

Social networks of nursing staff and organizational performance

A study in long-term care facilities

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The research for this thesis was carried out at NIVEL (Netherlands Institute for Health Services Research), Utrecht, The Netherlands.

The study was financed by the Netherlands Organisation for Scientific Research (NWO) and the Netherlands Organisation for Health Research and Development (ZonMw).

ISBN 978-94-6122-201-5

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Cover design: Ivette Heesbeen

Word processing/lay out: Christel van Well

Printing: GVO drukkers & vormgevers B.V. te Ede

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Social networks of nursing staff and organizational performance

A study in long-term care facilities

Sociale netwerken van verzorgend personeel en prestaties van zorgorganisaties

Een studie in verpleeg- en verzorgingshuizen

(met een samenvatting in het Nederlands)

PROEFSCHRIFT

ter verkrijging van de graad van doctor aan
de Universiteit Utrecht,
op gezag van de rector magnificus, prof. dr. G.J. van der Zwaan,
ingevolge het besluit van het college voor promoties
in het openbaar te verdedigen op
maandag 30 september 2013 des middags te 14.30 uur

door

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geboren op 4 december 1971
te Breda

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1

Social networks of nursing staff and organizational performance in long-term dementia care: a theoretical framework

This article is submitted as:

Van Beek APA, Flap H, Groenewegen P, Wagner C, Frijters DHM, Ribbe MW. Social networks of nursing staff and organizational performance in long-term dementia care: a theoretical framework.

Abstract

Despite growing interest in differences in healthcare performance, little is known about organizational aspects that influence performance in long-term dementia care. The growing number of elderly patients with dementia, a decrease in the availability of informal caregivers, and restrictions in national healthcare budgets, are putting pressure on long-term care facilities and the quality of care they can provide. Furthermore, the care requirements of residents with dementia mean that they often cannot communicate their needs and expectations effectively to nursing staff. Consequently, exchange of information between nursing staff through social networks is essential for care processes and healthcare performance.

In this chapter, we provide a theoretical framework for the relationship between social networks of nursing staff and organizational performance in long-term dementia care. Three types of social networks are discussed: communication and advice networks between nursing staff of dementia units, and boundary-crossing networks between nursing staff and relatives of residents. We argue that social networks of nursing staff influence care processes of the unit through information-exchange, social support, reputation effects and identification with the organization, which in turn will influence the quality of life of residents.

1.1 Introduction

It is 10 a.m. in the living room of the dementia unit. There are three elderly women sitting at a large dinner table. The table is laid with a linen table cloth and porcelain plates. There is nothing on the plates. There are two other women in the room at separate tables. One of them is singing softly and is constantly stretching her legs; one leg after another. The other resident, Mrs. M. is sitting next to the door in her wheelchair. On the table before her are some medicines in a little cup. The radio is playing. In the kitchen, that is located in a corner of the living room, two members of the nursing staff are talking about their weekend.

One of the CNAs¹ of the unit enters the living room and walks over to the three ladies. 'Are you finished with your breakfast Mrs. H.?', she asks one of the women. She gently strokes Mrs. H. over her hair and looks at the empty plate. 'Has no one had their breakfast yet?', she calls to her colleagues in the kitchen. There is no reply. She goes to Mrs. M. near the door and places the cup with medicines into Mrs. M.'s hand. Mrs. M. doesn't want them. She shakes her head and places a hand for her mouth. The CNA tries again and again. At last, the resident swallows her medicine. The CNA places the little cup on the table and leaves the room. One of the nursing staff brings milk in a large plastic mug and a sandwich to Mrs. M. from the kitchen. She does not say anything and goes back to the kitchen. Mrs. M. tries to pour some of the milk into her medicine cup. Doing this, she spills most of the milk on the table and her dress. Mrs. M. looks at her dress and then she looks at me. We smile at each other. A second later, she seems to have forgotten all about the milk and falls asleep. She has not eaten or drunk anything yet. Ten minutes later she is woken up and taken to her morning activity by an assistant. No one of the nursing staff noticed Mrs. M. did not have breakfast this morning.

(observation 133)

¹ Certified Nurse Assistants

This observation was completed in a nursing home in the Netherlands and shows the difficulties in caring for residents with dementia who are dependent on others in performing daily tasks and cannot voice their needs and wishes. In addition, the observation demonstrates that the mere presence of nursing staff is no guarantee for care. Although there were two members of nursing staff in the living room during breakfast and two other colleagues walked in during the observation, no one noticed that at least one of the residents had no breakfast. This was mainly due to the fact that the two members of nursing staff, who were in the living room all the time, focused their attention on each other, instead of focusing on the residents that needed care. Another problem was the lack of communication between the nursing staff. Although the CNA asked her colleagues if the residents had breakfast, she got no reply. The assistant who took the residents to their morning activity did not ask her colleagues if the residents had finished their breakfast.

The group of elderly persons in long-term care is growing rapidly and especially the group of patients with dementia who need intensive care will increase significantly in years to come. In 2010, there were approximately 35.6 million people with dementia worldwide. This number will increase to 115.4 million in 2050 (World Alzheimer Report, 2010).

The growing group of dementia patients coincides with a decline in informal caregivers that can care for these patients, and restricted growth of healthcare budgets, making it particularly important to understand how care processes can be optimized. The observation clearly demonstrates that contacts between nursing staff are very important for care processes in long-term care, but how are these contacts among nursing staff related to outcomes for residents with dementia? Over the years, there has been increasing attention for the role of social networks in explaining differences in organizational performance (Nohria and Eccles, 1992; Sparrowe et al., 2001; Völker and Flap, 2005). Yet, still little is known about the social networks of employees and organizational performance in healthcare settings.

In this chapter, we present a theoretical framework to explain differences in long-term dementia care from a sociological and social psychological perspective. We develop hypotheses about the intervening steps between the macro-level of social networks and organizational performance, and the micro-level of the behaviours of

nursing staff and care processes in dementia units. We address the following research question:

'Is there a relationship between social networks and performance, and how can this relationship be explained?'

