Relational Coordination in Danish General Practice

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Relational coordination in Danish general practice

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PhD Dissertation

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'There is no such things as good writing, only good rewriting'

US Supreme Court Justice Louis D. Brandies (1856-1941)

Dansk resumé

Denne ph.d.-afhandling er et produkt af mit ph.d.-projekt udført i et samarbejde mellem DTU Management, Tekniske Universitet Danmark, Forskningsenheden for Almen Praksis ved Syddansk Universitet og Forskningsenheden for Almen Praksis ved Københavns Universitet. Afhandlingen præsenterer forskningsundersøgelsen og en samling af tre forskningsartikler udarbejdet i perioden fra maj 2010 til juni 2014.

Relationel koordinering og organisatorisk social kapital er mål for en organisations ydedygtighed. Relationel koordinering analyserer kommunikation og netværk hvor igennem arbejdet koordineres på tværs af funktionelle og organisatoriske grænser. Tidligere undersøgelser har vist, at relationel koordinering er positivt forbundet med levering af pleje og behandling af patienter med kronisk sygdom. Organisatorisk social kapital anvendes, når man analyserer det psykosociale arbejdsmiljø i organisationer, og ses som en kraftfuld ressourcer til at forbedre organisationens præstationer. Relationel koordinering og organisatorisk social kapital kan give ny indsigt og muligheder for udvikling af almen praksis. Almen praksis giver omkostningseffektiv, first-line service og fungere som en sluse for resten af sundhedssektoren. Almen praksis står over for en række voksende krav - mange praktiserende læger er tæt på pensionsalderen, samt stigende krav til omfattende styring og koordinering af patientforløb. Hverken forskere eller politikere har fundet frem til hvordan disse voksende krav kan løses.

Dette ph.d.-projekt har målt relationel koordinering og organisatorisk social kapital i dansk almen praksis. Projektet vidste, at praktiserende læger bedømt relationelle koordinering og organisatorisk social kapital i deres praksis højere end sekretærer og sygeplejersker. Ydermere, havde sole praksis højere relationelle koordinering og organisatorisk social kapital end samarbejdes og kompagni praksis. Der var ingen evidens for en sammenhæng mellem relationel koordinering og patienters evalueringer af almen praksis. Projektet vidste yderligere at almen praksis med høj relationel koordination også have høj produktivitet.

Summary

This PhD dissertation is a product of my PhD project carried out in collaboration between DTU Management Engineering, The Technical University of Denmark, Research Unit for General Practice at University of Southern Denmark, and Research Unit for General Practice at University of Copenhagen. The dissertation present the research study and a collection of three research papers prepared during the period from May 2010 to June 2014.

Relational coordination and organisational social capital are measures of novel aspects of an organisation's performance. Relational coordination analyse the communication and relationship networks through which work is coordinated across functional and organisational boundaries. Previous studies have shown that relational coordination is positively associated with delivery of care for patients with chronic illness. Organisational social capital is used when analysing the psychosocial work environment in organisations, and is seen as a powerful resources for improving organisational performance. Relational coordination and organisational social capital may offer new insight and opportunities for general practice to learn. General practice provides cost-efficient, first-line service and mindful gatekeeping. General practice are faced with a series of growing demands - from many GPs being close to retirement, to the increasing demands for comprehensive management and coordination of patient care. Neither researchers nor politicians have found solutions to overcome the growing demands.

This PhD project has measured relational coordination and organisational social capital in Danish general practice. The project found that GP rated relational coordination and organisational social capital in their general practice higher than the secretaries and nurses, and single-handed practices had higher rating of both relational coordination and organisational social capital than cooperative and partnership practices. There was no evidence for an association between relational coordination and patient evaluation of general practice. However, general practice with high ratings of relational coordination was also found to have high productivity.

Preface

This dissertation is submitted at DTU Management Engineering, Technical University of Denmark, in fulfilment of the requirements for acquiring a PhD degree. The work has been supervised by Senior Researcher Kasper Edwards. The dissertation consists of a presentation of research and study design and a collection of three research papers prepared during the period from May 2010 to June 2014. Generally, British spelling rules are used in this dissertation. All the thesis publications have been submitted under the name 'Sanne Lykke Lundstrøm'.

Acknowledgements

The Danish general practice community deserve much gratitude, because of their willingness to participate in my survey. Many thanks to the people who responded to the survey and especially thanks to the general practices participating in the two pilot studies. Your participation was essential in developing the final questionnaire survey.

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Thanks to my colleagues from Work System Design, DTU Management Engineering. My sincere thanks goes to Christine Ipsen for opening my eyes to possibility of conduction a PhD and for introducing my to Kasper Edwards. Thanks to Liv Gish and Signe Poulsen for sharing the ups and downs in developing writing skills and for making it fun to go to work and be a PhD Candidate. Pedro Parraguez Ruiz, thank you for enduring sharing an office with me and for always being willing to engage in a discussion. Thank you all, it has been a pleasure working with you and I hope we can continue collaborating in the future regardless of where we all end up.

I also want to thank Heller School for Social Policy and Management for allowing me to be a part of your research environment during my external stay. I would additionally like to express my sincere gratitude to Professor Jody Hoffer Gittell. It has been a tremendous honour to work with you, and a pleasure to meet your loving family. I genuinely hope that we can maintain our friendship for many years to come.

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I want to thank my co-supervisors Jens Søndergaard, Susanne Reventlow and Jakob Kragstrup. At times it has been a challenge having so many supervisors from different research fields, but you have also help me view my project from different perspectives and embrace cross-disciplinary collaboration.

Finally, I thank Kasper Edwards for being a constant source of inspiration and my biggest supporter. I have enjoyed every moment working with you - even your some what playful and boyish site. I owe you the greatest thanks of all. I look forward to some day working along your side again, and until then, we will continue our fruitful collaboration.

Abbreviations

COPSOQ	**C**openhagen **P**sychosocial **Q**uestionnaire
DAK-E	**D**anish **Q**uality **U**nit of **G**eneral **P**ractice
DANPEP	**D**anish **P**atients **E**valuate **P**ractice
DAMD	**D**anish **G**eneral **P**ractice **D**atabase
DTU	**T**echnical **U**niversity of **D**enmark
EUROPEP	**E**european **P**atients **E**valuate **P**ractice
GP	**G**eneral **P**ractitioners
MQ	**M**eta-**Q**uestion
MMR	**M**ixed **M**ethods **R**esearch
NRCWE	**T**he **N**ational **R**esearch **C**entre for the **W**orking **E**nvironment
PhD	**D**octor of **P**hilosophy
SQ	**S**ub-**Q**uestion

Contents

Chapter 1

INTRODUCTION

In 2009 my association with DTU Management Engineering (Technical University of Denmark) as a teaching assistant led to my introduction to Senior Researcher Kasper Edwards, who later became my PhD supervisor. During our first meeting we discussed my insight into and knowledge about the healthcare system, which I gained through my studies in biomedical engineering. The outcome of our first meeting was a mutual agreement on the importance of studying the organisation in health care. I was later introduced to the Research Unit for General Practice, which led to the formulation of a project concerning organisation in general practice, which later became my PhD project.

The present dissertation is based on the empirical work I have been so privileged to carry out in the field of general practice over a four-year period, by surveying the people who work in general practice, making presentations to, and discussing with the people who work in general practice, scientists researching in general practice and fellow engineers working both inside and outside the healthcare system. The overall aims of the PhD project have been to understand and compare relational coordination and social capital, to measure the concepts within general practice and identify factors associated with the concepts.

This PhD is part of a collaboration between DTU, The Research Units for General practice in Odense and Copenhagen. The collaboration consisted of two PhD projects focusing on the same subject: COPD in general practice but to be solved by an engineer and a medical doctor. The idea was to combine two different perspectives to gain new insight. The medical perspective was to provide knowledge of COPD and general

practice and the engineering perspective was to provide knowledge of social capital, relational coordination and process design.

As such the two PhD's share common data but has explored different theoretical perspectives. The two PhD's has also collaborated and developed the common questionnaire used for collecting data in Danish general practice. The questionnaire consisted of four part: 1) Organisational social capital questions, 2) relational coordination questions, 3) questions regarding COPD, and 4) working procedure in general practice.

Both T.B. Knudsen and I used the questions on organisational social capital. The data on COPD and working procedure in general practice belong to T.B. Knudsen and data on relational coordination solely belongs to me. T.B. Knudsen used the questions on organisational social capital to compare with individual and practice characteristics, as well as performance measures, see [Knudsen et al., 2014]. I used the questions on organisational social capital to make a comparison between organisational social capital, relational coordination and associations between practice characteristics, relational coordination and organisational social capital [Lundstrøm et al., 2014].

The dissertation seeks to provide more information on the background of the research presented in the papers and tie the three papers together, in order to illustrate and discuss how they collectively contribute to answering the overall research question. There will therefore be some repetitions and overlaps between the dissertation and the papers. This introductory chapter presents the research problem and an outline of the dissertation.

1.1 How the research problem was approached initially

Within the first year, the project focused on how social capital could be measured and what factors influenced social capital in general practice. While studying the literature on social capital, I came across an article called 'A social capital model of high performance work systems' by Jody H. Gittell et al. [Gittell et al., 2007]. This soon led me to discover the concept of relational coordination [Gittell, 2000].

By becoming acquainted with relational coordination I was introduced to a new research area with a different view on best practice for cooperation in and between organisations.

Where social capital focuses on personal ties between people, relational coordination tries to eliminate the personal element and instead build cooperation on the foundation of task-based relationship ties between the different work groups. In large organisations or in organisations where people do not have a lot of face-to-face time, it can be a challenge to build personal ties, thus social capital. In these organisations relational coordination might be a more suitable approach.

A presentation of my ideas to the Danish Regions' Research Foundation and several discussions with my supervisors became one of the first milestones in altering and specifying what my research was going to be focusing on. This led to the choice of including relational coordination alongside social capital in my PhD project.

It became clear that until that point in time, I had looked at the PhD project as a task I was assigned and not as my personal PhD project. By adding relational coordination to the PhD project, I added something of my own, which made me feel ownership of the project, and the PhD project be came mine.

My PhD project mainly focuses on the organisation itself and the members make up the organisation, thereby making a deliberate choice to keep the patients as bystanders, where others might argue that they need to be the centre of all research within healthcare. One reason for making this choice was that countless studies have been centralised around the patients, whereas only a few studies have focused on the organisational part of health care. The large amount of studies focused on the patient can be explained by the special kind of organisation health care is, an organisation where the level of service provided is not only a question of satisfying its 'customers', but also of determining the survival of its 'customers'. Even though the quality of treatment delivered to the patient is the key issue within health care, there is still a need for research focusing on the organisation and work processes within health care. Ultimately, an improvement of an organisation's efficiency, productiveness and well-being of the organisational members will enhance the quality of 'service' delivered by an organisation, which is the end will benefit 'customers'.

To understand the research challenge and the rest of the dissertation some knowledge about the primary care system in Denmark is needed. The following gives a short introduction, comprehensive enough to continue with the outline of the research challenge.

1.2 A quick look at Danish general practice

The Danish welfare system with universal access to health care is built on the primary healthcare sector. All Danish residents have free and direct access to their own general practitioner (GP) and access to specialist and hospital care [Pedersen et al., 2012]. The GPs are usually the first contact for patients in need of medical service. The decision regarding treatment is left to medical judgement of the physician in charge, based on physical, emotional and social factors. Patient may be referred to office-based specialist and inpatient and outpatient hospital care for further assessment by the GP. The GPs are responsible for coordinating the care of individual patients, and have an important role as gatekeeper to other health services [Roland et al., 2012]. The Danish general practice is essentially designed to support the principle that treatment ought to take place at the lowest effective care level [Pedersen et al., 2012].

The healthcare system is embedded in a decentralised administrative structure consisting of five regions: Capital Region of Denmark, Region Zealand, Region of Southern Denmark, Central Denmark Region and North Denmark Region. Regional governments run the public hospitals (planning, operation, financing) and office-based health services such as general practice and office-based specialists. The Danish health care is financed largely through taxes, and a typical GP office receives 95% of its operating income from public funds [Pedersen et al., 2012].

A GP is self-employed and contracts with the regions on a 2-year contract, covering reimbursable services and a fee schedule. Beside treating patients a GP is also responsible for running a practice, involving a range of administrative activities, such as employing staff, managing contracts and working within a strict budget. For a GP to contract with the Danish Regions they need to fulfil criteria like accessibility, opening hours from 8.00 to 16.00 and being able to see patients within 5 weekdays. GPs under the age of 60 years are also obliged to take part in organisation of care coverage for weekends and out-of-hours services [Pedersen et al., 2012].

There are approximately 3600 GPs serving the Danish population, and they constitute 20% of the physician workforce. The GPs are distributed across 2200 practice units, meaning that most practices have one or two GPs. The Danish general practice also employs about 3100 healthcare professionals, mainly nurses and medial secretaries

[Pedersen et al., 2012]. There are mainly three types of practice forms in Denmark; single-handed practice, partnership practice and cooperation practice. A single-handed practice is owned and run by one GP. A partnership practice is owned by two or more GPs, who share patients, facilities, staff and finances. A cooperation practice consists of more than one single-handed or partnership practice with individual patient lists and finances, but where the practices share either facilities, staff or both.

General practice has been able to adapt to changing circumstances and establish itself as an important part of the Danish healthcare system by providing cost-efficient, first-line services and careful gatekeeping [Pedersen et al., 2012]. General practice provides an anchor for patients in an increasingly fragmented healthcare system and offers a good degree of continuity of care [Pedersen et al., 2012].

1.2.1 Challenges for general practice

General practice in Denmark is going through changes. Many GPs are close to the age of retirement, and it has become increasingly difficult to recruit new GPs to rural areas, where single-handed practice are predominant. As a consequence many single-handed practices have been closed and replaced by fewer and bigger practices [Pedersen et al., 2012]. General practice is at the same time facing a series of growing demands - from the changing needs of an ageing population, to the increasing demands for comprehensively managing and coordinating patient care [Chesluk and Holmboe, 2010].

For general practice to overcome these demands, the key issues are not necessarily the personal knowledge or vision of the individual physician, but rather the teamwork in the practice group, including professional and administrative staff [Chesluk and Holmboe, 2010, Roland et al., 2012] . Chesluk og Holmboe (2010) found a lack of teamwork in primary care practices, and when the entire practice team did come together, it was around physicians and facilitating their schedules, rather than around patients and their experiences. To meet the growing demands the practice team must collaborate in new ways that involve sharing both tasks and an underlying cultural framework [Chesluk and Holmboe, 2010].

General practice is also struggling with a substantial variation of practice patterns in e.g. use of spirometry testing, prescribing of narrow-spectrum penicillin, management

of hypertension and a number of different drugs prescribed per practice [Bjerrum and Bergman, 2001, Koefoed et al., 2013]. These variations have only for a small part been explained by practice or physician characteristics like GP gender and age, practice list size, structure and workload [Wenghofer et al., 2009].

These are the two main motivations for initiating research in general practice. Neither researchers nor politicians have found solutions to overcome the growing demands or to decrease the variation of practice patterns. Both areas need attention, if we want general practice to be the foundation for the Danish welfare system in the future.

Until now, research has focused on the above-mentioned easily measurable characteristics of general practice and the way they contribute to our understanding of differences in practice patterns. Research has indicated that non-technical abilities such as a psychosocial work environment that supports mutual trust, justice, cooperation skills and coordination of work are essential to efficiency of work in the financial, educational and production sector [Leana and Pil, 2006, Linzer et al., 2009, Olesen et al., 2008, Ommen et al., 2009]. Relational coordination and organisational social capital have been shown to be related to an organisation's performance and have individually received much attention in health care and private industry, but relational coordination and organisational social capital have not previously been jointly analysed in general practice.

1.3 Outline

The remainder of the dissertation is structured as follows. Chapter 2 gives a description of relational coordination and social capital. Chapter 3 presents the research questions that have guided this study. Chapter 4 presents the research design. Chapter 5 describes the study design and how the data were obtained in the three studies. Chapters 6-8 outline the results of the three studies in the form of three original papers. Chapter 9 summarises the discussion in the three papers and discusses some of the perspectives of the dissertation, which have not been explicitly addressed in the papers. Chapter 10 concludes the study and proposes ideas for future research. Finally, Chapter 11 presents my reflection on the PhD process.

The dissertation can be read either chronological page by page for an in depth understanding of the PhD project or, if read as an overview, read the introduction and then go directly to the discussion and conclusion.

