking highly of their GP. Secondly, some GPs and specialists mentioned that anonymity in a city contributes to uncooperative and competitive behavior among HCPs.

In contrast, this GP illustrates the benefits of collaboration and patient care in rural primary care practice. *"I think I am in quite a luxurious position. […] I know the whole medical offer throughout the whole canton. Moreover, many of the colleagues I know personally, and this is a totally luxurious situation regarding collaboration. The same goes for hospitals. Because we have a relatively small hospital, where physicians are practicing long-term, and do not change every two years." (GP2)* Thirdly, one specialist related the choice of communication channels to the degree of urbanity. This specialist observed that HCPs used the phone more than in the urban hospital where the specialist previously worked.

Enhancing communication and continuing medical education as improvement strategies

Both GPs and specialists had ideas about improving collaboration and patient care. Specialists acknowledged that more direct communication with GPs would be beneficial, as this specialist explained. *"Maybe we have to establish this from our side, that we call [the GP] a month after [discharge] and ask how it is going. […] It is quite common that we do not hear from the patients until the check-up three months after discharge, which is the first visit in the ambulatory unit. And maybe by then, it is already*

too late." (SP1) However, this specialist was not optimistic about establishing regular phone communication with GPs. *Of course, one wishes an intensive contact, to get to know each other, but this is always a question of own resources, and the GPs' resources." (SP6)*

Specialists wanted the GPs to become more knowledgeable and suggested continuing medical education events. They highlighted that GPs should be aware of particular treatment approaches that, although evidence-based or proven successful in other patient populations, were counterproductive or even harmful in individuals with spinal cord injury. On the other hand, other aspects of care for individuals with spinal cord injury were no different from those of other patient groups. According to this specialist, persons with *„a spinal cord injury have high blood pressure; they have diabetes, they are obese. All these widespread diseases occur in individuals with spinal cord injury. And these are traditional topics that are monitored by the GP." (SP2)* While specialists wanted GPs to gain more medical knowledge, GPs also saw benefits in medical education events, namely getting to know each other at education events and establishing a network with long-term partners. This network was the basis to form informal communication channels or new care models. In the case of this GP, even the possibility to organize a work shadowing is considered. *„If it is concerning highly specialized services, that I have never done before, I would like to say «I will come and do a work shadowing with you, to know how this works.»" (GP3)* Topics for medical education listed by the GPs were related to prevalent secondary conditions such as pressure injuries, bladder and bowel management, but also related to assistive devices such as wheelchair cushions.

Discussion

Summary of findings

363 This qualitative study explored the perceptions of specialists and rural GPs on role
364 distribution and collaboration in the care of patients with chronic diseases in
365 Switzerland. The role of the specialist was perceived similarly by GPs and specialists
366 as an expert and support for GPs in specialized questions. There was a difference
367 between specialists' expectations of GP services and what is provided by GPs.
368 Specialists saw the GPs' role as complementary to their own responsibilities, namely
369 as the first contact for patients and gatekeeper to specialized services. GPs saw
370 themselves as care managers and guides with a holistic view of patients, connecting
371 several HCPs. GPs were likely to search for relations between professionals and
372 recognition by getting to know specialists better. Specialists viewed collaboration as
373 somewhat distant and focused on processes and patient pathways. Challenges in
374 collaboration were related to unclear roles and responsibilities in patient care.

375 *Interpretation and comparison with existing literature*

376 The roles and responsibilities of specialists we explored were similar to those
377 described in other research. GPs in the study of Diamantidis and colleagues mentioned
378 specialists' confirmation of appropriate evaluation, additional evaluation and testing,
379 and medication regimen advice as motivations for participating in collaborative care
380 (20). Furthermore, Forrest suggested categorization of roles and responsibilities of
381 specialists (21): On the one hand, *cognitive consultants* provide advice to reduce
382 clinical uncertainty. On the other hand, *procedural consultants* perform a technical or
383 diagnostic procedure service. In contrast, the third type of specialist, *co-managers*, was
384 much more involved in ongoing care and performed care management tasks. Our
385 findings support the expected and self-perceived role of specialists to be *consultants*.
386 The primary care physicians we interviewed did not explicitly distinguish between
387 *cognitive* and *procedural consultants* but described the respective responsibilities as

mentioned by Forrest. Last, GPs rated timely communication with the GP as a crucial responsibility in Forrest's and in our study (21). These remarks underline the GPs' role as system-wide care managers, gathering and sharing information with appropriate professionals and institutions.