Figure 1.1 shows the central relationship between social networks and performance that forms the basis of our theoretical framework. We expect that social networks of nursing staff influence their behaviours and, hence, processes of care. Care processes will in turn influence multiple outcomes of residents (Kane, 2001).

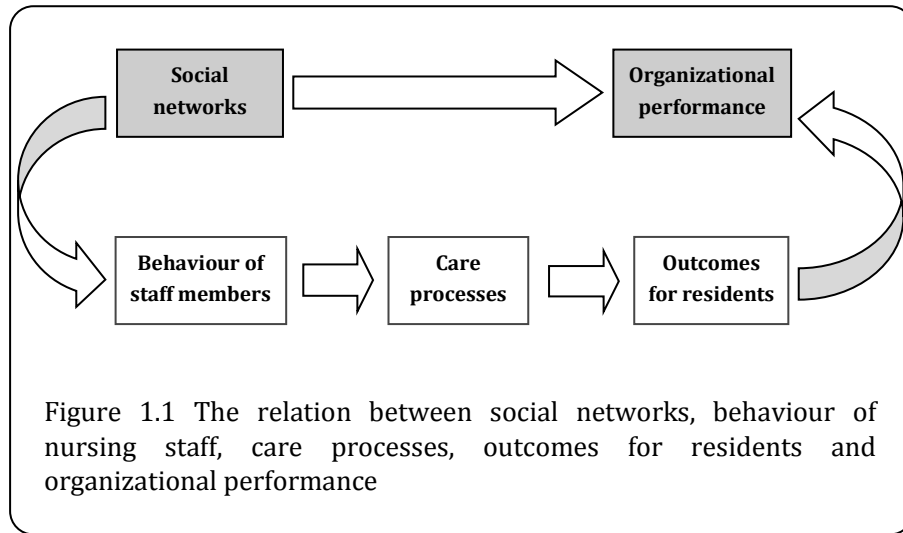


Figure 1.1 The relation between social networks, behaviour of nursing staff, care processes, outcomes for residents and organizational performance

In this study, we focus on the social networks of nursing staff and not on the social networks of residents themselves, as elderly persons with dementia, through their illness, cannot maintain their own social network. Furthermore, elderly persons with dementia can often be typified by a deteriorating health status that cannot be reversed by good quality of care. For this reason, performance in long-term care was traditionally measured by process indicators, focusing on the care that is provided to residents. Over the years however, this emphasis on processes in the evaluation of long-term care has shifted to an emphasis on outcomes of care, with quality of life of residents as the main measure of performance (Sloane et al., 2005). Quality of life is often seen

as a multi-dimensional construct consisting of the physical health of residents, their social engagement and their psychological well-being (Gerritsen, 2004). For this reason, we define organizational performance in our framework as the aggregated quality of life of individual residents on dementia units or care organization as a whole.

In the next sections, we first describe social networks and how they might influence organizational performance in general. Second, before we elaborate on the role of social networks in long-term dementia care, we describe organizational characteristics of long-term care that might influence the role of social networks. Third, we propose hypotheses about intervening mechanisms through which social networks of nursing staff influence quality of life of residents with dementia and, consequently, organizational performance of long-term care facilities.

1.2 Social networks and organizational performance

In this thesis, we focus on the informal social networks of nursing staff and how these networks are related to organizational performance. Within formal organizations, different informal networks can be identified. Krackhardt and Hanson (1993) distinguish three types of informal social networks in organizations: communication, trust and advice networks. Communication networks consist of employees who talk about work-related matters on a regular basis. The trust network shows which employees share confident and delicate information and back up one another in a crisis. The advice network is formed by the prominent players in an organization, the employees on which others depend to solve problems and provide information (Krackhardt and Hanson, 1993). In addition to informal networks within organizations, networks between members of the organization and outsiders can be defined. These networks are called boundary-crossing or boundary-spanning networks, because they cross the boundary of the organization or work-teams (Reagans and Zuckerman, 2001). Networks crossing the organizational boundaries can be formed by shared professional relations, but also by shared family members or shared friends. Social networks of employees are found to play an important role in work-related processes. Studies show, for instance, that social networks are conducive to finding a job (Granovetter, 1973; Völker and Flap, 2005) and career advancement (Burt, 1992; Podolny and Baron, 1997; Lin and Huang, 2005). Studies on social networks and organizational

performance have focused on performance in different types of organizations: elementary schools (Friedkin and Slater, 1994), business schools (Thompson, 2005), restaurants (Shaw et al., 2005), call-centers (Castilla, 2005), and combinations of organizations such as an universities and manufacturing and distribution firms (Sparrowe et al., 2001).

Völker and Flap (2005) name four dimensions of social networks that are important for organizational performance. These dimensions are the number of ties, the quality, the hierarchy, and the density of the network. Having multiple ties to colleagues has a positive effect on performance, especially when these contacts provide assistance when problems occur. A second aspect is the quality, or the strength of ties. When relations with colleagues and superiors are strong and trustful, this also positively affects performance. The positive effects of strong networks have been found in several studies. Nelson (1989) for instance showed that strong ties between groups of employees are found in organizations with low levels of conflict. Yet, strong ties can also have a negative effect on performance. Close friendships at work can cause more distraction and reduce effective working time. Third, the structure or hierarchy of the network is important (Völker and Flap, 2005). When an employee is constrained by hierarchical relations for example by the supervisor, this has a negative effect on performance (Burt, 1992). Krackhardt and Hanson (1993), in their study of 24 bank branches, found that organizations with less hierarchy were 70% more profitable compared to more hierarchical organizations. The fourth aspect is the density of the network. Burt (1992) argued that a network in which a person has contacts with few others who provide unique information is more productive than a network in which one has contacts with many others who provide the same information. Thus networks with low density or, as Burt named them, networks with structural holes, provide non-redundant information. These networks seem to be especially efficient in more competitive work-settings. Tasks that depend on cooperation on the other hand seem to profit from networks with a high density (Flap and Völker, 2001).