Chapter 2

THEORY

Many different theories and concepts could have been used to investigate the organisation within general practice, such as positive organisational behaviour, organisational design, leadership and management theory etc. I have chosen to use relational coordination and social capital.

Chapter 2 provides a description of relational coordination and social capital, as the concepts are used in this study.

2.1 Relational coordination

When looking at a smoothly functioning assembly line we may notice how well coordinated the actions of the group of people seem to be [Malon and Crowston, 1994]. Good coordination is, however, nearly invisible, and we sometimes notice coordination most clearly when it is lacking [Malon and Crowston, 1994]. Service operations that are highly uncertain, interdependent and time-constrained require a competency that Jody H. Gittell calls relational coordination [Woolcock and Narayan, 2000].

The theory of relational coordination specifies the nature of relationships through which coordination accords. Malone and Crowston [Malon and Crowston, 1994] define coordination as:

'*Coordination is managing dependencies between activities*'

People are typically assigned to tasks through their roles, relational coordination is measured as coordination between roles rather than between unique individuals [Gittell et al., 2010]. Relational coordination identifies specific dimensions of relationships important for the coordination of work, thus bridging the boundaries between the distinct professions responsible for carrying out the work [Gittell et al., 2010]. This feature allows for the interchangeability of employees, allowing employees to come and go without missing a beat [Gittell, 2005]. The relational dimension of relational coordination is therefore not personal relationships of 'liking' or 'not liking', but rather task-based relationship ties. The relationships are conceptualised as ties between work roles rather than personal ties between discrete individuals inhabiting those work roles [Gittell, 2011].

The theory of relational coordination argues specifically that the effectiveness of coordination is determined by the quality of communication among participants in a work process, such as frequency, timeliness, accurate communication and focus on problem-solving rather than on blaming. Furthermore, the communication depends on the quality of the participants' underlying relationships, particularly the extent to which they have shared goals, shared knowledge and mutual respect [Gittell, 2008].

The success of an organisation depends on the quality of coordination among its members. Effective coordination depends upon participants having a high level of shared goals [Gittell, 2008]. Shared goals increase participants' motivation to engage in high-quality communication, rather than blaming when things go wrong [Gittell, 2011]. Shared knowledge enables participants to communicate with each other with greater accuracy, due to knowledge of how their goals relate to the overall goal of the organisation [Gittell, 2011]. Mutual respect increases the likelihood that participants will be receptive to communication from their colleagues in other functions, irrespective of their relative status, thus increasing the quality of communication, given that communication is a function of what is heard as well as what is said [Gittell, 2011]. Relational coordination therefore is defined as:

'A mutually reinforcing process of interaction between communication and relationships carried out for the purpose of task integration' [Gittell, 2002]

Relational coordination can be seen as a mutually reinforcing process of interaction between relationships and communication that is frequent, timely, accurate and problem-solving, which is necessary for the purpose of task integration [Gittell, 2011]. Problem-solving or conflict resolution has been found to provide opportunities for building a shared understanding of the work process among participants, thereby strengthening the relationships through which coordination is carried out, in particular strengthening the shared knowledge and mutual respect dimensions of relational coordination [Gittell, 2000, Gittell et al., 2010]. Relational coordination enables employees to more effectively coordinate their work with each other, thus eliminating the production possibilities frontier to achieve higher quality outcomes, while using resources more effectively [Gittell, 2011].

2.2 Organisational social capital

Social capital was first used to describe social relations in neighbourhoods, social groups, regions, countries etc., but has developed into a useful concept in organisational studies [Hasle and Møller, 2007]. Social capital in an organisation is a collective good which depends upon the members and is a property of relationships, not of individuals [Olesen et al., 2008]. The latter is know as organisational social capital and has been shown to have a great impact on recruitment and well-being of the employees, but also on the social process of the workplace [Pejtersen et al., 2010b]. Organisational social capital is defined as:

> *'Organisational social capital is the ability of the members of the organisation to collaborate when solving the key tasks of the organisation. In order to solve the key tasks it is necessary that members master collaboration and that this collaboration is based on a high level of trust and justice'* [Olesen et al., 2008]

The key dimensions of organisational social capital are justice, trust and cooperation [Pejtersen et al., 2010b].

Trust is necessary for people to work together on a mutual project or to coordinate their work. Trust can be seen as a by-product of successful collective action; work groups

successfully completing a project are likely to exhibit trust, which makes further and more complex collaborative efforts possible [Leana and Van Buren III, 1999].

Justice must exist in order for the employees to perform to their best ability in terms of achieving the organisational goals [Olesen et al., 2008]. Studies have shown that justice and trust are correlated: Justice creates trust [Olesen et al., 2008]. Furthermore, trust can benefit the individual when work is very demanding, i.e. trust can serve as a 'buffer' when a person faces high quantitative demands [Olesen et al., 2008].

Organisational social capital has a big influence on the effectiveness, productivity and quality of the work executed by a company. This is an area the Danish business community concerns itself with. In particular, the Danish business community has used the concept of organisational social capital to explain how Denmark can have a competitive position with relatively short working days, long holidays and high tax rates [Olesen et al., 2008].

Organisations wanting to foster organisational social capital need to understand the relationships developed within and between groups. These networks enable people to access resources and collaborate to achieve shared goals in a practice environment [Hofmeyer and Marck, 2008]. Social capital has three basic types of relationships: bonding, bridging and linking.

Bonding social capital builds strong ties between team members and enhances their performance by having a shared purpose. Bonding strengthens the close relationships that individuals have in a network or team, which foster identity, affiliation, solidarity, and shared purpose [Hofmeyer and Marck, 2008, Putnam, 1995]. Bridging social capital refers to relations with distant friends, associates and colleagues [Côté, 2001]. Bridging strengthens relationships between groups, typically connecting people to others who are *not like themselves* [Putnam, 1995], thus improving performance by enabling employees to access the resources that are embedded within other networks [Gittell et al., 2007].

Although strong bonding ties provide particular communities and groups with a sense of identity and common purpose, without bridging ties that transcend various social divides (e.g., religion, ethnicity, socioeconomic status), bonding ties can become a basis for the pursuit of narrow interests and can actively exclude outsiders [Côté, 2001]. Groups characterised by strong trust and cooperative norms within the group may have low

trust and cooperation with other groups in the organisation. This exclusive form of bonding can then be a barrier to social cohesion and personal development [Côté, 2001].

Linking refers to relations between different social strata in a hierarchy where different groups have access to power, social status and wealth [Côté, 2001]. Thus, linking facilitates vertical interaction in an organisation [Olesen et al., 2008], enabling individuals and communities to leverage resources, ideas and information from formal institutions beyond the immediate community radius [Woolcock and Narayan, 2000].

2.3 Comparing relational coordination and organisational social capital

Relational coordination and organisational social capital are different concepts that have developed out of different traditions. Social capital is a broad and ambiguous concept where at least to general streams exist: 1) social capital as a network concept [Bourdieu, 1986, Granovetter, 1973, Nahapiet and Ghoshal, HHHH, Putnam, 1995] 2) social capital as personal relationships [Olesen et al., 2008]. Whereas relational coordination tries to eliminate the personal element and instead focus on task-based relationships ties between work groups, as mentioned in section 1.1.

2.3.1 Relationships Built in an Organisation

Relational coordination identifies specific dimensions of relationships important for the coordination of work, thus bridging the boundaries between the distinct professions responsible for carrying out the work [Gittell et al., 2010]. This feature allows for the interchangeability of employees, allowing employees to come and go without missing a beat [Gittell, 2005].

Social capital is not established by exchanging personal benefits, but by building relationships that are mutually binding. Organisational social capital can be divided in three types of relationships: bonding, bridging and linking. Bonding refers to relationships within a group which brings the group closer together; bridging refers to relationships between two or more groups; and linking facilitates vertical interaction in an organisation by fostering vertical relationships [Olesen et al., 2008].

A main difference in the relationships fostered by organisational social capital and relational coordination is that one is personal relationships between individuals at all hierarchical levels within an organisation and the other is relationships mainly in the form of bridging social capital, but based on roles instead of on unique individuals.

2.3.2 Developing Relational Coordination and Organisational Social Capital

A central factor in organisational social capital is leadership. Evidence points to a correlation between good leadership and high levels of organisational social capital and companies with high levels of organisational social capital are characterised by respect between the employees [Kristensen, 2010]. How good leadership leads to high levels of organisational social capital is still unknown. Or perhaps high levels of organisational social capital lead to good leadership? Researches have not yet determined which one came first.

Employment practices are other ways of building or maintaining organisational social capital. By focusing on stable relationships among organisational members an environment can be built, where trust between members can grow [Kristensen, 2010]. Developing norms, rules and procedures within the organisation can help form a social structure in terms of positions rather than people, making it easier for people to cooperate outside their "normal" network with people who are less like themselves, but contributing with resources they do not normally have access to [Leana and Van Buren III, 1999].

According to the theory of relational coordination, coordination occurring through frequent, high-quality communication supported by relationships of shared goals, shared knowledge, and mutual respect enables organisations to better achieve their desired outcomes [Gittell, 2005]. Effective coordination is influenced by the quality of the participants' relationships, particularly the extent of shared goals, shared knowledge and mutual respect [Gittell, 2005]. Gittell argues that human resource practices can be redesigned to foster relational coordination among employees who are engaged in a common work process [Gittell et al., 2000]. When carried out consistently across work practices, this form of redesign is argued to result in a high performance work system that is amenable to the development of working relationships [Gittell et al., 2000]. In

a study of airline employees Gittell found that the following work practices could foster the development of relational coordination [Gittell et al., 2000, 2007]:

1. Cross-functional selection
2. Cross-functional conflict resolution
3. Cross-functional performance measurement
4. Flexible job design
5. Cross-functional boundary spanner roles

Relational work systems are expected to foster the development of relational coordination by activating the social capital already latent in organisations, but likely to be fragmented across functional boundaries, into a form that is suitable for coordination interdependent work [Gittell et al., 2007]. The above work practices are more specifically building bridging social capital within the organisation. Bridging strengthens the relationships between two groups and helps facilitate a culture or norm in high demanding periods, where the work groups need to help each other in order to reach their common goal. Relational coordination and the high-performance work practices supporting its development are therefore particularly relevant in industries that must maintain or improve quality outcomes while responding to cost pressure [Gittell et al., 2010].

Both organisational social capital and relational coordination can be developed through human resource practices. When developing organisational social capital, the main focus should be on leadership and the organisation's norm, rules and procedures, as these all help develop trust, justice and cooperation. Relational coordination is more influenced by the work practices (see list above), which can foster coordination among employees who are engaged in a common work process. Both concepts can help develop a more efficient organisation and gain a competitive advantage.

2.3.3 Purpose and Function

Organisational social capital is not only a valuable resource in itself, but can also provide employees with access to resources within the organisation, e.g. organisational social capital can facilitate their relation to other employees within the organisation and

thereby giving them access to new knowledge. As mentioned earlier, bridging social capital strengthens relationships between groups who typically are not associated, giving employees access to resources embedded within other networks. Societies face two great challenges: globalisation and welfare. Companies must be more efficient, whilst at the same time having to attract qualified employees with a low level of absenteeism. Organisational social capital might be the strategic solution, as social capital is important for productivity, quality and work environment [Olesen et al., 2008].

Gittell has identified a specific role that social capital can play in high performance work systems. Building on the argument that social capital is latent in workplace relations, Gittell argues that a relational work system can be designed to trigger or activate that latent social capital into relational coordination, a role-based form of social capital useful for the purpose of task integration [Gittell et al., 2007]. When task and/or input uncertainty is high, relational coordination becomes more important for enabling participants to adjust their activities with each other 'on the fly', as new information emerges in the process of carrying out the work [Gittell, 2005]. Role-based relationships may require greater organisational investments to foster than personal ties – for example designing cross-functional performance measurement systems versus hosting after-work parties – but they are also more robust to staffing changes that occur over time [Gittell et al., 2010]. High-performance work systems fostering these role-based relationships may therefore provide organisations with a relatively sustainable source of competitive advantage [Gittell et al., 2010].

2.3.4 Summary

The concepts have in common their effort to make organisations as effective and productive as possible, whilst still maintaining a good work environment. Leadership and management affect both social capital and relational coordination. Good leadership is crucial for the development of trust, justice and collaboration in an organisation, which are all important key elements of organisational social capital. Good management can also develop trust and collaboration, which are both needed to foster relational coordination – it is almost impossible to have effective collaboration between organisational members if there is lack of trust. Social capital and relational coordination are both associated with better performance. The concepts might even be reinforcing one another

and helping build an even more productive and efficient organization with an excellent psychosocial work environment, and with a high level of trust between organisational members.

Social capital and relational coordination overlap each other. The main difference is the relationships fostered by the two concepts. Social capital builds individual relationships within a group (bonding), between groups (bridging), and across the hierarchy (linking), whereas relational coordination builds role-based relationships between groups both vertically and horizontally (bridging and linking) in an organisation.

Based on this I would categorise relational coordination is a form of social capital, which is particularly useful for measuring and looking at coordination. Relational coordination is more of a management tool, whereas social capital is a phenomenon practised by the 1. – line leader, and it can only work if the 1. - line leader has or takes some degrees of freedom to manoeuvre.

Chapter 3

RESEARCH QUESTIONS

The framing of the research problem has so far only been vaguely described. In pursuit of addressing the research problem, it needs to be broken down into more tangible research questions. The overall theme for the dissertation is framed by the following meta-question (MQ), which grasps the essence of the research problem.

***MQ**: Understanding level of relational coordination and organisational social capital in Danish general practice?*

The MQ as formulated above is still very broad and is broken down into three sub-questions (SQ), which ensure that the research problem and overall research questions are addressed comprehensively.

***SQ1**: Determine association between relational coordination and organisational social capital in Danish general practice and explore associations between practice characteristics and relational coordination and social capital, respectively?*

***SQ2**: Is there any association between relational coordination and performance outcomes?*

***SQ3**: Is the level of relational coordination associated with patients' evaluation of general practice?*

First, a practical framework was created, capable of measuring and analysing the concepts in Danish general practice. Secondly, after establishing that, the concepts were measurable in general practice and it was possible to discriminate between the practice

with high and low levels, the next step was to investigate whether the concepts were associated with outcome measures. Finally, the project ended by looking at patients' evaluation of general practice.

Before approaching the SQ, a thorough literature study was conducted in order to gain knowledge on how relational coordination and social capital had been measured in previous studies. A questionnaire was then created by questions found in the literature, which had previously been used, tested and validated before hand. The next chapter will provide a detailed description of a research design which will ensure that the data obtained enables us to answer the SQ as unambiguously as possible.

Chapter 4

RESEARCH DESIGN

The outcome from the three sub-questions is highly dependent on the choice of methodology used to gather the empirical data, and the interpretation of this material. This chapter provides insight into the choice of methodology that has been made before conducting this study.

4.1 Non-experimental Fixed Research

I have chosen a non-experimental fixed research design, also known as quantitative research. I do not attempt to change the situation, circumstances or experience of the participants, which is central for experimental research designs, where the researcher actively and deliberately make some form of change in order to change the behaviour of the participants [Robson, 2002]. I have chosen a non-experimental fixed design because it deals with things as they are and do not disturb the environment or organisation of interest. Furthermore, non-experimental fixed research is beneficial when the aim is to explain or explore a phenomenon [Robson, 2002].

A cross-sectional study is a methodology used when studying a group of subjects or variables in different contexts over the same period of time [Collis and Hussey, 2009]. I chose a cross-sectional study because it allows for more explanatory variables than is feasible in experimental and group comparison relational designs. However, this calls for careful consideration when including variables, and only variables relevant to your

research question should be included [Robson, 2002]. One of the issues with cross-sectional studies is to secure homogeneity of the group and to get a large enough sample for it to be representative of the population [Collis and Hussey, 2009, Robson, 2002]. Finally, a cross-sectional study determines if there is a correlation or not; but cannot explain why a correlation exists or if there is a causality.

4.2 Survey

Surveys are often used to obtain data in non-experimental fixed designs. Survey methodology is designed to collect primary and secondary data from a representative probability sample from a defined population, with a view to analysing them statistically and generalising the results to the larger population [Crabtree and Miller, 1999, Robson, 2002]. There are three different types of survey instruments: structured interviews, observational rating, and questionnaires [Crabtree and Miller, 1999].