We identified different perceptions among GPs and specialists for the role of the GP. The different perceptions confirmed that HCPs require organizational efforts to discuss their roles and instead take over responsibilities based on patients' needs and the necessary professional skills to fulfill them (23). As patients' needs differ, role distributions and responsibilities might change and therefore different forms of interprofessional cooperation are conceivable (24). However, to successfully adapt collaboration, HCPs might benefit from clarified role distributions and realistic expectations. As an example, Sampson et al. observed unrealistic expectations of service provision, and it caused frustration in patients and physicians simultaneously (5). The differences in role perception could relate to power struggles as described by the emancipatory framework (25) and professional territoriality as observed in Swedish research (22).Especially in situations where specialists feared that GPs expand their role, they defined a professional territory to secure their own role and status (22). Additionally, the perspectives of the GPs we interviewed reinforced some observations made in other research on the power struggles between GPs and specialists. The specialists in our interviews were distant regarding collaboration but did not openly express disliking GPs.

In comparison, specialists in a Dutch qualitative study stated that they could not learn anything from GPs, nor did they see them as equals in their working relationship (26). The GPs we interviewed seemed to have had bad experiences but described measures to counteract uncooperative behavior. Another explanation for the unclear

role distribution among physicians in our study could be that spinal cord injury care is not a common health condition (12). The GPs we interviewed were not highly experienced in collaboration specific to this condition. Different to other health conditions, persons newly experiencing a spinal cord injury consult specialists first. Usually, GPs are informed about the injury after initial rehabilitation is completed and the patient is transitioning to the community. Therefore, the specialists for spinal cord injury take on a significant role (15).

In this study, physicians suggested organizing shared continuing medical education events as a strategy to improve collaboration. While GPs wanted to get to know specialists at those events and form a relationship with them, specialists suggested education for GPs to improve their medical knowledge. In a study to initiate GP-specialist collaboration, the intervention was medical education, which improved satisfaction with communication and self-reported confidence and clinical practice (27, 28). Additionally, quality circles for quality improvement in primary have been shown to be an effective measure and seem to be widely accepted in Switzerland (29, 30). These strategies are based on education and aim to improve the knowledge transfer between the two professions.

Further qualitative research observed physicians forming personal relationships at education events while exchanging information and experiences. The interviewed physicians acknowledged that getting to know each other and each other's working environment would reduce unrealistic expectations about each other's roles. Furthermore, a personal relationship was essential to building trust for the working relationship (5). According to a typology by D'Amour and colleagues, a formalization process supports physicians getting to know each other (1). Formalization can define core values and competencies and, therefore, a clear distribution of responsibilities

(31). This formalization may be initiated at regular exchange meetings or educational events. Berendsen et al. supported this idea, as they found that GPs enjoyed working closely with specialists to increase their medical knowledge (32, 33). The authors suggested education as a promising way to improve collaboration because medical specialists were willing to teach GPs and enjoyed making them enthusiastic about their work domain (26, 33).

We found indications that the rural GPs we interviewed are well connected despite the rural location. They all established a network, particularly within their region, and have had few negative experiences in collaboration. This observation can be explained by other qualitative research showing that rural GPs had a greater appreciation of learning from specialists than their urban counterparts (5). Furthermore, the specialists we interviewed illustrated that rural GPs are particularly valued and trusted by patients. Research has different approaches to explaining rural areas' particularities, especially concerning the GP-patient relationship. Farmer argued that a long-term relationship is developed, simply because the patient is exposed to the same GP, as there often is only one practice in rural areas (34). The long-term connection leads to empathy and trust between physician and patient. Besides this long-term relationship, GP and patient are connected because they live close to each other and share a community. Knowing each other personally opens up additional opportunities for information exchange. Thus, the GP can receive personal information that might have been missed in consultations. Farmer explained that knowing personal or biographical information about the patient was associated with providing holistic care. As rural patients are more likely to face difficulties in accessing care, they especially value a continuous experience monitored by the GP, which was also proven to be true in the Swiss

population (35). Thus, a rural GP with a long-term connection to patients is likely to be trusted and appreciated.