1.3 Organizational characteristics of long-term care

In comparison to acute care, long-term care can be defined by it's slower pace, longer time horizon, low technology, care by paraprofessionals, smaller units of care and multiple transitions across care settings in

comparison to acute care (Kane, 1988). Other unique characteristics of long-term care are the frailty of its patients and an educationally diverse staff (Scott et al., 2004). Residents in long-term care have complex care-needs that often derive from multiple health problems. This is especially true for residents with dementia. Due to their prolonged stay and health problems, elderly residents with dementia in long-term care are extremely vulnerable and find themselves in an asymmetrical relationship with the nursing staff that cares for them (Nelson, 2000).

It is morning; the residents are sitting in the living room drinking coffee. Two staff members (CNAs) are present. One of them walks to Mrs. P. who is quietly drinking her coffee. Mrs. P. looks well, she wears a nice dress and her hair is nicely done. 'Do you want to come with me Mrs. P.? You have an appointment with the hairdresser', says the CNA. She takes the hands of Mrs. P. and tries to pull her to an upright position. Mrs. P. doesn't want to stand up. 'I've already been there', she says. 'No, you haven't been yet. The appointment is at half past ten this morning', the CNA explains and she tries to lift Mrs. P. again. This time she pulls somewhat harder. Mrs. P. repeats that she has already been today. She resists the pulling of the CNA, trying to stay seated in her chair. The other member of nursing staff notices the tussle and quickly walks over to Mrs. P. and her colleague. She briefly informs her that the hairdresser appointment was rescheduled. Mrs. P. was right all along; she had already been to the hairdresser today.

(observation 207)

Several studies have shown controlling and directive behaviours of nursing staff towards elderly residents with dementia (Hewison, 1995; Van Bilsen et al., 1998). Nursing staff in nursing homes often only communicate with residents with dementia during care activities and at these moments they predominantly give instructions and orders, instead of asking questions. In addition, interaction between nursing staff and residents is hampered because nursing staff cannot always interpret the communication of the resident, resulting in low quality of interaction between residents and staff (Van Bilsen et al., 1998; Christenson et al., 2011), leaving nurses with feelings of frustration and

helplessness (Graneheim et al., 2001). Because of the frailty and vulnerability of residents with dementia, we expect that social networks of nursing staff are extremely important in explaining differences in performance, even more so than in other organizations.

1.4 Communication and advice networks among nursing staff

After lunch, Mrs. S. is sitting in a corner of the living room in her wheelchair. She has a dining tray attached to her wheelchair, so she cannot stand up. On the tray lies a teddy bear with a dress. The floor around the wheelchair is dirty, Mrs. S. has spilled some food while eating her lunch. A CNA walks to Mrs S. to clean the floor around her chair. She smiles at Mrs. S. and asks her how she's doing. Mrs. S. smiles back, but does not answer the question. During cleaning, the bear falls on the ground. 'Oh dear', the CNA says, 'let's rescue the little lady' and she replaces the bear on the dining tray. Mrs. S. smiles. Then the CNA walks over to Mrs. J. The CNA smiles again and says hello, calling Mrs. J. by her name. 'I don't know you', Mrs. J. replies. The CNA takes a chair and sits next to Mrs. J. 'I don't know you', repeats Mrs. J. She does not look at the CNA and seems distraught. 'But I know you' says the CNA, 'my name is Karen and I work here in the nursing home'. 'Oh, do you know me because I come here often?' 'I want to go home', says Mrs. J., 'I don't like it here'. The CNA reaches for the book that lies on the table and offers it to Mrs. J. She asks if she wants to read something. Mrs. J. does not look at the book and repeats that she wants to go home. 'Don't you want a cup of coffee before you go?', the CNA asks. 'We drink coffee in half a hour'. Mrs. J. answers that that would be nice. She will wait for coffee. When the CNA leaves to do her other chores, Mrs. J. seems more at ease.

(observation 112)

As the observation shows, providing care to elderly with dementia requires patience, empathy, and knowledge on how to best approach a resident. Cooperation between members of nursing staff is essential for care processes as this provides information on how to best communicate with residents. We expect that social networks influence

the behaviour of nursing staff through information-exchange. In line with Völker and Flap (2005), we expect that the nursing staff's work performance will benefit from having many ties to colleagues in both communication and advice networks. Numerous contacts with other members of nursing staff at work provide information on how to best approach residents, which residents need extra help, the preferences of residents, and their health status and behaviours. This information will positively influence the care for residents. Subsequently, we expect that care processes benefit from a hierarchical structure in the advice network. Because nursing staff in long-term care is an educationally diverse group, it may be unclear whom to ask for advice. When the hierarchy in the advice network is clear, members of nursing staff who want to gather information on residents can do so efficiently.

Hypothesis 1: *Nursing staff with many ties to colleagues in communication and advice networks, have more relevant information of residents, which will positively influence care processes in the dementia unit and, hence, outcomes of residents.*

Hypothesis 2: *Nursing staff with hierarchical advice networks with colleagues, will have more efficient access to relevant information, which will positively influence care processes in the dementia unit and outcomes of residents.*

Networks between nursing staff will furthermore induce staff to support each other with difficult tasks or during peak hours. Hence, social networks will have a positive effect on performance, because they enhance social support. Social support from supervisors and colleagues has been associated with lower levels of work-related stress in staff nurses (Morano, 1993; McGilton et al., 2007). Especially, support from the supervisor is found to be important for experienced stress (Hall, 2005; McGilton et al., 2007) and is linked to lower staff turnover (Van der Heijden et al., 2009). Park et al. (2004) found, studying workers in a public hospital in the United States, that social support at work was linked to high job control, low depression and high job performance. Support will be given especially in dense networks or in networks with strong ties. We expect that, when members of nursing staff receive social support from colleagues and supervisors, they will experience less work-stress and find more time to communicate with residents. However, strong ties between members of nursing staff can also have a negative effect on care processes. Strong ties between nursing staff can

cause more distraction with members of the nursing staff talking to each other instead of spending time on interaction with residents. Strong ties can in addition lead to a situation in which nursing staff will not correct each other or give each other feedback on their performance. We thus expect a non-linear relation between strong ties and performance.