A questionnaire is a method for collecting primary data by asking a sample of respondents a list of carefully structured questions. The questions are tested before hand and validated to get as reliable a response as possible. A general disadvantage of questionnaire-based surveys is the likelihood of social desirability response bias [Robson, 2002]. Social desirability response bias is usually due to a distortion of response in a socially desirably direction as a result of two factors: 'self-deception' and 'other-deception' [Nederhof, 1985]. 'Self-deception' occurs when the respondent actually believes a statement to be true to him or herself, although it is inaccurate. 'Other-deception' occurs when people purposely misrepresent the truth in a manner that will be viewed favourably by others motived by a desire to avoid evaluation [Nederhof, 1985]. Both 'self-deception' and 'other-deception' can take the form of over-reporting 'good behaviour' or 'under-reporting 'bad' or undesirable behaviour. An advantage of questionnaire-based surveys is the high amount of data standardisation, and the relatively simple and straightforward approach for the study of attitudes, values, beliefs and motives [Robson, 2002]. Disadvantages of postal surveys are low response rate, ambiguities in and misunderstandings of the questions, which cannot be detected by the researcher. On the other hand, postal surveys are an efficient, low cost and fast way to gather large amounts of data, while still allowing anonymity, which can encourage frankness when sensitive issues are asked. However, a questionnaire-based postal survey can best answer my research

question, and in this case the advantages overcome the disadvantages when conducting a questionnaire-based postal survey.

4.3 Questionnaires

The aim of a questionnaire is to find out what a particular group of people think, do or feel about the matter of the research question, in order to answer it. The process of designing a questionnaire can be described in 7 steps, see

Designing the questions is a long process. Careful consideration needs to be given to what types of questions are best suited, their wording, in which order they should be presented and the reliability and validity of the responses. Another issue is targeting the questions to the sample group: Do they have prior knowledge about the subject? How are their abilities to read, write and understand complexity? A questionnaire should always be accompanied by a letter addressing the sample group, also known as an accompanying letter, explaining the purpose of the study in a way that will make the sample group respond. Before surveying the entire sample group a pilot test should be conducted to test the questionnaire and accompanying letter. The pilot test might need to be repeated, especially if the questions have not been used in previous surveys [Collis and Hussey, 2009].

There is mainly four distribution methods: By post, by telephone, on-line and face-to-face. Conducting a questionnaire survey by post is fairly easy to administrate, but the cost of printing, stationary, postage and entry of data can be fairly high [Collis and Hussey, 2009]. The cost could be minimized by distributing the survey by e-mail, but on-line surveys are widely used, and it is very difficult to get sufficient responses [Collis and Hussey, 2009]. Even though postal questionnaires also have a low response rate, I chose to distribute my survey by post, mainly because of my large sample size, which would make it very time-consuming to conduct surveys by telephone or face-to-face.

Using questionnaires to collect data is associated with two major issues. The first issue is questionnaire fatigue, where people are reluctant to answer, because they are drowning in requests to participate in surveys by post, email, telephone and in the street. The second issue is non-response bias and how best to deal with it. Too many non-responses can

make it impossible to generalise the results, because the data may not be representative of the population [Collis and Hussey, 2009].

Chapter 5

STUDY DESIGN

In this chapter the study design is presented. It includes a thorough outline of the study design. This is followed by a presentation of the scales and dimensions comprising the questionnaire. The final section presents each of the four studies.

5.1 Study design

A cross-sectional national questionnaire survey was carried out in Danish general practice from June to September 2011. The Organisation of General Practitioners provided addresses for all 2074 current Danish general practices in 2011. Danish registers contain information on the number of GPs in each practice, but no records are kept about other types of healthcare professions.

The questionnaire was designed to measure the psychosocial work environment and the task-based relationship ties in general practice. It comprised questions based on the National Research Centre for the Working Environment (NRCWE) and from three validated questionnaires: the Relational Coordination Survey [Gittell, 2005], the Copenhagen Psychosocial Questionnaire I (COPSOQ I) and the Copenhagen Psychosocial Questionnaire II (COPSOQ II) [Pejtersen et al., 2010b].

In the process of constructing the questionnaire, three different issues needed to be considered. The first issue, The Relational Coordination Survey [Gittell, 2000] was initially constructed in English, which meant it would have to be translated into Danish.

Translating a questionnaire is a complicated process, which calls for consideration on conceptual and cultural equivalence in the translated version, and not only on linguistic equivalence. I forward-translated the Relational Coordination Survey, then it was discussed within a multidisciplinary research group. A professional translator subsequently made a back-translation and finally Jody Hoffer Gittell, the developer of the Relational Coordination Survey, evaluated the back-translated survey. The second issue, several lengths of Copenhagen Psychosocial Questionnaire (COPSOQ) [Pejtersen et al., 2010b] existed. The third issue, neither of the questionnaires had been applied to small organisations like general practice. It was therefore unknown, if it would be possible to measure this concept using the same questionnaires, which had been used to measure relational coordination and social capital in bigger organisations.

The questions from COPSOQ I, COPSOQ II and NRCWE were used in the Danish version in order to adapt to Danish General Practice. For the purpose of presentation of the project outside a Danish context, the dissertation will be using the original questions from the Relational Coordination Survey and a translated version of the questions from COPSOQ II and NRCWE. In Appendix A an original version of the questionnaire can be found. All questions were answered on a 5-point Likert scale.

Every general practice receives numerous questionnaires every day making it challenging to get the general practice community to respond to a survey. In order to make the general practice community aware of this survey in advance a popular scientific article was published in the journal Practicus Appendix B. The article explained the purpose of the study and why this study was important, increasing the probability of the general practice community responding.

The questionnaire was tested in the autumn 2010 and spring 2011 in two Danish general practices. Participants completed the questionnaire, and interviews were conducted with all healthcare groups (physicians, nurses, secretaries and other healthcare personnel involved in general practice treatment), who were asked to comment on content, wording and intelligibility. Only minor changes were made. Furthermore, a pilot study was conducted in spring 2011, where the Organisation of General Practitioners in Denmark randomly selected 100 general practices to participate. The internal consistency was found to be acceptable with a Cronbach's alpha between 0.52-0.71. The questions included in the present study will be described in detail later.

A letter including questionnaires and a stamped reply envelope was sent to the secretary in each general practice in Denmark. The practice secretary was asked to distribute the questionnaires among the owner(s) and employee(s), fill in a background form with information about the practice, collect and return all questionnaires and the background form. The original Danish background form can be found in Appendix C. Non-respondents received two reminders, the second one with new questionnaires, background form and a stamped reply envelope.

5.2 Measures

5.2.1 The Relational Coordination Survey

In the Relational Coordination Survey seven questions (1.1-1.7) measured the following dimensions of relational coordination: frequent; timely; and accurate communication; the problem-solving nature of communication; and the degree to which relationships were characterised by shared goals; shared knowledge and mutual respect [Gittell, 2005]. Respondents were asked to answer each of the questions with respect to each of the other professions (GP, nurse and secretary) within a general practice, see Table 5.1. Relational coordination was calculated as a mean of the seven dimensions.

TABLE 5.1: Relational Coordination Questions

Dimension	Number	Question
Frequent communication	1.1	How frequently do people in each of these groups communicate with you about patients with chronic diseases?
Timely communication	1.2	Do people in these groups communicate with you in a timely way about patients with chronic diseases?
Accurate communication	1.3	Do people in these groups communicate with you accurately about patients with chronic diseases?
Problem-solving communication	1.4	When problems occur with patients with chronic diseases, do the people in these groups blame others or work with you to solve the problem?
Shared goals	1.5	How much do people in these groups share your goals regarding patients with chronic diseases?
Shared knowledge	1.6	How much do people in each of these groups know about the work you do with patients with chronic diseases?
Mutual respect	1.7	How much do people in these groups respect the work you do with patients with chronic diseases?

5.2.2 Organisational Social Capital Survey

Organisational social capital was measured by means of statements about trust, justice and cooperation. The trust scale comprises five statements (items 2.1-2.5) selected from the dimensions of 'trust regarding management' and 'mutual trust between employees' in COPSOQ II [Pejtersen et al., 2010b]. This scale has been validated on a representative sample of 3517 Danish employees [Pejtersen et al., 2010b]. The five statements are shown in Table 5.2. The justice scale comprises three statements. Items 3.1 and 3.2 were

selected from the dimension 'justice' in COPSOQ II [Pejtersen et al., 2010b]. For item 3.3 a negation of the original question from the scale 'influence at work' in COPSOQ I [Kristensen et al., 2005] was used in order to check consistency and make the respondents use both extremes of the 5-point Likert scale, see Table 5.2. COPSOQ II does not include questions, which directly relate to cooperation. NRCWE has suggested the use of questions about 'social support from superiors and colleagues' and 'community spirit in the workplace' to operationalise cooperation [Produktivitetskommission, 2013, Roland et al., 2012]. The cooperation scale comprises three of the suggestions as ad hoc statements, which were tested in the pilot study. Statements 4.1-4.3 from Table 5.2 were used to assess the cooperation between employees.

TABLE 5.2: Organisational Social Capital Statements

Dimension	Number	Question
Trust	2.1	You can trust the information coming from the management
Trust	2.2	The management trust that the employees do their work well
Trust	2.3	The employees in general trust each other
Trust	2.4	Do employees withhold information from each other?
Trust	2.5	I am able to express my views and feelings to my colleagues
Justice	3.1	Conflicts between employees are resolved fairly for all involved
Justice	3.2	Work is distributed fairly
Justice	3.3	I do not have a large degree of influence over my work
Cooperation	4.1	Among us everybody is involved in decisions regarding changes
Cooperation	4.2	If I forget something, then one of my colleagues will take care of it for me
Cooperation	4.3	We have a good cooperation between work groups

5.3 The Three Studies

In this section the design of each of the three papers comprising the dissertation will be described in details. Figure 5.1 shows an overview of the study design and illustrates the continuity in the project.

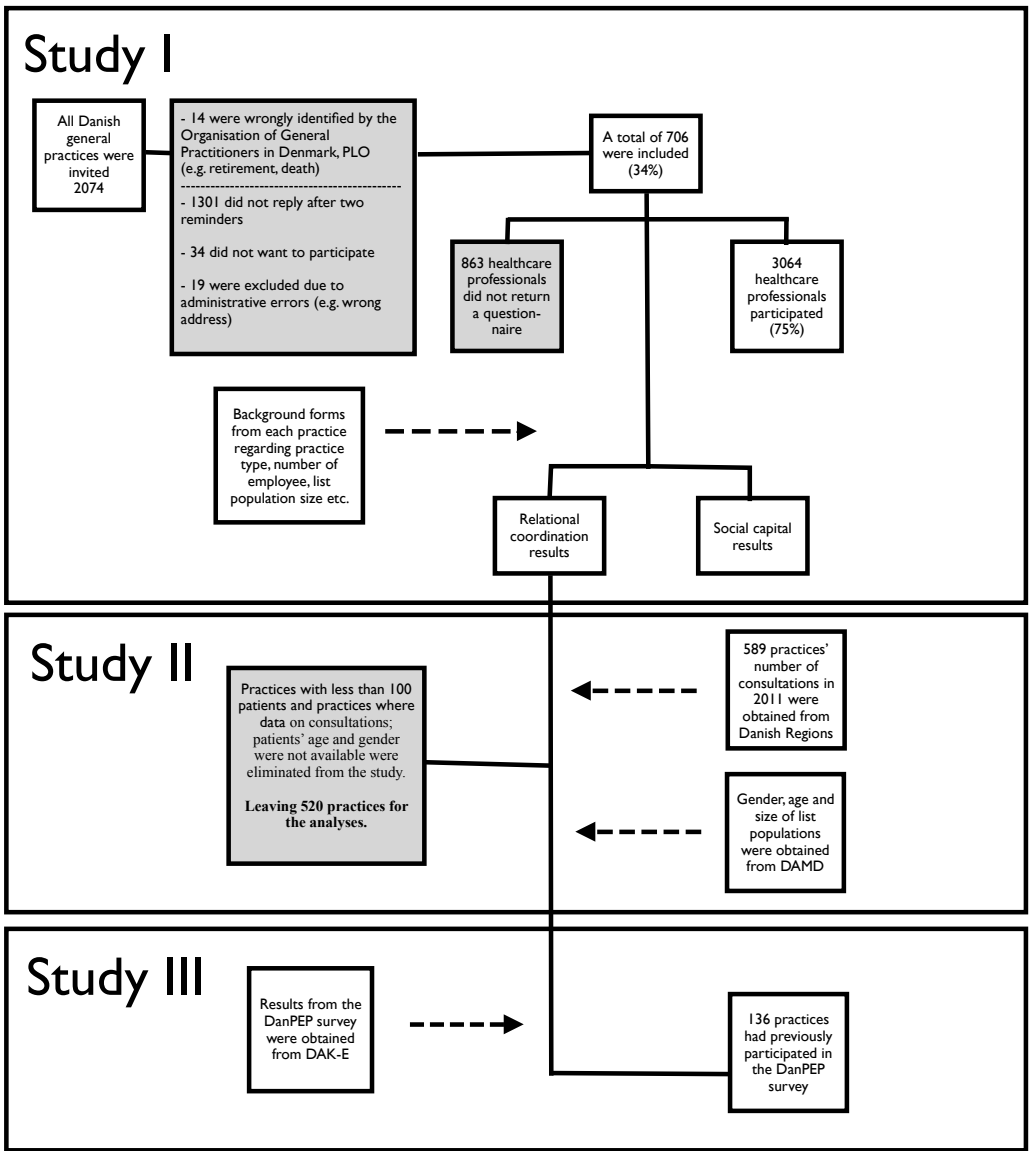

FIGURE 5.1: Study Design

5.3.1 Paper I

Paper I aims to answer SQ1:

Determine association between relational coordination and social capital in Danish general practice and to explore associations between practice characteristics and relational coordination and social capital, respectively?

In the quest to address SQ1 Paper I investigates the association between relational coordination and social capital in Danish general practice by conducting a survey measuring the two phenomena. Furthermore, Paper I combines data from the questionnaires with

data from background forms in order to explore associations between practice characteristics and relational coordination and social capital, respectively.

5.3.2 Paper II

Paper II aims to answer SQ2:

Is there any association between relational coordination and performance outcomes?

In the quest to address SQ2 Paper II investigates, if relational coordination is associated with outcome measures. Paper II only looked at relational coordination, because it became too complex investigating relational coordination and social capital in the same study. Social capital is to be investigated in future studies.

Danish Regions provided register-based data on number and types of consultations per practice per year, which were used as the outcome measures. DAMD provided data on gender, age and size of the list population that were used as explanatory variables. The outcome measure provided a measure for the productivity in each general practice, but the limitation was that it did not measure the quality of the medical service. The aim of Paper II became to investigate the association between relational coordination and number of consultations per practice per year.

5.3.3 Paper III

Paper III aims to answer SQ3

Does the level of relational coordination affect the patients' evaluation of general practice?

In the quest to address SQ3 Paper III includes customers' opinions - the patients. This study continued to focus only on relational coordination due to two reasons. One, it becomes too complex investigating both relational coordination and social capital in the same study. Two, a study focusing on social capital was instead conducted in collaboration with another researcher [Knudsen et al., 2014].

DAK-E (Danish Quality Unit of General Practice) runs a survey called DanPEP (Danish Patients Evaluate Practice), which is the Danish version of the EUROPEP (European Patients Evaluation Practice) survey. The EUROPEP questionnaire has 23 items distributed on five dimensions: the physician-patient relationship, quality of medical treatment, level of information and support, organisational service provided, and accessibility. DanPEP surveys were conducted up to 2009. Respondents were adult patients attending the general practice, where they were registered. For each participating general practice 130 questionnaires were handed out. The results of the survey are used to focus on the quality experienced by the patients [Pedersen et al., 2012, Wensing et al., 2000].

The survey data on relational coordination were combined with the data from the DanPEP survey. The aim of Paper III then became to investigate, if the level of relational coordination affect the patients' evaluation of the general practice.

Chapter 6

PAPER I

TITLE Relational coordination and organisational social capital association with characteristics of general practice.

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Relational coordination and organisational social capital association with characteristics of general practice.

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ABSTRACT

Background: Relational coordination (RC) and organisational social capital (OSC) are measures of novel aspects of an organisation's performance, which have not previously been analysed together, in general practice.

Objectives: The aim of this study was to analyse the associations between RC and OSC, and characteristics of general practice.

Methods: Questionnaire survey study comprising 2074 practices in Denmark.

Results: General practitioners (GPs) rated both RC and OSC in their general practice higher than their secretaries and nurses. The practice form was statistically significantly associated with high RC and OSC. RC was positively associated with the number of patients listed with a practice per staff, where staff is defined as all members of a practice including both owners and employees.