Limitations

The physicians we interviewed were part of the SCI-CO intervention study and thus most probably more motivated than other physicians to improve collaboration. Furthermore, only a subset of physicians who are part of SCI-CO could be interviewed. Due to this selection and the small number of physicians, the generalization of our findings is limited. However, we found that the results of the interviews were rich and insightful that we were able to focus on them. Another limitation might be that spinal cord injury is a specific setting. Few GPs have experience in spinal cord injury care, and the patient population is small. Nonetheless, our findings are mostly applicable in general care for patients with chronic conditions, as individuals with spinal cord injury are very much concerned with general concepts of chronic conditions and their pitfalls. To add to our research, the perception of patients and relatives of the role distributions should be explored.

Implications

We believe that HCPs and researchers may learn from the concepts incorporated in delivering care for this complex patient population. Concepts of care delivery that are usually incorporated in spinal cord injury care include interprofessional and interdisciplinary care, shared decision-making, and vertical integration of care. Multiple stakeholders want to incorporate these concepts into daily practice, but the implementation seems to be complicated. Spinal cord injury care might serve as a model to learn from.

The findings provide insights into the physicians' motivation to collaborate. Considering this information, continuing medical education may be implemented to enhance

collaboration. First, the GPs' search for relations can be met by getting to know each other at education events. Second, discussing patient pathways and processes should be part of patient case discussions. Third, a regular timeslot to communicate with each other must be provided. Furthermore, the roles of the GPs and specialists need to be addressed formally to ensure a clear and complementary distribution of tasks and responsibilities. The health system needs to reward healthcare professionals and enable them to establish collaboration. Appropriate information exchange technologies and resources for exchange need to be provided.

Conclusion

The expectations for role distribution and responsibilities differ among physicians. Different goals of GPs and specialists for collaboration may jeopardize shared care models. The role distribution should be aligned according to patients' holistic needs to improve collaboration and provide appropriate patient care.

Declaration of Interest Statement

All authors completed and submitted the International Committee of Medical Journal Editors form to disclose potential conflicts of interest.

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641 # Tables and Figures

642 *Table 1 Interview guide with templates from literature*

Topics	Templates from literature	Study aim
1. Role distribution of GP and specialist a. Description of role distributions b. Development of role distribution c. Referral and counter-referral d. Differences in role distribution for spinal cord injury care	(36-39)	1
2. Perceptions of patients and other HCPs on role distribution	(36, 39)	dropped from analysis
3. Collaboration a. Positive and negative experiences for both general and spinal cord injury care b. Facilitators and barriers to collaboration	(33)	2
4. Communication a. Communication channels b. Information exchange	(33, 40)	2
5. Suggestions for improvement a. for role distribution b. for collaboration c. for spinal cord injury care specifically	(33, 36, 39, 41)	3