Hypothesis 3: *Nursing staff with dense communication networks will receive more social support from colleagues, which will positively influence their well-being and their interaction with residents, which in turn will result in better resident outcomes.*

Hypothesis 4: *However, nursing staff with strong ties in their communication networks will be more often distracted from work, having a negative effect on the time they interact with residents.*

1.5 Networks between nursing staff and relatives of residents (boundary-crossing ties)

I was born and raised in this neighbourhood. Through my parents and my parents-in-law I know many elderly residents on this unit. As a consequence, I can approach residents more easily. I know their background and the (nick)names they had when they were young. In addition, it is easier to communicate with their children, for instance when discussing the living arrangements of their mother or father.

(member of nursing staff, 217)

The existence of boundary-crossing networks directly affects behaviour of nursing staff, because relatives/acquaintances of residents (boundary-crossing ties) provide information on the background and habits of residents. In addition, these contacts give indirect opportunities for control to residents. Third parties, such as family-members or friends of residents, will regard the nursing staff as representatives of the unit. Negative reports on the quality of care hurt the reputation of nursing staff and boundary-crossing ties might be able to impose sanctions, as in general in socially embedded relationships (Buskens and Raub, 2002). Boundary-crossing networks will particularly influence the treatment of residents by nursing staff, making them more understanding and at ease with residents.

Furthermore, we expect that boundary-crossing networks will influence the compliance of nursing staff to everyday care procedures, such as reporting incidents in individual care-plans of residents and taking appropriate steps when administering chemical or physical restraints.

Hypothesis 5: *As contacts with relatives of residents provide information and may influence the reputation of staff members in the community, it is expected that on dementia units with more boundary-crossing networks residents are given a better treatment.*

We also expect boundary-crossing networks to affect behaviours of nursing staff through the process of identification. According to the Social Identity Theory (Tajfel and Turner, 1979), a person's self-image is connected to the image of the group to which they belong; individuals define themselves in terms of their group-membership and ascribe typical characteristics of the group to themselves. However, individuals are not always aware of belonging to a group; their group membership has to be made salient (Van Knippenberg, 2000). Especially, closed and cohesive networks are deemed to facilitate social identity (Jones and Volpe, 2011). We expect that both boundary-crossing and communication networks strengthen nursing staff's awareness of their group membership, and as a result, increase their identification with the organization. Networks thus provide a sense of social identity (Podolny and Baron, 1997). When nursing staff have a boundary-crossing tie with relatives of residents, group membership is clear. However, when no boundary-crossing ties exist, salience of group membership depends on the communication among nursing staff, which in turn influence identification with the organization. Identification with the organization in turn leads to feelings of attachment and loyalty to the organization (Mael and Tetrick, 1992) which motivates group members to work in the group's interest (Van Knippenberg, 2000; Haslam, 2004). Work motivation is deemed to be especially important for nursing staff, as they often seem to choose their jobs on intrinsic values such as recognition, contacts with residents and task content, over instrumental rewards such as salary (Tummers et al., 2002). Several studies have shown a positive relation between organizational performance and motivation (Völker and Flap, 2005).

Hypothesis 6: *The existence of boundary-crossing networks and communication networks of nursing staff increases staff members' identification with the organization, which in turn will result in higher work motivation. Communication networks between nursing staff will be especially relevant when no or few boundary-crossing ties exist.*

1.6 Outline of this thesis

In this chapter, we analysed how, in theory, the social networks of nursing staff influence care processes, outcomes for residents, and ultimately organizational performance of long-term care facilities. For this we distinguished between communication and advice networks of nursing staff in dementia units, and networks between nursing staff and relatives or acquaintances of residents outside the organization (boundary-crossing networks). In this section, we explain the outline of the rest of this thesis.

In Chapter 2, we first describe informal social networks between staff members in long-term dementia care. We investigate communication and advice networks of nursing staff, and study how these networks are related to characteristics of nursing staff, characteristics of units and job satisfaction.

In Chapter 3, we study two important outcomes for residents with dementia: the occurrence of depressive symptoms and social engagement. We investigate how these outcomes are related to each other, to characteristics of individual residents and to structural aspects of long-term care units.

In Chapter 4 to 6, the mechanisms through which social networks influence organizational performance are investigated. In Chapter 4, we examine two types of networks: communication networks of nursing staff in the unit, and boundary-crossing networks of staff members with relatives and acquaintances of residents. We investigate if these networks are related to the treatment of residents, through information-exchange and organizational identification. Subsequently, in Chapter 5 we study how communication networks are related to social support, and challenging behaviour of residents. In Chapter 6, we investigate if networks of nursing staff are related to organizational performance as measured by the occurrence of depressive symptoms, frailty, and social engagement of residents.

Finally, in Chapter 7 the results of this thesis are summarized and discussed. In addition, we consider theoretical and methodological limitations of the study, and discuss the relevance of our findings for long-term care settings.

2

Communication, advice exchange and job satisfaction of nursing staff: a social network analysis of 35 long-term care units

This article was published as:

Van Beek APA, Wagner C, Spreeuwenberg P, Frijters DHM, Ribbe MW, Groenewegen PP. Communication, advice exchange and job satisfaction of nursing staff: a social network analyses of 35 long-term care units. *BMC Health Services Research*, 2011; 11(140).

www.biomedcentral.com/1472-6963/11/140

Abstract

The behaviour of individuals is affected by the social networks in which they are embedded. Networks are also important for the diffusion of information and the influence of employees in organizations. Yet, at the moment little is known about the social networks of nursing staff in healthcare settings. This is the first study that investigates informal communication and advice networks of nursing staff in long-term care. We examine the structure of the networks, how they are related to the size of units and characteristics of nursing staff, and their relationship with job satisfaction.