Conclusion: The study showed that RC and OSC were significantly associated with type of profession and practice type. RC was also found to be significantly positively associated with number of patients per staff. However, the relatively low response rate most be taken into consideration when interpreting the results of this study.

INTRODUCTION

General practice provides cost-efficient, first-line service and mindful gatekeeping [1]. Still, studies have shown substantial variation of practice patterns in e.g. use of spirometry testing, prescribing of narrow-spectrum penicillin, management of hypertension and number of different drugs prescribed per practice [2-3]. These variations have only for a small part been explained by practice or physician characteristics like GP's gender and age, practice list size, structure and workload [4]. Until now, focus has been on the above-mentioned easily measurable characteristics of general practice and the way they contribute to our understanding of differences in practice patterns. However, such characteristics may only to a minor extent serve as proxies for more subtle features. While relational coordination (RC) and organisational social capital (OSC) have not previously been jointly analysed in general practice, they have been shown to be related to an organisation's performance and have individually received much attention in health care and private industry with potential managerial implications.

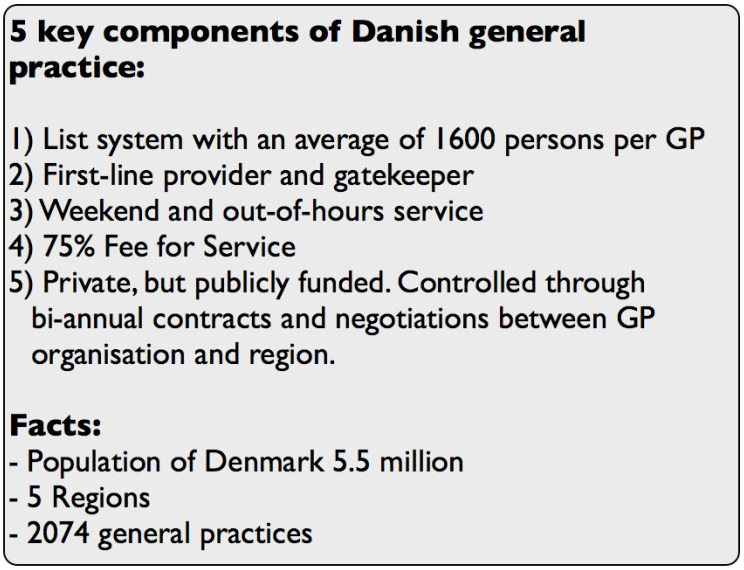

Figure 1: Information box on Danish general practice [1].

RC was first studied in the airline industry and later within health care [5-6]. RC is a tool for measuring and analysing the communication and relationship networks through

which work is coordinated across functional and organisational boundaries [7]. In hospital settings, a positive association between RC and quality of care has been found [5]. Studies in primary care have emphasised the importance of enhancing RC between healthcare professionals and the fact that it may improve delivery of medical services [8-9]. RC is defined as a mutually reinforcing process of interactions between communication and relationships carried out for the purpose of task integration. Studies have shown that RC is correlated with on-time airport departures and surgical performance [5-7], which have led to RC being perceived as a means of improving quality and performance under conditions of task interdependence, uncertainty and time constraints [7, 10]. RC proposes that three relational dimensions contribute to effective coordination: shared goals, shared knowledge and mutual respect [5]. These relational dimensions are theorised to enhance communication that is frequent, timely, accurate and problem-solving, rather than blaming, making an organisation that can coordinate collective action [5, 11].

OSC is used when analysing the psychosocial work environment in organisations. OSC is closely related to social relations and networks [9] and is seen as a powerful resource for improving organisational performance [10]. OSC is defined as the ability for members in an organisation to collaborate, when solving the key task of the organisation [11]. OSC can also facilitate changes in the levels of trust between employees and owners, and enhance cooperation and feelings of justice [11]. People in trusting relationships seek input from one another, and they allow others to do their job without unnecessary supervision [12]. Having high OSC can therefore make it easier for different professions to collaborate and achieve a high level of RC. The work of a general practice is quite different from the airline and production industry where RC and OSC have their origin; still we believe that RC and OSC may offer new insight and opportunity for general practice to learn.

To improve RC and OSC in general practice, a deeper understanding of some main features of the general practice contribution to RC and OSC is needed. Practice structure such as single-handed, partnership and cooperative practices is also associated with quality of care delivered, as is the workload. However, still no one has explored relationships between RC and OSC, and how these measures are associated with general practice characteristics. Hence, this paper aims to: 1) determine association between RC and OSC, 2) to explore associations between practice characteristics and RC and OSC, respectively.

METHODS

Study design

A questionnaire survey was carried out among 2074 Danish general practices from June to September 2011. The Organisation of General Practitioners provided addresses for all 2074 Danish practices. Danish registers contain information on the number of GPs in each practice, but no records are kept about other types of healthcare professions.

The questionnaire was designed to measure the psychosocial work environment and the task-based relationship ties in general practice. It comprised questions from two validated questionnaires: the RC survey [7] and the Copenhagen Psychosocial Questionnaire (COPSOQ) [13]. The questions from the RC Survey were translated from English into Danish through a cross-cultural adaption process [14]. Firstly it was forward-translated by the first author and discussed within a multidisciplinary research group. Secondly, a professional translator subsequently made a back-translation. Thirdly, Jody Hoffer Gittell, the developer of the RC Survey, then evaluated the back-translated survey with emphasis on conceptual and cultural equivalence, rather than on linguistic equivalence. All questions were answered on a 5-point Likert scale.

The questionnaire was pilot tested in the autumn 2010 and spring 2011 in two Danish general practices. Participants completed the questionnaire and were asked to comment on content, wording and intelligibility. Only minor changes were made. The questions included in the present study will be described in detail later.

A letter including questionnaires and a stamped reply envelope was sent to the secretary in each general practice in Denmark. The practice secretary was asked to distribute the questionnaires among the owner(s) and employee(s), fill in a background form with information about the practice, collect and return all questionnaires and the background form. Non-respondents received two reminders, the second one with new questionnaires, background form and a stamped reply envelope.

Measures

In the RC Survey seven questions (1.1-1.7) measured the following dimensions of RC: frequent, timely, and accurate communication; the problem-solving nature of communication; and the degree to which relationships were characterised by shared goals,

shared knowledge and mutual respect [15]. Respondents were asked to answer each of the questions with respect to each of the other professions (GP, nurse and secretary) within a general practice with respect to patients with chronic diseases, see Table 1. Caring for patients with chronic diseases in Danish general practice is usually organised around the secretary, who is the first point contact and relay the relevant information to the GP and/or other health personnel.

RC was calculated as a mean of the seven dimensions.

Item	Dimension	Question
1.1	Frequent communication	How frequently do people in each of these groups communicate with you about patients with chronic diseases?
1.2	Timely communication	Do people in these groups communicate with you in a timely way about patients with chronic diseases?
1.3	Accurate communication	Do people in these groups communicate with you accurately about patients with chronic diseases?
1.4	Problem-solving communication	When problems occur with patients with chronic diseases, do the people in these groups blame others or work with you to solve the problem?
1.5	Shared goal	How much do people in these groups share your goals regarding patients with chronic diseases?
1.6	Shared knowledge	How much do people in each of these groups know about the work you do with patients with chronic diseases?
1.7	Mutual respect	How much do people in these groups respect the work you do with patients with chronic diseases?

Table 1: Relational coordination questions.

OSC was measured by means of statements about trust, justice and cooperation. The trust scale comprises five statements (items 2.1-2.5) selected from the dimensions of 'trust regarding management' and 'mutual trust between employees' in COPSOQ II [13]. This scale has been validated on a representative sample of 3517 Danish employees [13]. The five statements are shown in Table 2. The justice scale comprises three statements. Items 3.1

and 3.2 were selected from the dimension ´justice´ in COPSOQ II [13]. For item 3.3 a negation of the original question from COPSOQ [16] was used in order to check consistency and make the respondents use both extremes of the 5-point Likert scale, see Table 2. The cooperation scale comprises three ad hoc statements, which were tested in the pilot study. Items 4.1-4.3 from Table 2 were used to assess the cooperation between employees.

Item	Scale	Statements
2.1	Trust	You can trust the information coming from the management
2.2	Trust	The management trust that the employees do their work well
2.3	Trust	The employees do in general trust each other
2.4	Trust	Do employees withhold information from each other?
2.5	Trust	I am able to express my views and feelings to my colleagues
3.1	Justice	Conflicts between employees are resolved fairly for all involved
3.2	Justice	Work is distributed fairly
3.3	Justice	I do not have a large degree of influence over my work
4.1	Cooperation	Among us everybody is involved in decisions regarding changes
4.2	Cooperation	If I forget something, then one of my colleagues will take care of it for me
4.3	Cooperation	We have a good cooperation between workgroups

Table 2: Organisational social capital statements.

Statistical analysis

Two types of analyses were conducted, one where RC and OSC, respectively, were based on individual ratings, and a second where they were based on practice average ratings. The analyses on individual ratings were adjusted for practice cluster effects using robust cluster estimation.

To analyse associations between RC and OSC, respectively, and a number of personal and organisational explanatory variables, mean differences with 95% confidence intervals

(CIs) were calculated by use of analysis of variance. As explanatory variables geographical location, gender, practice types (single-handed, cooperative and partnership practice), profession, number of healthcare professionals at the practice, length of employment in general practice, gender of the respondent and size of list population were considered. All explanatory variables were categorical variables. To account for possible confounding, fully adjusted analyses as well as univariate analyses were conducted. A residual analysis was performed to assess the model assumptions.

The percentage of missing values and non-relevant answers were calculated for both RC and OSC. Furthermore, two sensitivity analyses were performed in the calculations of RC: 1) Missing values and non-relevant answers in the dimensions comprising the RC dimensions were substituted by the mean of the observed values for the dimension, 2) Missing values and non-relevant answers were substituted by 0.2 less than mean of the observed values of the dimension.

All analyses were performed using Stata Release 11.0 (StataCorp, College Station, TX, USA). A p-value of <0.05 was considered statistically significant.

Ethical approval

The study was conducted with approval from the Multi Practice Committee under the Danish College of General Practitioners (Multipraksisudvalget), and the Danish Data Protection Agency.

RESULTS

Of the 2074 Danish general practices that were invited to participate, 706 (34%) general practices responded, Figure 1.

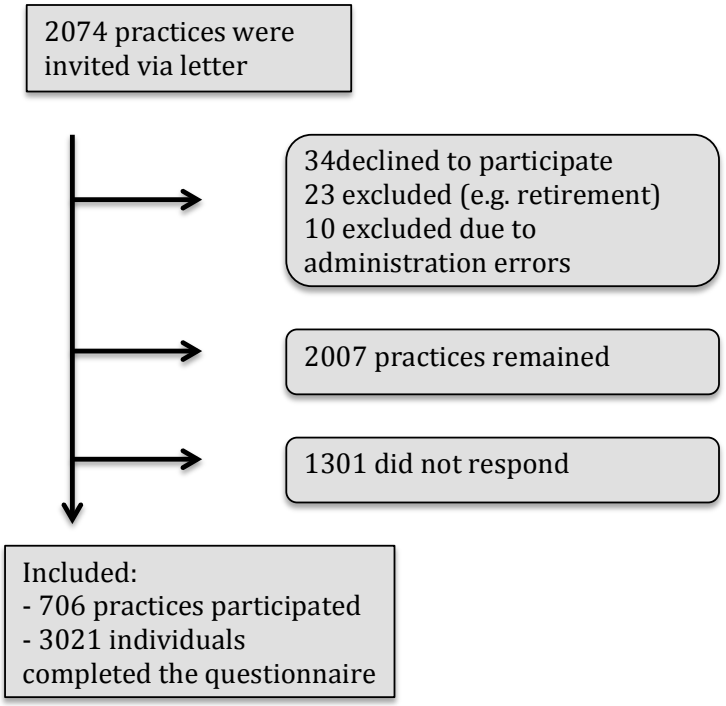

Figure 2: Flowchart

The study population is reported in Table 3.

	Numbers of respondents
Gender	
Male	481
Female	1904
Professional Position	
Secretary	674
Nurse	801
Physician - owner	1127
Physician - employed	253
Laboratory technologist	63
Others	75

Table 3: Profile of the study population.

The mean rating was 4.1±0.3 (Mean±SD) out of 5 and 80.3±8.4 out of 100 for RC and OSC, respectively.

Personal characteristics associated with ratings of RC and OSC

Table 4 shows a statistically significant association between profession and ratings of RC and OSC, respectively. GPs rated both RC and OSC higher than nurses and secretaries. GPs owning a general practice also rated RC higher than GPs who were employed (Difference = -0.01, 95%CI -0.18 to 0.02).

	Relational Coordination		**Organisational Social Capital**	
	crude	**adjusted [A]**	**crude**	**adjusted [A]**
	Difference	Difference [95% CI]	Difference	Difference [95% CI]
Years of employment in general practice	***	*		
Y<1	-	-	-	-
2-5Y	-0.5*	-0.05 [-0.13; 0.02]	-2.02**	-1.18 [-3.06; 0.71]
6-10Y	-0.3	-0.05 [-0.14; 0.04]	-1.85*	-2.31* [-4.60; 0.28]
Y>10	0.06*	0.04 [-0.05; 0.13]	-0.75	-1.71 [-4.04; 0.61]
Profession	***	***		***
GP owner	-	-	-	-
Secretary	-0.35***	-0.37*** [-0.45; -0.29]	-4.15***	-5.02*** [-6.96; -3.08]
Nurse	-0.11***	-0.12*** [-0.18: -0.05]	-2.56***	-3.94*** [-5.96; -1.93]
GP employed	-0.12***	-0.1* [-0.18; -0.02]	0.16	-0.97 [-3.46; 1.52]
Gender				
Male	-	-	-	-
Female	-0.14***	-0.01 [-0.06; 0.04]	-2.62***	0.56 [-1.04; 2.16]
Age				
Min -29Y	-	-	-	-
30-39Y	-0.16*	-0.15* [-0.27; -0.04]	-2.30	-1.35 [-4.56; 1.85]
40-49Y	-0.10*	-0.11 [-0.23; 0.02]	-2.94*	-0.82 [-4.22; 2.58]
50-59Y	-0.11*	-0.15* [-0.29; -0.02]	-2.71	-0.30 [-3.83; 3.23]
60-69Y	-0.13*	-0.16* [-0.31; -0.01]	-2.26	-0.05 [-3.94; 3.84]
70- max	-0.09	-0.37 [-1.54; 0.81]	-1.58	5.40 [0.26; 11.06]

Table 4: Associations of personal characteristics with individual ratings of relational coordination and organisational social capital. *P<0.05 **P<0.01 ***P<0.001

[A] A fully adjusted model including all variables listed in the table

Table 4 also shows a statistically significant association between RC and years of employment in general practice. Respondents who had been employed between 2-5 years and 6-10 years rated RC lower than respondents who had been employed less than 1 year in the same general practice, whereas respondents who had been employed more than 10 years rated RC higher than respondents with less than 1-year employment in the general practice.

Gender and age were not significant for the rating of RC or OSC.

Practice characteristics associated with ratings of RC and OSC

Table 5 shows that practice form was highly statistically significantly associated with the rating of both RC and OSC. Respondents from single-handed practices rated RC and OSC higher than respondents from other types of practices. Respondents from partnership practices had the lowest rating of RC and OSC.

	Relational Coordination		Organisational Social Capital	
	crude	**adjusted [A]**	**crude**	**adjusted [A]**
	Difference	Difference [95% CI]	Difference	Difference [95% CI]
Regions				
Capital Region of Denmark	-	-	-	-
Central Denmark Region	-0.05	0.0 [-0.07; 0.07]	-1.80	-1.01 [-2.93; 0.91]
North Denmark Region	-0.03	-0.01 [-0.11; 0.08]	-1.75	-1.45 [-4.1; 1.2]
Region Zealand	-0.02	0.02 [-0.06; 0.1]	0.47	1.58 [-0.66; 3.82]
Region of Southern Denmark	-0.09*	-0.03 [-0.1; 0.05]	-0.61	1.2 [-0.81; 3.82]
Practice type	***	***	***	***
Single-handed	-	-	-	
Cooperative	-0.15***	-0.15*** [-0.22; -0.08]	-3.83***	-4.23*** [-6.29; -2.18]
Partnership	-0.12***	-0.12*** [-0.18; -0.06]	-3.52***	-3.59*** [-5.22; -1.97]
PT-Physician ratio[B]				
Low	-	-	-	-
Medium	-0.1	0.01 [-0.06; 0.09]	0.96	1.98 [-0.07; 4.04]
High	-0.04	-0.09 [-0.19; 0.01]	1.99	1.43 [-1.31; 4.18]
PT-Employee ratio[B]	***	***		
Low	-	-	-	-
Medium	-0.02	0.00 [-0.07; 0.08]	-0.47	-0.4 [-2.12; 2.05]
High	0.13	0.14** [0.04; 0.24]	2.96*	1.87 [-0.90; 4.64]

Table 5: Associations of practice characteristics with ratings for each general practice on relational coordination and organisational social capital, respectively. *P<0.05 **P<0.01 ***P<0.001

[A] A fully adjusted model including all variables listed in the table

[B] The study population is split into three intervals: 0-15% = low; 16-85% = medium; 86-100% = high.