643 Abbreviations: GPs = general practitioners; HCPs = healthcare professionals

644

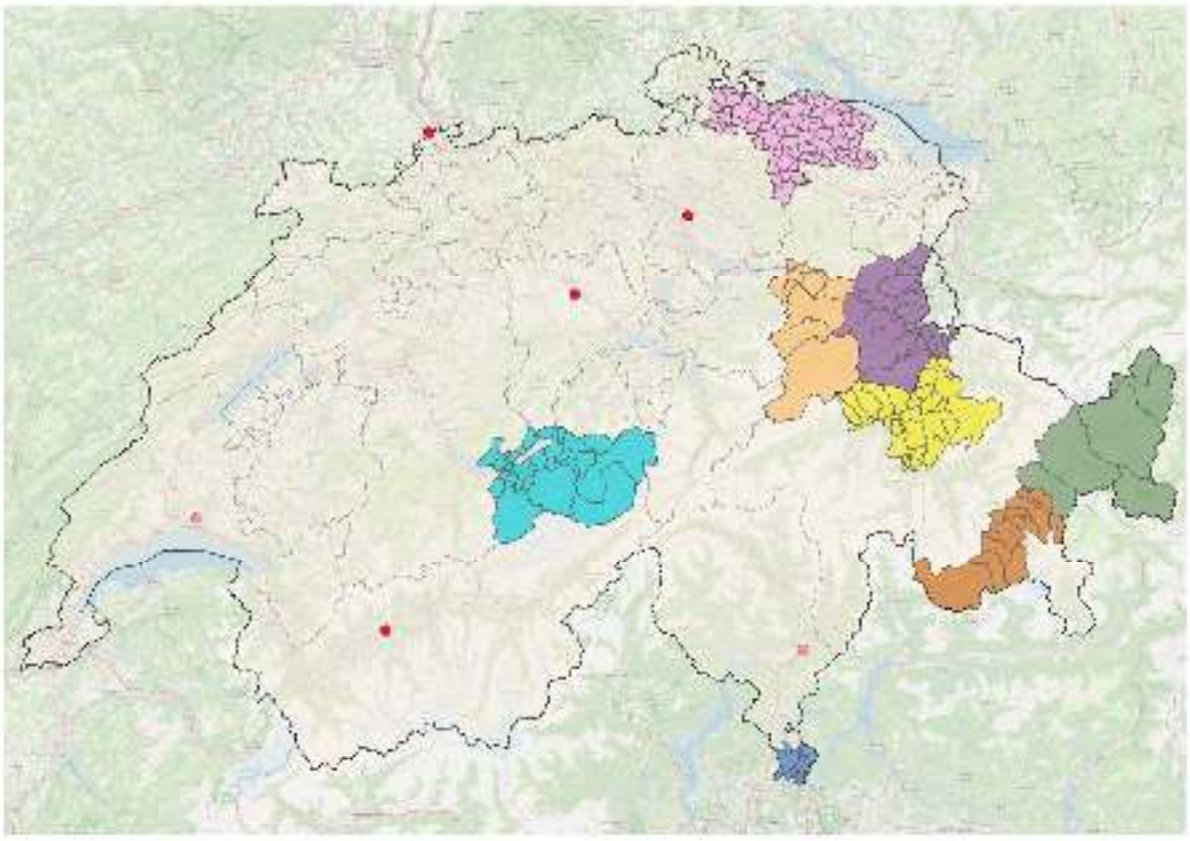
645 *Table 2 Physicians' characteristics*

	GPs (N=6)	Specialists (N=6)
Age in years – mean (SD)	52 (7.9)	50 (9.9)
Female – n (%)	2 (33.3)	1 (17)
Issuing country of academic title, Switzerland – n (%)	4 (67)	2 (33)
Title – n (%)		
M.D. and university lecturer	0 (0)	1 (17)
M.D.	6 (100)	4 (67)
Practicing physician	0 (0)	1 (17)
Medical focus – n (%)		
General internal medicine	6 (100)	4 (67)
Physical medicine and rehabilitation	0 (0)	3 (50)
Urology	0 (0)	1 (17)
Others	2 (33)	4 (67)
Self-employed – n (%)	3 (50)	-
Current position in specialized center – n (%)		
Chief physician	-	2 (33)
Senior physician	-	2 (33)
Hospital physician	-	2 (33)
Years working at current place of work – mean (SD)	7 (5.5)	7 (9.7)

Percentage employed at current place of work – mean (SD)	70 (35.2)	93 (16.3)
Patients caring for in one month – mean (SD)	500 (187.1)	28 (7.5)
Using electronic medical records – n (%)	6 (100)	6 (100)
Distance GP practice to next hospital in km – mean (SD)	16 (12.3)	-
Number of HCPs in GP practice – median (min-max)		
Physicians	2 (2-5)	-
Medical practice assistants	5 (4-14)	-
Medical practice coordinators	1 (1-1)	-
Nurse	1 (2-10)	-
Physiotherapist	3 (1-3)	-
Occupational therapist	1 (3-4)	-
Speech therapist	0 (0-1)	-
Dietician	0 (0-1)	-
Psychologist	0 (0-3)	-

GP: general practitioner; HCPs: healthcare professionals; km: kilometers; M.D.: medical doctor; SD: standard deviation

Figure 1 Location of GP practices and specialized service providers for spinal cord injury in Switzerland



List of Supplementary Material

Appendix Table 1: COREQ checklist (.docx 16KB)

Appendix Table 2: Overview of themes and sub-themes for interviews with GPs (.docx 30KB)

Appendix Table 3: Overview of themes and sub-themes for interviews with specialists (.docx 30KB)