We collected social network data of 380 nursing staff of 35 units in group projects and psychogeriatric units in nursing homes and residential homes in the Netherlands. Communication and advice networks were analysed in a social network application (UCINET), focusing on the number of contacts (density) between nursing staff on the units. We then studied the correlation between the density of networks, size of the units and characteristics of nursing staff. We used multilevel analyses to investigate the relationship between social networks and job satisfaction of nursing staff, taking characteristics of units and nursing staff into account.

Both communication and advice networks were negatively related to the number of residents and the number of nursing staff of the units. Communication and advice networks were more dense when more staff worked part-time. Furthermore, density of communication networks was positively related to the age of nursing staff of the units. Multilevel analyses showed that job satisfaction differed significantly between individual staff members and units and was influenced by the number of nursing staff of the units. However, this relationship disappeared when density of communication networks was added to the model.

Overall, communication and advice networks of nursing staff in long-term care are relatively dense. This fits with the high level of cooperation that is needed to provide good care to residents. Social networks are more dense in small units and are also shaped by characteristics of staff members. The results furthermore show that communication networks are important for staff's job satisfaction.

2.1 Background

Studies have found that cohesive groups of nursing staff are related to higher work satisfaction and quality of care (Leppa, 1996), and lower anticipated turnover (Shader et al., 2001). Yet, at the moment little is known about the social structure of nursing staff relations. This is the first study to investigate informal social networks of nursing staff in long-term care, based on social network analyses.

Social networks in organizations in which individuals are embedded affect behaviour (Mizruchi and Marquis, 2006), and are important for the diffusion of information and the influence of employees (West et al., 1999). Studies have shown that social networks are beneficial for career advancement (Burt, 1992; Podolny and Baron, 1997), job performance (Sparrowe et al., 2001), and diminishment of conflict (Nelson, 1989). Until now, studies on social networks have mainly concentrated on the business sector or small groups of professionals. Not much is known about the role of social networks in healthcare settings although Coleman as early as in 1957 found that social networks of medical doctors were conducive to their prescription of new drugs (Coleman et al., 1957). West et al. (1999) described in their study the social networks of clinical directors of medicine and directors of nursing in hospitals. They found that the networks of both types of directors differ. Networks of directors of nursing were more hierarchical and highly central. Directors of medicine often worked in tightly knitted networks or cliques. Kravitz et al. (2003) identified opinion leaders on caesarean delivery in obstetric care by studying the advice networks of obstetricians, family physicians and nurse midwives. Heiligers et al. (2008) studied the impact of part-time work on the networks of doctors in hospitals. They found that working part-time did not influence the personal social networks of doctors. Nonetheless, they found that there were less communication ties in mixed teams of part-time and full-time working doctors compared to teams of full-time doctors only. Creswick et al. (2009) looked at the social networks of staff working in Emergency Departments, including doctors, nurses and allied health professionals. Their results showed that individuals were most closely connected to colleagues of the same profession. Cott (1997) studied the social networks of three multidisciplinary teams of healthcare workers, including nurses, in a geriatric care facility. The author found that multidisciplinary teamwork increased participation in decision-making

only for the higher status professionals. The hierarchal structure of the teams did not change.

Krackhardt and Hanson (1993) distinguish three types of informal social networks in organizations: communication, advice and trust networks. Communication networks consist of employees who talk about work-related matters on a regular basis. The advice network is formed by the prominent players in an organization, the employees on which others depend to solve problems and exchange information. The trust network shows which participants share delicate information and back one another in a crisis. In this chapter, we study communication and advice networks of nursing staff in long-term care dementia settings in the Netherlands.

The group of elderly persons with dementia who need intensive long-term care will increase significantly in years to come. In 2010, there were approximately 35.6 million people with dementia worldwide. This number will increase to 115.4 million in 2050 (World Alzheimer Report, 2010). In the Netherlands, there are around 235,000 persons with dementia of which 35% live in a long-term care facility (www.alzheimer-nederland.nl). The Dutch work population is projected to decline. It is therefore particularly important to understand how care for persons with dementia can be optimized.

Facility based care for persons with dementia in the Netherlands is provided in nursing homes and residential homes in special (psychogeriatric) units (Hoek et al., 2000). Residents who live on these units often share their bedroom and receive multidisciplinary care. The doors on the units are closed for residents, so that they cannot leave the unit on their own accord. In addition, in residential homes care for persons with dementia is provided in day-time psychogeriatric group projects which aim to delay or prevent admission of residents to a nursing home. Residents who attend these group projects live in their own apartments in the facility, but spend most of their day in a small group-setting of approximately 10 to 12 residents (Dijkstra et al., 1993) most often in a living room designated to this purpose. Group projects provide multidisciplinary care to residents and aim to provide a daytime routine and activities with other residents in a sheltered setting (Dansen and Voogt, 1998).

The majority of nursing staff in Dutch long-term care consists of Certified Nurse Assistants (CNAs), who generally have three years of basic nursing training, and perform most care tasks (Verkaik, 2009). Furthermore care is provided by care assistants, trainees and some fully

qualified nurses. In group projects recreational therapists are also often employed.

First, we look at the structure of communication and advice networks. Second, we study how these networks are related to the size of the care units and characteristics of nursing staff. McPherson and Smith-Lovin (McPherson et al., 2001) have found that social network patterns are influenced by the relative size of groups. Characteristics of nursing staff may also influence the structure of social networks. For example, nursing staff in Dutch long-term care facilities often work part-time, which limits the possibilities to meet colleagues. Third, we explore if social networks are related to the job satisfaction of nursing staff.