The number of patients listed with a general practice per staff, where staff is defined as all members of a practice including both owner and employees, was statistically significant for the rating of RC in general practice. There was no difference in RC between practices with low and medium number of patients per staff (Difference = 0.00, 95%CI -0.07 to 0.08). Practices with a high number of patients per staff rated RC higher than practices with a low number of patients per staff (Difference = 0.14, 95%CI -0.04 to 0.24).

The number of patients listed with a general practice per GP was not statistically significant for ratings of RC or OSC. Nor was the regional location of the practice.

Missing values and sensitivity analysis

The percentage of missing values and non-relevant answers for OSC statements was low, with a range of 0.43-5.71%. A higher frequency was seen for the RC questions, where the range was 6.15-18.12%. Both sensitivity analyses changed the effect of patients per staff ratio to non-significant.

DISCUSSION

Main findings

The results showed high OSC in Danish general practice (80.3±8.4), when comparing with the Danish national average of 64.9 [13]. There is no Danish national average for RC or any other benchmark to compare with. Instead, the RC measured in this paper (4.1±0.3) is compared to the nine hospital studies presented in "High Performance Healthcare', with RC ranging from 3.84 to 4.22 [5]. The average RC for Danish general practices presented in this paper is in the high end compared to the range from the hospital studies and is also with a smaller SD.

GPs rated both RC and OSC in their general practice higher than the secretaries and nurses. RC and OSC were both associated with practice types, where single-handed practices had higher ratings. Associations between profession and RC and OSC, were also found. RC was also associated with the number of patients per staff in a general practice, a similar association was not found for OSC.

Interpretation

We believe that the higher ratings by the GPs may be due to the practices being owned and managed by GPs. GPs, in other words have significant influence on both RC and OSC, because they define processes and relationships.

There are mainly three types general practices in Denmark: single-handed practice, cooperation practice and partnership practice. Of the three types of practices single-handed practices had the highest ratings of RC and OSC compared to the other practice forms. Common for all practices is that they are owned and managed by GPs. Partnership and cooperative practices usually have more than one manager, and we hypothesise that such a joint leadership may be a source of confusion amongst the staff about who to report to. This may then cause uncertainty and lower levels of trust in general practice, resulting in the observed lower RC and OSC.

RC was found to increase when the number of patients per staff increased. Studies have shown that a high prevalence of polypharmacy (simultaneous use of five or more drugs) was found in practices characterised by a low patient load, probably meaning that the patients had high GP availability and employees had time for coordination and

communication about everyday tasks [3]. High prevalence of polypharmacy could also be due to high level of contact between GPs and pharmaceutical delegates. However, access to data that could determine rapid contact between GPs and pharmaceutical delegates was not available. Ceteris paribus, we assume a relationship between numbers of patients per employee and time available per patient consultation, i.e. with only a few patients there are ample time for consultation. As the number of patients per staff increases there will be less time for consultation, discussion and helping colleagues, which in turn should reduce RC. Nevertheless, this study shows that it is indeed possible to raise the number of patients per staff and also increase RC. Another important factor is the relationship between the patients and GP. However, the scope of this study was not to examine the effect of the patient-GP relationship. The findings indicate a point in the organisational development, where natural job specialisation will occur. The change comes from a place of need, more than from a growing focus on RC.

Geographical location, gender and age were not associated with RC or OSC. It is remarkable that these factors, often hypothesised to be associated with performance such as quality of treatment and consultants per staff member in general practice, were not associated with RC or OSC. Instead, this paper shows that RC and OSC are associated with personal and practice characteristics.

Strengths and limitations of the study

Statements and questions used in this paper were from validated questionnaires [7-13, 20], which were tested in a pilot study. The discrepancy between our findings and the residual analyses indicated that the model assumptions were satisfied for both RC and OSC. The results of the sensitivity analysis suggest that RC with regard to the effect of patients per staff ratio should be further examined.

A limitation is that sample size calculations were not performed before sending out the survey. However, the large sample size with a total of 706 practices and 3021 individual respondents, the reasonably narrow confidence intervals, and the many statistically significant results, suggest that the sample size was sufficient for our study. Another limitation is the low response rate of 34%, which could lead to selection bias. As our paper

considers associations rather than e.g. prevalence estimation, selection bias is unlikely to have affected our results significantly.

A general disadvantage of questionnaire-based surveys is the likelihood of social desirability response bias – people responding in a way that shows them in a good light. Particularly the owners of the general practices could be rating their practices well.

Implication for future research and clinical practice

More research is needed to achieve an in-depth exploration of the influence of RC and OSC on outcome performance measures, such as consultation rate per staff in each practice, characteristics of list populations and patient satisfaction. Furthermore, it should be studied whether RC and OSC can be enhanced, both within general practice and between patients and healthcare professionals.

Even though increased RC in a general practice is hypothesised to reflect in communication with the patient and the service provided by the general practice future research should also include the patient. This is especially important due to the increasing focus on patient involvement in primary care.

CONCLUSION

This paper found a positive association between profession and RC and OSC in general practice. The paper also showed that single-handed practices have significantly higher RC and OSC than other practice types. Furthermore, the results showed a significantly positive association between RC and number of patients per staff.

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Chapter 7

PAPER II

TITLE Relational coordination is associated with productivity in general practice: A survey and register based study.

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Relational Coordination is Associated with Productivity in General Practice: A survey and register based study

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Abstract. In this paper we investigate the association between relational coordination among the practice team in general practice and number of consultations performed in a general practice per staff, i.e. a proxy of productivity. We measured relational coordination using the Relational Coordination Survey and combined the results with register data. We found that relational coordination was statistically significantly associated with number of consultations per staff per year. We later divided consultations into three types: Face-to-face, e-mail and phone consultations. We found a statistically significant association between relational coordination and with number of face-to-face consultations per staff per year.

Keywords. Relational Coordination, Productivity and General Practice

1. Introduction

General practices are faced with a series of growing demands – from the changing needs of an aging population, to the increasing demands for comprehensive management and coordination of patient care. For general practice to overcome these demands, the key issues are not necessarily the personal knowledge or vision of the individual physician, but rather the teamwork in the practice group, including professional and administrative staff (Chesluk & Holmboe, 2010). Chesluk og Holmboe (2010) found a lack of teamwork in primary care practices, and when the entire practice team did come together, it was around physicians and facilitating their schedules, rather than around patients and their experience. To meet the growing demands the practice team must collaborate in new ways that involve sharing both tasks and an underlying cultural framework (Chesluk & Holmboe, 2010).

One approach for fostering collaboration in an organisation is relational coordination, which involves coordination work through relationships of shared goals, shared knowledge and mutual respect (J. H Gittell, 2005). It is measured as a network of communication and relationship ties among work groups engaged in a common work process. Higher levels of relational coordination produce higher levels of quality and efficiency performance, fewer dropped balls and less wasted effort (Jody Hoffer Gittell, Godfrey, & Thistlethwaite, 2013). Relational coordination also improves job satisfaction by allowing team members to effectively perform their jobs and by providing the social support they need (J. H Gittell, 2009).

Research has indicated that a group with better teamwork tends to perform better than a group lacking teamwork (Grumbach & Bodenheimer, 2004). This paper investigates the association between relational coordination among the practice team and number of consultations performed in a general practice per staff. The purpose of the paper is to explore, if relational coordination has an effect on productivity in a general practice, when productivity is defined as number of consultations per staff.

2. Methods

2.1 Study Design

A national questionnaire survey was carried out among general practices in Denmark from June to September 2011 and combined with register-based data on consultations per year in each practice in 2011 and on list populations' gender and age. The questionnaire was designed to measure relational coordination by using the seven questions from the Relational Coordination Survey (J. H Gittell, 2005), see Table 1. The questions were translated from English to Danish via a cross-cultural adaptation process (Guillemin, Bombardier, & Beaton, 1993). First it was forward-translated by the first author and discussed within a multidisciplinary research group. Secondly, a professional translator subsequently made a back-translation. Thirdly, Jody Hoffer Gittell, the developer of the Relational Coordination Survey, then evaluated the back-translated survey with emphasis on conceptual and cultural equivalence, rather then on linguistic equivalence. All questions were answered on a 5-point Likert scale.

Table 1: The Relational Coordination Questions

Dimension	Question
Frequent communication	How frequently do people in each of these groups communicate with you about patients with chronic diseases?
Timely communication	Do people in these groups communicate with you in a timely way about patients with chronic diseases?
Accurate communication	Do people in these groups communicate with you accurately about patients with chronic diseases?
Problem-solving communication	When problems occur with patients with chronic diseases, do the people in these groups blame others or work with you to solve the problem?
Shared goals	How much do people in these groups share your goals regarding patients with chronic diseases?
Shared knowledge	How much do people in each of these groups know about the work you do with patients with chronic diseases?
Mutual respect	How much do people in these groups respect the work you do with patients with chronic diseases?

2.2 Register Data

The register data were obtained from two different national databases:

- Danish Quality Unit of General Practice administrates Danish General Practice Database (DAMD) from where data on gender, age and size of list populations were provided.
- Danish Regions provided data on number of individuals seen in each practice and number of consultations per practice in 2011 divided into face-to-face consultations in practice, phone consultations and e-mail consultations.

2.3 Study Population

A total of 706 general practices responded to the Relational Coordination Survey. Data were combined with the register data. Practices with less than 100 patients and practices where data on consultations; patients' age and gender were not available were eliminated from the study, leaving 520 practices for the analyses.

2.4 Statistical Analysis

Relational coordination was calculated as a mean of the seven dimensions. To analyse consultation variables' association with relational coordination, mean differences with 95% confidence intervals (CIs) and P-values were calculated by use of univariate and multiple linear regression models. As explanatory variable gender, age and size of list populations were included. Relational coordination was analysed at practice level.

All analyses were performed using Stata Release 11.2 (StataCorp, College Station, TX, USA). A p-value of <0.05 was considered statistically significant.

2.5 Ethical Approval

The study was conducted with approval from the Multi Practice Committee under the Danish College of General Practitioners (Multipraksisudvalget), and the Danish Data Protection Agency.

3. Results

The average relational coordination for the 520 participating general practices was 4.05 (SD 0.3) on a scale from one to five.

Table 2 shows a statistically significant association between number of consultation per staff and relational coordination. A one-point increase in relational coordination is associated with an increase of 441.11 consultations per staff per year. Consultations were dividing into three types: Face-to-face, e-mail and phone. Table 2 shows a statistically significant association between number of face-to-face consultations per staff and relational coordination, where a one-point increase in relational coordination is associated with an increase of 199.92 consultations per staff per year.

*Table 2: Association between relational coordination and number of consultations per year. The coefficients indicate the change of number of consultations per one-point change in relational coordination. Level significant at *P<0.05*

	Coefficient	**95% confidence interval**
Consultations per physician per year	68.5	[-884.11; 1021.1]
Consultations per staff per year	441.11	[19.18; 803.04]*
Face-to-face consultations per physician per year	-11.33	[-518.69; 496.03]
Face-to-face consultations per staff per year	199.92	[13.48; 386.37]*
E-mail consultations per physician per year	49.06	[-136.6; 234.71]
E-mail consultations per staff per year	34.57	[-47.26; 116.39]
Phone consultations per physician per year	-37.22	[-409.43; 483.87]
Phone consultations per staff per year	179.37	[-23.60; 382.33]

Number of consultations per physicians per year was not statistically significantly associated with relational coordination. Neither was number of e-mail and phone consultations per staff.

4. Discussion and Conclusion

The results showed a positive association between number of consultations per staff per year in a general practice and relational coordination, when adjusting for age and gender of the list population. Relational coordination builds on the idea that coordination is essential for all work and that coordination happens through communication, which is shaped by relationships. A general practice with high relational coordination has strong communication and relationships ties, as well as possesses a great ability to utilise the qualifications among the different healthcare personal. This could explain why we only find an association between relational coordination and number of consultations per staff per year and not an association with number of consultations per physicians.

Furthermore, the results showed a positive association between number of face-to-face consultations per staff and relational coordination, but no association between e-mail or phone consultations and relational coordination was found. An explanation could be that e-mail and phone consultations are primarily carried out by the physician and do not require coordination or communication with the other staff members, where on the other hand face-to-face consultations require coordination and collaboration between the staff members and either a physician, nurse or another healthcare professional, who carries out a face-to-face consultation.

The study shows that relational coordination is associated with high productivity in a general practice, where productivity is defined as number of consultations per staff. Furthermore, the study implicates that relational coordination could be an approach to get higher productivity in general practice. Future studies should investigate if relational coordination can be increased in general practice, and how relational coordination can be influenced.

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Chapter 8

PAPER III

TITLE Association between relational coordination and patient evaluation in Danish general practice: A combination of a general practice survey and a patient survey.

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Association between relational coordination and patient evaluation in Danish general practice: a combination of a general practice survey and a patient survey.

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ABSTRACT

Background: Previous studies have shown that relational coordination is positively associated with delivery of care for patients with chronic illness in primary care and with number of consultations per staff member in a general practice.

Objectives: The objective of this study was to analysis the association between relational coordination and patients' evaluation of general practice.

Methods: A cross-sectional study among Danish general practice, where two questionnaire surveys were combined: general practices were surveyed with the Relational Coordination Survey and patients in general practices were surveyed with the DanPEP Survey. Linear regression was used to assess the association between each of the five dimensions in DanPEP and a number of explanatory variables including relational coordination.

Results: In total, 113 general practices participated in both surveys. There was no significant association of relational coordination within general practice with patient evaluation of general practice in this study after adjusting for other characteristics.

Conclusion: There is no evidence of an association between relational coordination and patient evaluation of general practice.

KEYWORDS

Relational coordination, DanPEP, general practice, Denmark

KEY MESSAGE

- There was no association between relational coordination within a general practice and patient evaluation of general practice.

INTRODUCTION

Relational coordination is a research model proposed by Gittell in 2002 to assess organisational coordination, i.e. to measure and analyse a network of communication and relationship ties within work groups engaged in a common work process (1). Relational coordination is particularly important in service organisations characterised by high levels of uncertainty, interdependence and time constraints, where it is expected to improve both quality and efficiency performance (1). In hospital settings, a positive association between relational coordination and quality of care has been shown (2). Studies in primary care have shown that enhancement of relational coordination among core disease management professionals improves delivery of chronic illness care (3). Furthermore, studies comprising Danish general practices have shown a positive association between relational coordination and productivity (4). Relational coordination has been shown to be associated with increasing number of consultations per staff member in a general practice (4).

Patient evaluation surveys are widely used in connection with quality development in general practice and are to become mandatory in Denmark. Patient evaluations of general practice reflect the extent to which general practice succeeds in meeting the patients' individual needs and can be used to identifying areas that can be improved and therefore to some extent patient evaluations probably reflects the effectiveness of the practice (5-7). Further, Heje et al. (7) found that feeding back patient evaluation results to the GPs had a significant impact on GPs' attention to the patients' perspective on care quality and on the GPs' job satisfaction.

Hence, taking into account previous finding of a positive association between relational coordination and productivity, we propose the following hypothesis: relational coordination within a general practice is positively associated with patients' evaluation of general practice.

METHODS

Cross-sectional, questionnaire-based study within Danish general practice combining two questionnaire surveys: a general practice survey on relational coordination in general practice and a patient survey on patient evaluations of general practice.

Participants and Settings

The Danish version of the European evaluation questionnaire for general practice (EUROPEP) is called DanPEP (DANish Patients Evaluate general Practice). The Danish Quality Unit of General Practice found all GPs who had participated in both the DanPEP Survey regarding patient evaluation of general practice and the Relational Coordination Survey. General practices participating in both surveys were included in the study.