The following research questions are addressed:

- 1 *'What is the structure of communication and advice networks of nursing staff in long-term care?'*
- 2 *'Are social networks of nursing staff related to the size of units and characteristics of staff members?'*
- 3 *'Are social networks of nursing staff related to job satisfaction?'*

2.2 Methods

Data were gathered on 37 units for residents with dementia in nursing homes and residential homes in the Netherlands in psychogeriatric units and group projects during October 2002 - June 2003 (on one unit/project per facility). In total, 26 psychogeriatric units participated in the research of which 16 units in nursing homes and 10 units in residential homes. In residential homes 11 group projects took part. Facilities were asked to participate in the study on a voluntary basis.

Size of units and characteristics of nursing staff

Data on the number of residents and nursing staff on the units was collected in an interview with the unit supervisor at the beginning of data collection on each unit. Characteristics of nursing staff were measured with a questionnaire for all nursing staff on the units. We asked staff their age, gender, and the number of years they worked on

the unit. In addition, we asked if they worked full-time or part-time and if they had a permanent position.

Measurement of social networks

We individualized the questionnaires for each unit by presenting the names of all staff. To measure communication networks we asked the following question: *'Please report for each colleague how often you speak to him or her about your work or things that happen at work'* (Krackhardt and Hanson, 1993). The frequency of contacts had a range from a few times a day (5) to less than two times a month/never (0). Responses of individual members of nursing staff were symmetrised (Hanneman and Riddle, 2005; Kossinets, 2006), coding a tie between two members of nursing staff (dyads) when at least one indicated a relation with the other. The answers for communication networks were then dichotomized (Hanneman and Riddle, 2005; Borgatti et al., 2006) into at least once a week and rare (twice a month or less).

Advice networks were measured with the question: *'Sometimes we all need advice on how to best do our job. Who comes to you for advice on this unit and how often?'* For this question, the frequency of contacts also ranged between a few times a day (5) to less than two times a month/never (0). For the advice network we also recorded the direction of ties. Therefore, answers for this network were not symmetrised. We expected advice exchange to be less frequent than communication. For this reason answers for advice networks were dichotomized into frequent (at least two times a month) and rare (less often or never).

Job satisfaction

Job satisfaction of nursing staff was measured with the Maastricht Work Satisfaction Scale for Healthcare (MAS-GZ) (Landeweerd et al., 1996). The MAS-GZ consists of 21 items which have to be scored on a five-point scale ranging from very dissatisfied (1) to very satisfied (5). Items address the satisfaction with the unit supervisor, promotion possibilities, quality of care, contacts with colleagues and residents, and clarity of tasks. For this study, one item ('the extent to which you can get ahead in the facility') was removed as it is not directly related to working on the unit. Internal consistency (Cronbach's alpha) of the 20 remaining items in our sample was 0.88.

Data analysis

Answers on the social network questions were analysed using the UCINET software package (Hanneman and Riddle, 2005), which models the relationships of subjects in a certain group. With social network analysis several aspects of networks can be measured. For instance, Völker and Flap (2005) name four dimensions of social networks that are important for organizational performance. These dimensions are the number of ties, the quality, the hierarchy, and the density of the network. In this chapter, we focused on the density (or number of contacts) both for communication and advice networks. Density is a measure of the general level of cohesion of the network on the unit. It describes the extent to which actors are tied to each other (West et al., 1999). Density has a value between 0 and 1. A density of 1 represents a saturated network: all members of nursing staff interact with each other. With a density of 0 none of the nursing staff interacts (Hanneman and Riddle, 2005). Aggregated data for the units were analysed in SPSS 18.0. Differences between types of care unit were analysed using Kruskal-Wallis Tests. The relationship between social networks, size of units and characteristics of nursing staff were examined through Spearman's rho correlations. Last, we investigated the relationship between social networks and job satisfaction using multilevel analyses (Leyland and Groenewegen, 2003; Snijders and Bosker, 1999) in the statistical package MLwiN, with job satisfaction as the main dependent variable. We analysed a random intercept model with two levels: units (Level 2) and nursing staff on these units (Level 1). After the empty model, we first entered characteristics of nursing staff into the model (Model 1). Second, we entered type of care setting and number of nursing staff one after another into the model (Model 2). Third, density of communication and advice networks were entered separately in to the analyses (Model 3). As our study is mainly explorative in nature, we decided to use a significance level of $p < 0.10$.

2.3 Results

Size of units and characteristics of nursing staff

The number of residents of the units varied from 8 to 34, with an average of 21 residents. The group projects provided care to an average of 12 residents, compared to 22 in psychogeriatric units in residential homes and 27 residents in units in nursing homes. The number of nursing staff in the units varied from 4 to 39, with an average of 23.

Group projects in residential homes had on average 11 staff members, compared to 26 staff members in psychogeriatric units in residential homes and 30 in psychogeriatric units in nursing homes.

A total of 474 staff members completed the questionnaire. This was 55% of all 861 nursing staff of the units. Almost half of all respondents were CNAs (46%). Other respondents were care assistants, trainees, nurses and recreational therapists. The majority of the responding staff members were women (95%), with an average age of 38 years (sd=10.6). Nursing staff mostly worked part-time (77%) and the vast majority held a permanent position (89%). Nursing staff worked on average between 4 and 5 years in the units, varying between one month and 28 years (see Table 2.1). There were no significant differences between nursing staff in the different care settings for the percentage of women, their average age, the percentage of nursing staff that worked part-time and the percentage of nursing staff with a permanent position. There were differences, however, in the average number of years nursing staff worked in the units and group projects. Half of the nursing staff in residential homes, both of psychogeriatric units and group projects, had been working in the unit for one to three years compared to 28% of nursing staff in nursing homes. In nursing homes more nursing staff worked on the unit for ten years or longer (not in Table). Analyses showed that the 37 units that participated in the study did not differ from all nursing homes and residential homes in the Netherlands in the age and qualifications of nursing staff (Mathijssen et al., 2004).

Table 2.1 Characteristics of nursing staff in the care settings and in total (N=474)

	Psycho-geriatric units in nursing homes (N=246)	Psycho-geriatric units in residential homes (N=141)	Group projects in residential homes (N=87)	Total (N=474)
Age (mean and sd*)	37.5 (10.0)	38.9 (11.0)	39.3 (11.8)	38.2 (10.6)
Women (%)	94.3	96.5	96.5	95.3
Part-time (%)	74.2	82.7	81.4	78.0
Permanent position (%)	87.3	92.9	88.5	89.2
Years on unit (mean and sd)	5.4 (5.5)	3.8 (4.6)	3.5 (3.7)	4.6 (5.0)

* standard deviation

Response rates on social network measures

The question on communication was answered by 380 staff members. Due to a low response rate (less than 15%) two units were excluded from further analysis. The response percentage on the remaining 35 units with 801 staff members varied between 18% and 100% per unit with an average response rate of 53%. In psychogeriatric units in nursing homes and residential homes the average response rate was 45%. In group projects the average response rate was 71% (see Table 2.2).

Table 2.2 Response rates and density of social networks of nursing staff of the units (N=35)

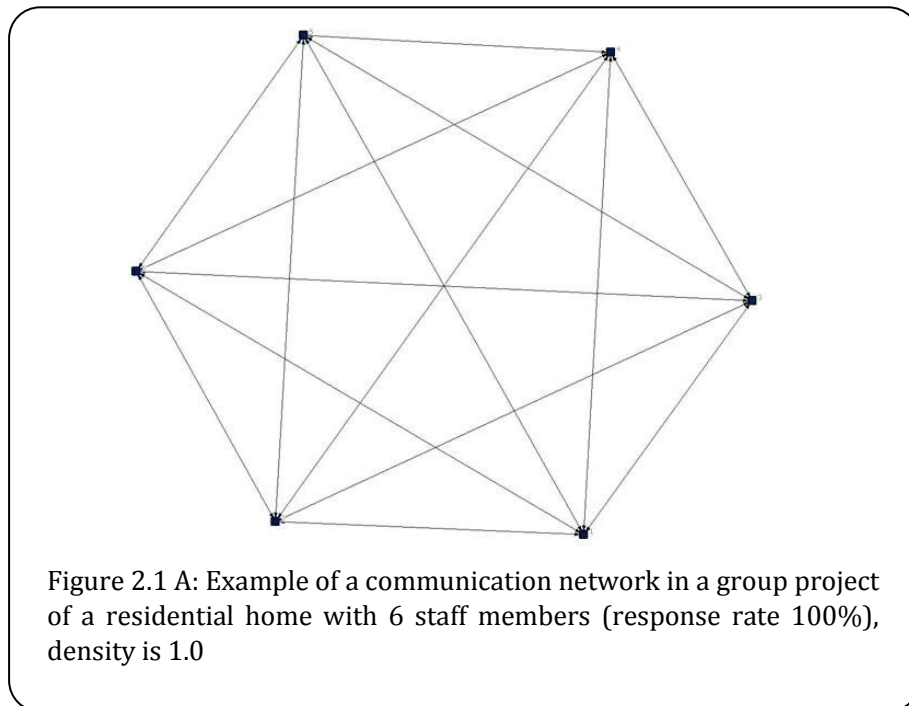
Networks	Psycho-geriatric units in nursing homes (N=14)	Psych-ogeriatric units in residential homes (N=10)	Group projects in residential homes (N=11)	p
Response in %:				
Communication networks (mean and sd)	44.7 (14.0)	45.3 (14.6)	71.0 (31.0)	0.149
Advice networks (mean and sd)	41.3 (13.7)	41.8 (12.2)	67.6 (29.5)	0.079
Density:				
Communication networks (mean and sd)	0.44 (0.1)	0.43 (0.2)	0.69 (0.3)	0.014
Advice networks (mean and sd)	0.20 (0.1)	0.22 (0.1)	0.38 (0.2)	0.034

The question on advice networks was answered by 347 staff members of the 35 units. The response rate between the units varied from 18% to 100%, with an average rate of 50%. The average response rate for group projects was 68%. For psychogeriatric units in nursing homes and residential homes response rates were respectively 41% and 42%. Response rates on the communication networks and advice network questions were highly correlated (0.97, $p < 0.001$). The response rate was negatively related to the size of the units. In units with more residents, response rates on communication and advice networks were lower (correlation between the number of residents and the response rate on communication networks was -0.43 and advice networks -0.47, $p < 0.01$).

Similar results were found for units with more nursing staff (correlation between the number of nursing staff and the response rate on communication networks was -0.61, for advice networks -0.61, $p < 0.001$).

Density of communication and advice networks

For communication networks we looked at the weekly contacts among staff members. Figures 2.1 and 2.2 provide examples of communication networks of nursing staff in a group project and in a psychogeriatric unit, as illustrated with NetDraw (McPherson et al., 2001). Example A shows a completely saturated network of a group project; all staff members communicate with each other. Example B shows a network of a psychogeriatric unit, with a density of 0.67. Example B clearly shows that it is more difficult to communicate with all other members of staff of larger units in comparison with smaller units. The average density of the communication networks for all units was 0.52, varying between 0.22 and 1.0. Overall, communication networks in group projects had a higher density than networks in psychogeriatric units (Table 2.2).