Danish general practices are responsible for coordinating care for individual patients and provide gatekeeping to other health services (8). All Danish residents have free and direct access to their own GP, who is self-employed and contract with the regions on a 2-year contract (5). General practices can be divided into single-handed or partnership practices. A single-handed practice is owned and run by one GP. A partnership practice is owned by two or more GPs, who share patients, facilities, staff and finances (5).

Data

The data were obtained from two surveys conducted in Danish general practice. The Relational Coordination Survey consists of seven questions formulated by Jody H. Gittell (9), see Table 1. Each of the questions represents one of the seven dimensions. The questions were translated from English into Danish via a cross-cultural adaptation process. First, it was forward-translated by the first author and discussed within a multidisciplinary research group. Secondly, a professional translator subsequently made a back-translation. Thirdly, Jody H. Gittell evaluated the back-translated survey with emphasis on conceptual and cultural equivalence, rather than on linguistic equivalence. The Relational Coordination Survey was conducted in 2011 (10).

The DanPEP questionnaire was constructed based on the literature and patients' priorities and comprised 23 items distributed on five dimensions: physician-patient relationship, quality of medical treatment, level of information and support, organisational

service provided, and accessibility (11). DanPEP Surveys can be used by GPs to focus on the quality experienced by the patients (5, 12). The DanPEP Survey was conducted between 2002-2009. Respondents were adult patients attending the general practice where they were registered. For each participating general practice 130 questionnaires were handed out.

All questions in the Relational Coordination Survey and the DanPEP Survey were answered on a 5-point Likert scale.

Statistical analyses

Analyses on associations between each of the five dimensions for patient evaluation of general practice and the explanatory variables were performed. Mean effects with 95% confidence intervals (CIs) were calculated by use of linear regression. As explanatory variables relational coordination, practice form (single-handed, shared or partnership practices), number of patients listed, number of healthcare professionals, patient sex, patient age, years listed with the current practice and patient self-rated health were considered. To account for possible confounding, a fully adjusted analysis was conducted as well as univariate analyses. Residual analyses were performed to assess the model assumptions for each DanPEP dimension.

All analyses were performed using Stata Release 11.2 (StataCorp, College Station, TX, USA). A p-value of < 0.05 was considered statistically significant.

Ethical approval

This study was approved by the Danish Data Protection Agency (journal number 2010-41-5632). According to Danish legislation no approval from the Danish ethics committee was required.

RESULTS

Descriptive

A total of 113 general practices participated in both the Relational Coordination Survey and the DanPEP Survey. The practices were compared to 474 general practices that only participated in the Relational Coordination Survey. Table 1 shows only minor differences between the general practices' participation in both surveys and the ones only participating in the Relational Coordination Survey.

TABLE 1: Basic characteristics of practices participating in the Relational Coordination Survey and the DanPEP Survey.

Variables	**Participants in the Relational Coordination and DanPEP Survey N**	**Participants in the Relational Coordination but not DanPEP Survey N**
Organisational Characteristics		
Number of practices	113	474
Total number of patient evaluations	14469	-
Evaluations per practice, mean (SD)		
Relational coordination, mean (SD)	4.05 (0.29)	4.06 (0.31)
Practice form		
Single-handed practices (%)	45 (39.82)	202 (42.62)
Shared-/partnership practices (%)	68 (60.18)	268 (56.54)
Number of listed patients, mean (SD)	11039.5 (26352.5)	9359.2 (23727.32)
Number of healthcare prof., mean (SD)	9.44 (17.58)	8.95 (17.76)

Characteristics of the respondents to the DanPEP Survey are reported in Table 2. In brief, the mean age was 53 years, and 32.3% were women. On average, the patients had been listed with their current practice for 8.6 years, and the self-reported health of 63.9% of the patients was good to excellent.

TABLE 2: Patient characteristics of DanPEP respondents

Variables	**N**
Women (%)	4672 (32.3)
Age, mean (SD)	53.0 (17.8)
Years listed with current practice, mean (SD)	8.6 (8.02)
Self-rated health status	
Excellent	451
Very good	2275
Good	5987
Fair	3987
Poor	940

Statistical associations in regression model

There was no statistically significant association between relational coordination in general practice and patient evaluation of general practice.

Table 3 shows a statistically significant association between patient evaluations of the dimension 'Organisation of service' and patient age (coefficient = 0.01, 95% CI [0.00; 0.02]). Table 3 also shows that practice form was highly statistically significantly associated with patient evaluations of the dimension 'Accessibility'. Patients from shared- or partnership practices rated the dimension 'Accessibility' lower than patients from single-handed practices (coefficient = -0.33, 95% CI [-0.46; -0.19]). Furthermore, Table 3 shows a statistically significant association between patient evaluations of the dimension 'Accessibility' and patient sex (coefficient = 0.51, 95% CI [0.06; 0.95]). There was no effect modification of practice form on the association between relational coordination and 'Accessibility' (p=0.83).

TABLE 3: Adjusted associations between patient evaluations of general practice, organisational and patient characteristics. Patient evaluation score and relational coordination were measured for each practice. Level significant at *P<0.05 **P<0.01 ***P<0.001

	Crude Coefficient	Adjusted Coefficient	95% CI
Doctor-patient relationship			
Relational coordination	-0.04	0.04	[-0.14; 0.22]
Practice form	0.04	0.03	[-0.06; 0.13]
No. patients listed/10,000	-0.00	-0.00	[-0.02; 0.02]
No. healthcare professionals/10	0.00	0.01	[-0.03; 0.04]
Patient sex	-0.03	0.17	[-0.15; 0.49]
Patient age	0.0	0.0	[-0.01; 0.01]
Years listed with current practice	0.01	0.01	[-0.01; 0.01]
Patient self-rated health	0.28	0.29	[-0.13; 0.72]
Medical care			
Relational coordination	-0.01	0.05	[-0.12; 0.23]
Practice form	0.02	0.03	[-0.06; 0.12]
No. patients listed/10,000	-0.00	-0.00	[-0.02; 0.01]
No. healthcare professionals/10	0.00	0.00	[-0.03; 0.04]
Patient sex	0.04	0.17	[-0.14; 0.48]
Patient age	0.0	0.0	[-0.01; 0.01]
Years listed with current practice	0.01	0.01	[-0.00; 0.02]
Patient self-rated health	0.26	0.25	[-0.17; 0.66]
Information and support			
Relational coordination	-0.05	0.06	[-0.13; 0.25]
Practice form	0.06	0.06	[-0.04; 0.17]
No. patients listed/10,000	0.00	0.00	[-0.02; 0.02]
No. healthcare professionals/10	0.00	0.00	[-0.03; 0.04]
Patient sex	-0.10	-0.02	[-0.36; 0.33]
Patient age	0.0	0.01	[-0.00; 0.02]
Years listed with current practice	0.0	0.0	[-0.01; 0.01]
Patient self-rated health	0.27	0.17	[-0.29; 0.63]
Organisation of service			
Relational coordination	-0.04	0.07	[-0.12; 0.25]
Practice form	0.03	0.04	[-0.06; 0.14]
No. patients listed/10,000	0.00	0.00	[-0.02; 0.02]
No. healthcare professionals/10	-0.00	0.01	[-0.03; 0.04]
Patient sex	0.07	0.13	[-0.21; 0.47]
Patient age	0.01*	0.01*	[0.00; 0.02]
Years listed with current practice	0.01	0.00	[-0.01; 0.01]
Patient self-rated health	0.26	0.26	[-0.18; 0.71]

TABEL 3 COUNTINUET

Accessibility			
Relational coordination	0.26**	0.13	[-0.12; 0.37]
Practice form	-0.36***	-0.33***	[-0.46; -0.19]
No. patients listed/10,000	-0.01	0.00	[-0.02; 0.02]
No. healthcare professionals/10	-0.01	-0.01	[-0.06; .004]
Patient sex	0.47*	0.51*	[0.06; 0.95]
Patient age	0.01	0.00	[-0.01; 0.02]
Years listed with current practice	0.01	0.01	[-0.00; 0.02]
Patient self-rated health	-0.16	0.50	[-0.10; 1.09]

DISCUSSION

There was no evidence of an association between relational coordination within general practice and patients evaluation of general practice. Any apparent association in the analysis was attenuated by adjustment for other practice characteristics. The hypothesis is therefore rejected.

A previous study has shown that single-handed practices have higher relational coordination than shared- or partnership practices (10), and another study showed that practices with high relational coordination have more consultations per staff member per year (4). The result of the present study suggests that patients may not perceive the higher number of consultations in practices as better accessibility.

A reason could be that many consultations per staff do not necessarily lead to lower waiting time, hence better accessibility. If a general practice books consultations back-to-back several days in advance, it would not leave any room for patients in need of an acute consultation. This will lead to even longer waiting time and worse accessibility.

Strengths and limitations

Even though we only found minor differences between the practices participating in the DanPEP Survey and the ones participating in both the Relational Coordination Survey and the DanPEP Survey, some selection bias may still exist. General practices that give participation in such surveys high priority might also be focusing more on the management and organisation of their general practice. Thus, general practices with limited interest in organising their work may be underrepresented. However, as our paper considers associations rather than e.g. prevalence estimation, selection bias is unlikely to have affected our results significantly.

Our results may be affected by social desirability response bias, which can occur in questionnaire-based surveys. Participants may want to please and will therefor answer in ways that will be viewed favourably by others. The residual analyses indicated that the model assumptions were satisfied for all five dimension of the DanPEP Survey.

The Relational Coordination Survey and the EuroPEP Survey are both a validated questionnaires (12-13). Prior to conduction the Relational Coordination Survey in 2011 a pilot study had been carried out to test the Danish translation. In a previous study two

researchers had translated the EuroPEP Survey into Danish, had it back translated by two independent professional translators, compared the results with the original English questionnaire, and finally establishing the DanPEP Survey (11).

A limitation is related to the timespan of two years between the DanPEP Survey and the Relational Coordination Survey. In theory, a poor DanPEP evaluation could lead to subsequent changes in the individual general practice, and the state of the practice could therefore have been changed by the time where the Relational Coordination Survey was conducted. We are assuming that the state of the practice and the patients' opinions have not changed during the two years for two reasons: 1) the results of the DanPEP Survey would not have been reported back immediately, giving the general practice less than two years to implement any changes as a consequence of the feedback, and 2) planning and implementing changes in an organisation takes time.

Future research

More research is needed to achieve an in-depth exploration of the factors influencing patients' perception of accessibility. Furthermore, studies investigation best practice regarding scheduling consultations in general practices should be conducted in order to optimise the resource within a general practice and minimise waiting time.

Even though we assuming that the 2-year timespan between the two surveys were not long enough for significant changes to be established in general practices and for the patients opinions to change, it would be interesting to repeat the study where the Relational Coordination Survey and the DanPEP Survey were conducted at the same time.

CONCLUSION

This study has found that relational coordination within a general practice is not associated with patient evaluation of general.

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Chapter 9

DISCUSSION

The overall aim of this chapter is to discuss the most vital issues raised during the course of this PhD project. Firstly, the results and discussions from the three papers are summarised. Secondly, the research design's appropriateness is discussed, implicitly elaborating on the methodological considerations. Finally, the applicability of the study is discussed.

9.1 Summary of Paper Discussions

This section provides a summery of the discussions in each of the three papers in this dissertation. For a more details see the original discussions in the paper Chapter 6-8.

9.1.1 Paper I

The purpose of Paper I was to answer SQ1:

Determine association between relational coordination and organisational social capital in Danish general practice and to explore associations between practice characteristics and relational coordination and social capital, respectively?

The main findings in Paper I were that both relational coordination and organisational social capital were high in Danish general practices. GPs rated relational coordination and organisational social capital higher than the secretaries and nurses. People working

in single-handed practice rated both relational coordination and organisational social capital higher than people working in cooperative and partnership practices. Furthermore, relational coordination was found to be associated with the number of patients per staff in a general practice.

GP rated relational coordination and organisational social capital significantly higher than other healthcare professionals. GPs can influence the work process and influence the work carried out by the other healthcare professionals in Danish general practice. This indicates that having insight and influence on work processes, as well as being placed at the top of hierarchy is important for rating of relational coordination and organisational social capital. Lack of insight and influence on work processes together with the confusion that can occur, when having more than one manager might explain why cooperative and shared practice had lower ratings of relational coordination and organisational social capital than single-handed practices.

Relational coordination was found to increase when the number of patients per staff increased. This was an interesting finding since one would assume that when the number of patients per staff increases there will be less time for consultation, discussion and helping colleagues, which in turn should reduce relational coordination. The increase in relational coordination might be due to organisational development, where natural job specialisation occurs out of need, more than from a growing focus on relational coordination in Danish general practice.

9.1.2 Paper II

The purpose of Paper II was to answer SQ2:

Is there any association between relational coordination and performance outcomes?

The main findings in Paper II were a positive association between number of face-to-face consultations per staff per year in a general practice and relational coordination, where a one-point increase in relational coordination is associated with an increase of 199.92 consultations per staff per year.

High ratings of relational coordination in an organisation is associated with strong communication and relationships ties, as well as great ability to utilise the qualifications

among the different healthcare professionals in general practice. This could explain why the findings only showed association between relational coordination and number of consultations per staff per year and not an association with number of consultations per GP.

9.1.3 Paper III

The purpose of Paper III was to answer SQ3:

Is the level of relational coordination associated with patients' evaluation of general practice?

The main findings in Paper III were that relational coordination within a general practice is not associated with patient evaluation of general practice. Any apparent association in the analyses were attenuated by adjustment for other practice characteristics.

Paper II showed that practices with high relational coordination have more consultations per staff member per year. The results in Paper III suggest that patients may not perceive the higher number of consultations in practices as better accessibility.

A reason could be that many consultations per staff do not necessarily lead to lower waiting time, hence better accessibility. If a general practice book consultations back-to-back several days in advance, it may lead to longer waiting time and worse accessibility, because there will not be any room for patients in need of an acute consultation.

9.2 Research Design Considerations

As mentioned in Chapter 4, research design dictates how studies are conducted and how conclusions are drawn. Hence, the research design needs to be evaluated in relation to scientific methodology and bias.

The purpose of this PhD project was to answer the MQ:

Understanding level of relational coordination and organisational social capital in Danish general practice?

A non-experimental fixed research design is beneficial because the aim of the PhD project was to explain or explore phenomenons [Robson, 2002]. Furthermore, a questionnaire-based survey study was found suitable due to the high amount of data standardisation, and relatively simple and straightforward approach to collection of data, which could be analysed statistically and generalised to a larger population. The findings in this PhD project can point out associations, however, it can not explain the associations or if there are a causality. It is therefore not possible for this PhD project to make direct recommendation to Danish general practice. Before any recommendation can be made, the associations found in this PhD project should be investigated in a qualitative study. A qualitative interview study of a number of general practices could explain the associations and mechanism behind relational coordination and organisational social capital.

Even though validated and reliable questionnaires was used in this PhD study, there are a number of limitations by using questionnaire-based surveys, such as the likelihood of selection bias, social desirability bias and recall bias. The following sections will discuss these limitations.

9.2.1 Surveys

In Chapter 5, section 5.2 the Relational Coordination Survey and the Organisational Social Survey used in this study were presented. The Relational Coordination Survey is a validated measure [Valentine et al., 2014], and has been used in empirical research to explore outcomes and predictors of relational forms of coordination [Cramm et al., 2014, Gittell, 2001, 2002, 2008, Hartgerink et al., 2014, Manski-Nankervis et al., 2014]. The dimensions on trust and justice in the Organisational Social Capital Survey were adapted from the COPSOQ II questionnaire, which is a validated and reliable instrument to assess the psychosocial work environment both in Danish and international settings [Albertsen et al., 2010, Bjorner and Pejtersen, 2010, Kristensen, 2010, Moncada et al., 2010, Nuebling and Hasselhorn, 2010, Pejtersen et al., 2010a, Rugulies et al., 2010, Thorsen and Bjorner, 2010]. No studies validating the dimension assessing the cooperation skills in the Organisational Social Capital Survey have been published, but together with all other questions used in this study, they were tested in the pilot studies described in Chapter 5, section 5.1.

9.2.2 Selection bias

The calculations on relational coordination and social capital were performed on a large sample size of 706 general practices, 3012 individual respondents, in a cross-sectional national study. However, 706 general practices still represent 34% of the 2074 general practices in Denmark. It was not possible to compare the characteristics of the responding general practices to the non-responding. Furthermore, sample size calculations were not performed before conducting the survey. It can therefore not be determined, if the general practices participating in this study are a representable sample of Danish general practice. Selection bias should therefore be considered, and calculations of mean relational coordination and social capital for general practice in Denmark should be interpreted with extreme caution.

Other analyses in the dissertation were primarily concerning contrasts within the sample. Hence, response rate is of less importance, because the results are less vulnerable to selection bias. Furthermore, when examining response rates in each participating general practice 75% individuals participated. Previous studies measuring relational coordination have reported response rates varying from 44% to 71% within organisations [Gittell et al., 2000, Hartgerink et al., 2014], and studies measuring social capital have reported response rates varying from 60% to 85% [Ali et al., 2006, Fujiwara and Kawachi, 2008]. The relatively high response rate within organisations supports the validity of the analysis concerning contrasts in this dissertation.

In order to get a comprehensive picture of general practice, all individuals working within the participating practices were included, regardless of them being part-time, full-time, temporarily or permanently employed. Yet, there were some limitations to the procedure of handing out the questionnaires. The questionnaires along with the accompanying letter and return envelopes were posted to the secretary together with instruction to hand out the questionnaire to everyone in the general practice. It is unknown to what degree the secretaries reminded and motivated others in the practice to participate, or if some individual temporarily disconnected with the practice. However, the sample size in this dissertation still has a good representation of all work groups comparable to the distribution in an average general practice.

9.2.3 Social desirability bias

Social desirability response bias is almost impossible to avoid in self-reported survey research [Robson, 2002]. It can take the form of over-reporting 'good behaviour' or under-reporting 'bad' or undesirable behaviour, in order for the respondent to show themself in a good light. The data collected in the Relational Coordination Survey, Social Capital Survey and the DanPEP Survey might all be influenced by social desirability response bias, both in the form of 'self-deception' and 'other-deception' [Nederhof, 1985]. Employed respondent in the Relational Coordination Survey and the Social Capital Survey might be over-reporting 'good behaviour' and under-reporting undesirable behaviour to make their work effort look as good as possible to the GP-owner and all respondents might answer in ways there make their general practice look well functioning according to their norms. Respondent in the DanPEP Survey might have under-reported negative answer about the general practice they are associated with, in fear of scattering the relationship they, the patients, have build with their general practice. In order to minimise social desirability response bias the questionnaire surveys were made anonymous and respondents returned the questionnaire in individually concealed envelops. The respondents were made aware that their answers were hidden from all other participants both within their own general practice and from other general practice, as well as from the GP-owners. Only questions answered on a prefixed categorised 5-point likert scale were used, and a few questions were negations of the original questions in order to check consistency and make the respondents use both extremes of the scale.

9.2.4 Recall bias

Recall bias occur when the respondents have differential recall of information about the exposure or situation addressed in the questionnaire. The validity and credibility of self-reported surveys are threatened by recall bias, because recall of information depend on the memory of the respondent, which can often be imperfect and thereby unreliable [Hassan, 2005]. The self-reported questionnaire surveys in this dissertation were concerning present situation and recall bias are therefore unlikely to have a significant effect. Nevertheless, past events addressing specifically relations between people could have affected current answers, also known as telescoping effect.

9.3 Applicability of the study

Since the survey study examined in this dissertation was limited to Danish general practice, no comparisons were made to other healthcare sectors. The collected data can not support universal conclusions, particularly because general practice have a unique structure linked to the Danish model of entrepreneurs (GP are self-employed under contract with the regions and employing healthcare professionals). Having said this, however, the present findings does have a relevance and can gain acceptance from within the organisation, Danish general practice. Furthermore, the findings would also be interesting for the Danish Regions and government when decisions are to be made on the future structure and organisation of Danish general practice.

Looking beyond national applicability, Danish healthcare system usually compare itself with the Nordic countries (Sweden, Norway and Finland) and other European countries such as UK, Germany, France and The Netherlands. These countries' healthcare system and the populations' way of life make it relevant to compare with them [Sundhedsstyrelsen, 2010]. The findings from this dissertation might be similar to what can be found within general practice in the countries mentioned. However, it should be taken into consideration that concepts like relational coordination and organisational social capital are easily influenced by culture and norms. Danish culture is rather unique, when it is explored through Hofstede's dimensions of national cultures. Especially the dimension power distance stands out, which is very low compared to other countries. In the Danish culture one do not lead, but coach and employee autonomy is essential. Values such as in dependency, equal rights and that management facilitates and empowers are rooted in the Danes mindset. Comparing the findings in this dissertation with countries with much higher power distance, such as The United States, which also have a very different healthcare model than Denmark might not be possible. Nevertheless, the findings might be generalisable for an American exceptional healthcare consortium, Kaiser Permanente, which works with a structure and organisation very similar to the Danish healthcare model.

In conclusion it appears that the results indeed may be applicable to all general practices in Denmark. The findings are arguably not idiosyncratic but on the other hand it has not been established that the findings are general applicable in other types of medical practices, or in internationals settings - the truth may lie somewhere in-between.

Chapter 10

CONCLUSION

In this chapter, I draw conclusions regarding the main findings of the study and suggest ideas for future research.

The aim of the present PhD study was to examine relational coordination and organisational social capital in Danish general practice. Initially, I brook the study down into three SQ to guide the study:

***SQ1**: Determine association between relational coordination and organisational social capital in Danish general practice and explore associations between practice characteristics and relational coordination and social capital, respectively?*

***SQ2**: Is there any association between relational coordination and performance outcomes?*

***SQ3**: Is the level of relational coordination associated with patients' evaluation of general practice?*

The conclusion to SQ1 was that organisational social capital was high in Danish general practice when compared to other work sectors in Denmark, and relational coordination is also high when compared to results from American hospitals. It could also be concluded that a positive association between profession and relational coordination and organisational social capital in Danish general practice exist. Single-handed practices were also found to have significantly higher relational coordination and organisational social capital than cooperative and partnership practice. Furthermore, it could be concluded that a significantly positive association between relational coordination and number of

patients per staff was present in Danish general practice. These associations persisted even after adjusting for geographical location, length of employment in general practice, gender of the respondents, number of healthcare professional and size of list population at the general practice.

The conclusion to SQ2 was that relational coordination was associated with high productivity in a general practice, where productivity was defined as number of consultations per staff per year. Furthermore, the study implicates that relational coordination could be an approach to get higher productivity in general practice. Another interesting conclusion was that the number of consultations per physicians per year was not statistically significantly associated with relational coordination. These associations persisted when adjusting for age and gender of the list population.

The conclusion to SQ3 was that the hypothesis 'relational coordination within a general practice is positively associated with patients' evaluation of general practice' could not be supported.

10.1 Future research

Even though a PhD project is considerably comprehensive, it still leaves room for further research. Moreover, it arouses curiosity about what could also have been studied. In the following of proposal for future research are presented.

This PhD project focused on measuring the level of relational coordination and organisational social capital in Danish general practice and defining characteristics associated with relational coordination and organisational social capital. The next natural development would be to look at how relational coordination and organisational social capital can be enhanced within general practice. Furthermore, studies investigating relational coordination and organisational social capital in other countries with similar healthcare systems should also be conducted, in order to investigate whether the findings in this PhD study are limited to a Danish context.

Another interesting aspect is the developing of patient involvement care, which makes it very interesting to investigate the relationship between the patient and their general

practice. In some situations it could be beneficial to include the patient as an active participant along side healthcare professionals.

Research investigating best practices regarding scheduling consultations in general practices could also be a way to optimise the resources within a general practice and minimise waiting time. As mentioned in the discussion, if a general practice e.g. book consultations back-to-back several days in advance, it would not leave any room for patients in need of an acute consultation, which could cause even longer waiting time and worse accessibility for the patients.

Finally, an important area to study is the exchange of knowledge, coordination and relationship across and between primary healthcare, secondary healthcare and municipalities. Many patients float between these different sectors and very offend have to be their own healthcare manager.

Chapter 11

EPILOGUE

This Chapter presents my reflections on the personal and professional aspect of becoming a researcher and therefore has a very personal touch.

Early on in my PhD studies a colleague, Christine Ipsen, told me: *Conduction a PhD is like a roller-coaster ride. It is an emotional write but also challenging and sometimes even fun"*. Back then I though the emotional part seemed kind of exaggerated - after all conducting a PhD is a job. Today I know what Christine meant and if you asked me know I would say that conducting a PhD is more a way of living than a job. In my view, conduction a PhD project will develop and change you.

It involves so much more than the formal tasks of planning a study, reviewing literature, collecting and analysing data, presenting finding and writing papers. A wide range of additional activities and learning potential are also present in this process. Having a Master in Biomedical Engineering I entered a new research field when starting my PhD. It have learned me the value of being cross-disciplinary and now I will say it has been an advantage - but at times also very challenging. I have had the opportunity to use a wide range of skills and gain even more as a PhD candidate, such as:

- to manage a project, make realistic project plans and continuously adjust my own expectations and ambitions. The latter is the more difficult.
- to learn how to present a project, which is very challenging in the initial phase when you only have a short descriptions and your supervisors ideas.

- to become confident when defending my point of view when people with different research background and theoretical framework challenge your research.
- to develop excellent English skills, both written and oral.
- to develop teaching skills and be comfortable with the fact that I do not have all the answers.
- to develop writing skills and understand how to make an argument.
- to understand the research community of which I am a part - which can be especially challenging when you work in an cross-disciplinary project.
- to learn where and how to get published.
- to become an excellent net-worker.
- to know and understand research and academic policy.
- And maybe most important of all, I learned how to motivate myself to make sure the end goal was reach: to write the dissertation and hopefully be rewarded with the fine PhD title.

These challenges can of course seem trivial and less surprising for the experienced researcher, but for an inexperienced researcher it can be rather overwhelming at the beginning. However, I can now acknowledge the learning potential each of these challenges has offered, and whenever my frustration over writing papers or other things was about to drive me crazy, my supervisor Kasper Edwards was always their to bring me back to reality and put things in perspective.

Appendix A

Questionnaire

Kontaktoplysninger

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Sygehus Sønderjylland
Danmarks Tekniske Universitet
Institut for Sundhedstjenesteforskning
Syddansk Universitet

ARBEJDET I ALMEN PRAKSIS
- EN SPØRGESKEMAUNDERSØGELSE

Til læger og personale i praksis

Vi håber, at du vil medvirke i denne landsdækkende undersøgelse vedrørende arbejdet i almen praksis.

Det tager 10 minutter at udfylde skemaet. Vi vil bede alle personer i praksis om, at udfylde ét skema. Du skal udfylde skemaet alene.

Projektet, der er et samarbejde mellem Forskningsenheden for Almen Praksis, Sygehus Sønderjylland, Danmarks Tekniske Universitet og Syddansk Universitet, undersøger, hvordan tillid, retfærdighed og samarbejdsevne i den primære sektor har indflydelse på behandlingskvalitet.

Spørgsmålene relaterer sig til teorien om social kapital. Social kapital i en organisation er den egenskab, der sætter organisationens medlemmer i stand til i fællesskab at løse dens kerneopgaver.

KOL bruges som modelsygdom for kronisk sygdom. Derfor vil der være en række spørgsmål om KOL og om arbejdsgangene med KOL-patienter i praksis.

Alle spørgeskemaer behandles fortroligt. Det er kun projektgruppen, der har adgang til de enkelte svar, og al kommunikation af resultater vil ske i anonymiseret form.

På forhånd tak

Sanne L. Lundstrøm
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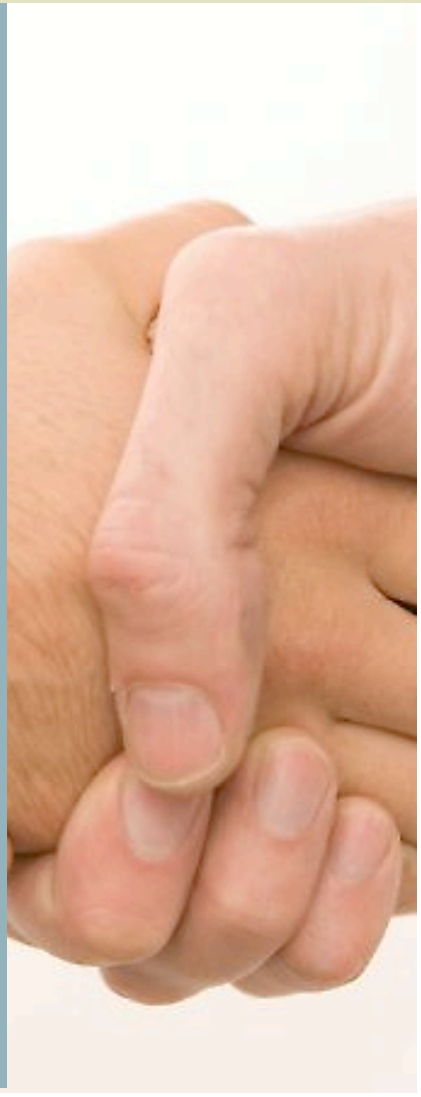


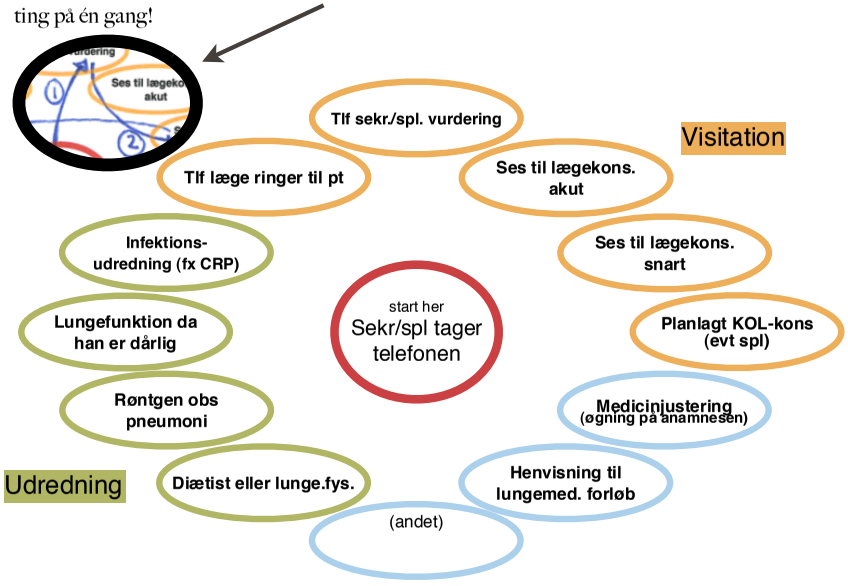
Arbejdsgange i din praksis. Hvordan vil I håndtere denne patient?

Vis med pile, hvad I vil gøre med denne patient. Prioriter rækkefølgen.
(Yderligere forklaring på forrige side)

Case: 60-årig mand. Kommet hos jer gennem mange år. Har røget 40 pakke-år (startet som 15-årig) og er stoppet for 5 år siden. Har i jeres praksis fået diagnosticeret KOL (FEV1/FVC < 70%). FEV1 er til daglig 55% af forventet, sv.t. moderat KOL.
Ellers rask. Har ikke været indlagt pga. KOL. Har ikke haft recidiverende exacerbationer af KOL. Ses i KOL-forløb 2 gange om året.
Tager Oxis turbohaler (formeterol) 9 yg / dosis, 1 sug x 2 dgl. samt
PN Bricanyl turbohaler 0,5 mg/ dosis, aktuelt 6-8 gange dagligt.

Ringer mens lægen er optaget af konsultation og ikke umiddelbart har mulighed for at tale i telefon. Han har gennem 1 uge hostet en del og synes ikke, medicinen virker så godt. Plejer selv at gå på indkøb, men mister luften i disse dage. Får ingen anden motion. Mener ikke, han har feber. Ønsker en recept på noget hostemedicin og noget, der kan få slimen op.

Du har ikke andre oplysninger: prioriter herudfra, hvad du tror, I vil gøre ved denne patient! Sæt så mange pile som muligt, gerne 5 pile - marker tydeligt dine valg. Du kan ikke gøre flere ting på én gang!



FORKLARING TIL NÆSTE SIDE ->

Denne del handler om at beskrive, hvordan I visiterer en patient (case følger)
Se eksemplet nedenfor.

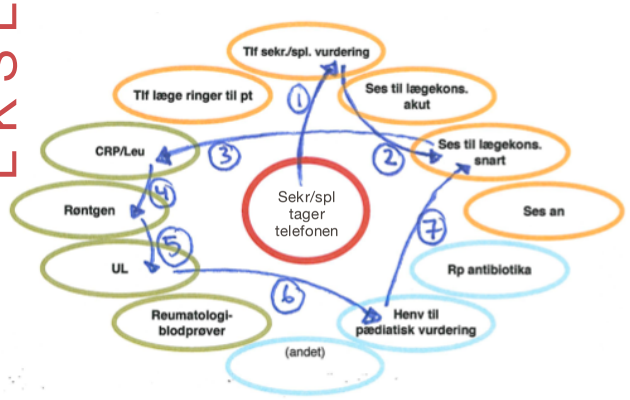
Sæt pile mellem de forskellige behandlingselementer i den rækkefølge, du umiddelbart mener, at I vil foretage dem (der er ikke en facitliste for denne prioritering). Dine valg skal bero på den afvejning, du laver, og afhænge af de muligheder, I har i jeres praksis, fx om I har sygeplejerske ansat. Et element (fx telefonkons.) kan gå igen flere gange.

Sæt så mange pile som muligt - gerne minimum 5 (lad alle jeres normale procedurer indgå)!
Marker tydeligt den rækkefølge, du vælger (én ting ad gangen)!
Kun én pil fra midten og ud (se eksempel nedenfor)!

EKSEMPEL

Patientens mor ringer, mens lægen ikke umiddelbart har mulighed for at tale i telefon.

3-årigt barn, i det væsentligste rask. Feber-episode for 4 uger siden. Pt vil ikke støtte på højre ben. Udadroterer i hoften.



Hvem er du?

Sekr ☐ Sygepl ☐ Ordinær læge ☐ Ansat læge ☐ Bioanalytiker/lab. ☐ Andet ☐____

Arbejder du: Fuldtids ☐ Deltids ☐ Din alder:_____ Køn: Mand ☐ Kvinde ☐

Hvor mange år har du arbejdet i denne praksis: _____år

Flg. spørgsmål handler ikke om dit eget job, men om din arbejdsplads som helhed

	meget uenig	uenig	del-vist	enig	meget enig
1) Vi tænker på, hvad sundhedsvæsenets ressourcer bruges til hos os	☐	☐	☐	☐	☐
2) Hos os bliver alle involveret i beslutninger om forandringer	☐	☐	☐	☐	☐
3) Personalekonflikter løses retfærdigt for alle involverede	☐	☐	☐	☐	☐
4) Man kan stole på de udmeldinger, der kommer fra ledelsen	☐	☐	☐	☐	☐
5) Ledelsen stoler på, at medarbejderne gør et godt stykke arbejde	☐	☐	☐	☐	☐
6) Jeg synes, at arbejdsopgaverne er fordelt på en hensigtsmæssig måde	☐	☐	☐	☐	☐
7) Jeg føler mig som en del af et fællesskab på arbejdspladsen	☐	☐	☐	☐	☐
8) De ansatte stole i almindelighed på hinanden	☐	☐	☐	☐	☐
9) Arbejdsopgaverne fordeles på en retfærdig måde	☐	☐	☐	☐	☐
10) Hvis jeg glemmer noget, så vil mine kolleger rette det for mig	☐	☐	☐	☐	☐
11) Behandlingen i min praksis har et højt fagligt niveau	☐	☐	☐	☐	☐
12) Holder de ansatte informationer skjult for hinanden	☐	☐	☐	☐	☐
13) Jeg har ingen indflydelse på beslutninger om mit arbejde	☐	☐	☐	☐	☐
14) Vi har et godt samarbejde mellem faggrupperne	☐	☐	☐	☐	☐
15) Lægerne i min praksis er omhyggelige	☐	☐	☐	☐	☐
16) Der er en god stemning mellem mine kolleger og mig	☐	☐	☐	☐	☐
17) Jeg kan give udtryk for mine meninger over for kollegerne	☐	☐	☐	☐	☐
18) Jeg tror, at andre lægepraksis fungerer bedre end vores	☐	☐	☐	☐	☐

Disse spørgsmål handler om jeres måde at dele viden på. Hvad tænker du om flg.?

Der er intet eksakt facit til disse spørgsmål: fortæl hvad du tror!

	meget uenig	uenig	ved ikke	enig	meget enig
19) Korrekt KOL-behandling med god compliance forbedrer FEV1	☐	☐	☐	☐	☐
20) Den vigtigste del af KOL-behandlingen er rygeophør	☐	☐	☐	☐	☐
21) Den medicinske KOL-behandling påvirkes ikke af fortsat rygning	☐	☐	☐	☐	☐
22) Lungemedicin til KOL-patienter er vigtigere end rehabilitering	☐	☐	☐	☐	☐
23) Effekten af KOL-rehabilitering er kun varig ved kontinuert træning	☐	☐	☐	☐	☐
24) Planlagt kontrol af KOL-patienter kan foretages af klinikpersonalet	☐	☐	☐	☐	☐
25) Patienter med svær KOL bør henvises til lungeambulatorium	☐	☐	☐	☐	☐

Flg. spørgsmål handler om relationer mellem faggrupper i jeres praksis

	slet ikke	lidt	til dels	meget	fuldt ud	ikke relevant
26) Deler følgende faggrupper dine mål i arbejdet med patienter med kroniske sygdomme?						
Læge	☐	☐	☐	☐	☐	☐
Sygeplejerske	☐	☐	☐	☐	☐	☐
Sekretær	☐	☐	☐	☐	☐	☐
27) Respekterer følgende faggrupper din rolle i arbejdet med patienter med kroniske sygdomme?						
Læge	☐	☐	☐	☐	☐	☐
Sygeplejerske	☐	☐	☐	☐	☐	☐
Sekretær	☐	☐	☐	☐	☐	☐

	aldrig	sjældent	nogle gange	ofte	altid	ikke relevant
28) Hvor ofte kommunikerer personer fra følgende faggrupper med dig om patienter med kroniske sygdomme?						
Læge	☐	☐	☐	☐	☐	☐
Sygeplejerske	☐	☐	☐	☐	☐	☐
Sekretær	☐	☐	☐	☐	☐	☐
29) Kommunikerer følgende faggrupper rettidigt med dig om patienter med kroniske sygdomme?						
Læge	☐	☐	☐	☐	☐	☐
Sygeplejerske	☐	☐	☐	☐	☐	☐
Sekretær	☐	☐	☐	☐	☐	☐
30) Er følgende faggruppers kommunikation med dig præcis vedrørende patienter med kroniske sygdomme?						
Læge	☐	☐	☐	☐	☐	☐
Sygeplejerske	☐	☐	☐	☐	☐	☐
Sekretær	☐	☐	☐	☐	☐	☐

	ingenting	lidt	noget	meget	alting	ikke relevant
31) Hvor meget ved følgende faggrupper om din rolle i arbejdet med patienter med kroniske sygdomme?						
Læge	☐	☐	☐	☐	☐	☐
Sygeplejerske	☐	☐	☐	☐	☐	☐
Sekretær	☐	☐	☐	☐	☐	☐

	skyder skylden på andre	løser problemet	hverken eller
32) Når der opstår problemer vedrørende arbejdet med patienter med kroniske sygdomme, samarbejder flg. faggrupper så med dig om at løse problemet, eller skyder de skylden på andre?			
Læge	☐	☐	☐
Sygeplejerske	☐	☐	☐
Sekretær	☐	☐	☐

Appendix B

Article in Practicus

TITLE Relational coordination and organisational social capital association with characteristics of general practice.

AUTHORS Thomas Bøllingtoft Knudsen and Sanne Lykke Lundstrøm

JOURNAL Practicus

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Social kapital i almen praksis

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I de kommende måneder gennemfører DTU i samarbejde med Forskningsenheden for Almen Praksis i København og Odense en undersøgelse af, hvordan social kapital, organisatoriske karakteristika og behandlingskvalitet hænger sammen i almen praksis.

> *... indbyrdes tillid på arbejdspladsen, retfærdighed og samarbejdsevne er afgørende for, at en organisation kan levere et godt resultat.*

I Danmark, hvor arbejdsmiljøet generelt er godt, bliver forbedringer heraf ofte opfattet som en modpol til produktivitet. Hvis medarbejderne skal have mere i løn eller flere goder, så bliver profitten mindre. Dette er den traditionelle opfattelse af sammenhængen, men studier fra finansverdenen og fra produktionsvirksomheder viser, at tingene ikke altid hænger sådan sammen.

Undersøgelser viser, at organisatoriske egenskaber så som indbyrdes tillid på arbejdspladsen, retfærdighed og samarbejdsevne er afgørende for, at en organisation kan levere et godt resultat. Det er disse egenskaber, der tilsammen udgør den sociale kapital.

I modsætning til andre former for kapital er social kapital forankret i relationerne mellem og blandt personer. Værdien ligger ikke i individerne, i de fysiske rammer eller i produktionen. Social kapital kan defineres på baggrund heraf som:

Den egenskab, der sætter organisationens medlemmer i stand til i fællesskab at løse dens kerneopgave. For at kunne løse denne kerneopgave er det nødvendigt, at medlemmerne evner at samarbejde, og at samarbejdet er baseret på et højt niveau af tillid og retfærdighed.

Værdien af social kapital udspringer ikke af et perfekt arbejdsmiljø og medfører det ej heller. – Men høj social kapital betyder, at arbejdspladsen er god! Og denne egenskab betyder, at medarbejderne tilsammen kan yde mere, end en gruppe af enkelte individer kan. Ressourcerne rækker længere, og 2 + 2 er ikke 4, men 5.

Social kapital i organisationer

Social kapital er et begreb, der bruges inden for sociologi, økonomi, folkesundhedsvidenskab samt inden for teorier om organisation og ledelse. Begrebet er blevet udviklet siden midten af 1900-tallet på baggrund af observationer, der tyder på, at sociale netværk har en form for ibunden værdi. Særligt de seneste 10-15 år er social kapital blevet bredt accepteret som en egentlig ressource. Blandt de vigtigste udviklere af begrebet social kapital er Pierre Bourdieu, James Coleman og Robert D. Putnam. Forskning i feltet viser, at der er tæt sammenhæng mellem social kapital og helbred, fravær fra arbejde, samt hvor meget man involverer sig i opgaver, psykosocialt arbejdsmiljø og tilfredshed.

I 2008 udgav det Nationale Forskningscenter for Arbejdsmiljø en hvidbog vedrørende social kapital i organisationer. Ifølge denne kan ikke blot individer, men også organisationer, så som en arbejdsplads eller i dette tilfælde en lægepraksis, besidde social kapital. Når det ikke længere er individerne, men organisationen, der besidder denne ressource, kan social kapital sidestilles med andre ressourcer fx økonomiske. Med andre ord kan man sige, at hvis der i organisationen er høj social kapital, så er potentialet for at producere mere til stede. Investeringen i social kapital i virksomheder er de seneste år blevet tiltagende vigtig, netop fordi det i både den finansielle sektor, men også i produktionsvirksomheder har vist sig, at det medfører øget kommerciel succes.
Det er som sagt et område, som erhvervslivet i stigende omfang beskæftiger sig med, mens det stort set ikke er belyst i sundhedsvæsnet. Det er dog nærliggende at antage, at de sammenhænge, der er fundet, også er gældende for sundhedsvæsnet.
I sundhedssektoren har forskningen i social kapital hovedsageligt fokuseret

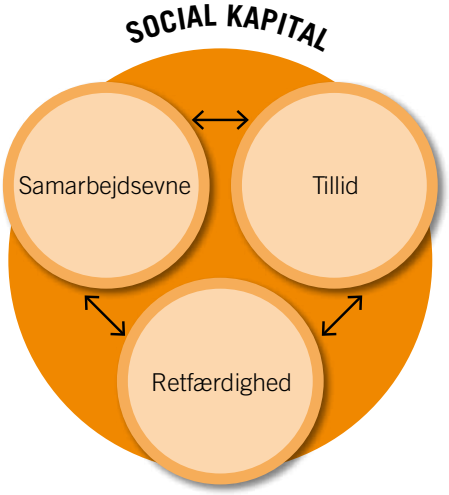
på, hvorledes det påvirker det enkelte individ, hvorledes det påvirker rekruttering af human ressources og tendens til burn-out blandt individerne i netværket.

Social kapital og teamwork i almen praksis

Høj social kapital kan lidt populært beskrives som indbyrdes forståelse af, hvordan man arbejder i en given organisation. En sådan forståelse er essentiel for, at et team kan fungere optimalt omkring en patient. Desuden er konsistens vedrørende behandling afgørende for, hvorledes ressourcer i teamet bruges. Social kapital og konsistens i behandling er på trods heraf ubeskrevne forhold i relation til behandlingskvaliteten.

Lægefaglig behandling er baseret på kendskab til symptommønstre og deres ætiologiske faktorer. Teoretisk set genkender og klassificerer behandleren sammenhænge som én bestemt diagnose, fx KOL, og behandler ud fra guidelines, der specifikt omhandler denne diagnose. Den variation, der er imellem patienterne, og de skøn behandleren foretager, vil føre til inter-behandler-variation. Endvidere er behandling i stigende grad et teamwork med flere involverede faggrupper. Teammedlemmer med direkte patientkontakt fokuserer ofte på forskellige aspekter af samme situation, og det betyder, at bevægelsen fra en idiosynkratisk proces til en struktureret konsistent behandling er kompliceret.

DTU planlægger i samarbejde med Forskningsenhederne for Almen Praksis i København og Odense aktuelt en spørgeskemaundersøgelse, der involverer alle landets praktiserende læger og deres praksispersonale (med direkte patientkontakt). Formålet er at afdække hvilke faktorer, der fører til høj social kapital, og hvordan social kapital påvirker behandlingskvaliteten. Dertil undersøges organisatoriske egenskaber så som praksisformens betydning og betydningen af, hvordan viden spredes mellem faggrupperne i almen praksis.
Det er som nævnt nærliggende at tro, at social kapital spiller samme rolle i almen praksis, som den gør i andre sammenhænge. Almen praksis har dog nogle særegne karakteristika, der gør, at begrebet ikke kan direkte oversættes. Høj social kapital må i stedet for at være associeret med produktivitet relateres til behandlingskvalitet af kroniske sygdomme. Som modelsygdom bruges KOL. Vi undersøger niveauet af tillid, retfærdighed og samarbejdsevne i den enkelte praksis. Derved kan vi beskrive den organisatoriske sociale kapital. Der efter undersøger vi hvilke mekanismer, der påvirker social kapital i den primære sektor, samt hvorledes social kapital og KOL-behandlingen i den enkelte praksis er associeret. Organisationsstrukturen



af og ressourcerne i den enkelte praksis kan formentlig have betydning, såvel som proceshåndtering, vidensdeling og rolleinteraktioner, og derfor undersøges disse forhold i sammenhæng med den sociale kapital.

En organisationsstruktur kan være svær at ændre, mens der findes redskaber til at påvirke social kapital samt håndtering af processer i organisationer. Det gør social kapital og konsistens til mulige interventionsområder for behandlingskvalitet.

Referenceliste kan rekvireres hos forfatterne.

Appendix C

Background form

Oplysningsskema

FORSKNINGSENHEDEN
FOR ALMEN PRAKSIS

DETTE SKEMA ØNSKES UDFYLDT AF KONTAKTPERSONEN (SEKRETÆR/SYGEPLEJERSKE ELLER LÆGE)

og skal sendes retur med de personlige spørgeskemaer, der skal forblive i lukkede kuverter.

a) Ydernummer: _____

b) Praksisform:

☐ Solopraksis (typisk ét ydernummer og en ejer)

☐ Delepraksis (typisk ét ydernummer der deles af flere læger)

☐ Kompaniskabspraksis (typisk flere læger med hver sit ydernummer der deler faciliteter og har fælles klinikpersonale)

c) Antal tilmeldte patienter: _____

d) Hvor mange arbejder i jeres praksis inkl. ejer(e): _____

Hvem er i, i jeres praksis:

e) Ordinære læger: Fuld tid _____ Deltid _____

f) Uddannelseslæger: Fuld tid _____ Deltid _____

g) Ansatte speciallæger (vikarer/aflastningsemanuensis):

Fuld tid _____ Deltid _____

h) Sygeplejersker/SOSU/Bioanalytikere:

Fuld tid _____ Deltid _____

i) Sekretærer: Fuld tid _____ Deltid _____

j) Andet personale: Fuld tid _____ Deltid _____

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Relational coordination and organisational social capital are both concept there have been widely discussed and become increasingly popular within later years. Relational coordination analyse the communication and relationships networks through which work is coordinated across functional and organisational boundaries. Organisational social capital is used when analysing the psychosocial work environment in organisations, and is seen as a powerful resources for improving organisational performance.

The aim of this PhD project is, firstly, to investigate relational coordination and organisational social capital and to compare them, and secondly look for associations between characteristics of Danish general practice and high level of relational coordination and organisational social capital.

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