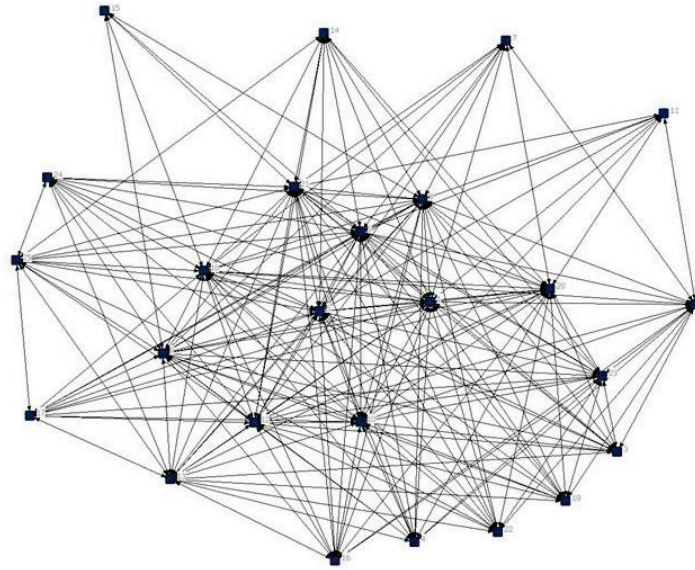
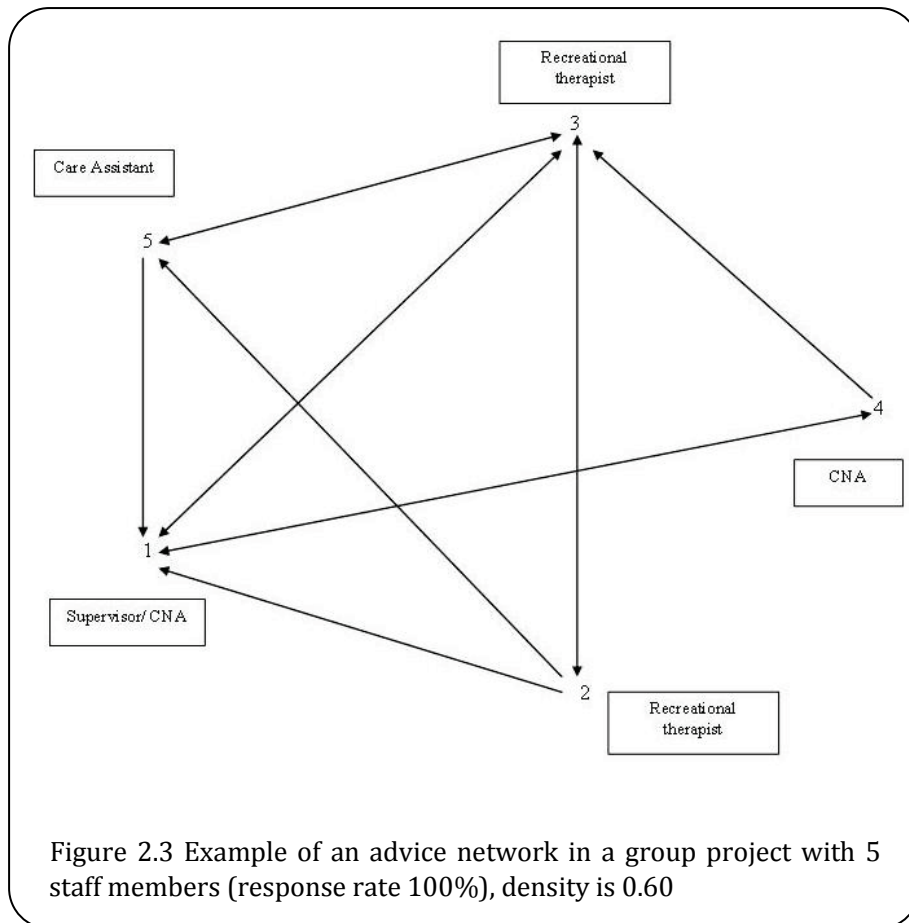


Figure 2.2 B: Example of a communication network in a psychogeriatric unit of a residential home with 25 staff members (response rate 60%), density is 0.67

For advice networks, we studied monthly contacts between staff members. Figure 2.3 gives an example of an advice network of a group project with 5 staff members. Although all nursing staff communicated with each other, the density of the advice network was less strong (0.60). Staff member 4 only exchanged advice with staff member 1 and 3. The other staff members 2 and 5 had no ties with 4, although they exchanged advice with staff members 3 and 1. Figure 2.3 also shows that all staff ask advice from the supervisor of the group project. An equal position is taken by staff member 3, one of the recreational therapists.

Overall, advice networks were smaller than communication networks and had an average density of 0.26, varying between 0.09 and 0.83 between the units. Identical to communication networks, advice networks in group projects had a higher density than networks in psychogeriatric units. This difference was significant (Table 2.2).



Social networks, size of units and characteristics of nursing staff

Table 2.3 gives an overview of the correlations between the social networks, size of the units, characteristics of staff members, and work-related outcomes for the 35 units. Both communication and advice networks were negatively related to the number of residents and the number of nursing staff of the units ($p < 0.01$). Consequently, in units with more residents and nursing staff, staff communicated less with each other and less often asked each other for advice. Communication and advice networks were more dense when more staff worked part-time ($p < 0.10$). Density of communication networks was also positively related to the age of nursing staff of the units ($p < 0.10$).

Table 2.3 Correlations between social networks and characteristics of units/nursing staff (N=35)

	Density of advice network	Number of residents	Number of staff members	Average age nursing staff	Average time on the unit (in months)	Percentage of staff with a permanent position	Percentage of staff working part-time
Density of communication network	0.854***	-0.445***	-0.698***	0.306*	-0.078	0.111	0.314*
Density of advice network		-0.522***	-0.687***	0.259	-0.085	0.164	0.295*
Number of residents			0.712***	-0.374**	0.390**	-0.175	-0.337**
Number of nursing staff				-0.385**	0.237	-0.270	-0.330*
Average age nursing staff					-0.095	0.013	0.500***
Average time on the unit (in months)						0.233	-0.100
Percentage of staff with a permanent position							0.084

*** correlation is significant at the 0.01 level

** correlation is significant at the 0.05 level

* correlation is significant at the 0.10 level

Units with dense communications networks also had dense advice networks ($p < 0.01$). The size of units was also related to characteristics of staff. In units with more residents and staff members, nursing staff were younger ($p < 0.05$), and less often worked part-time ($p < 0.10$).

The relationship between social networks of nursing staff and job satisfaction

Overall job satisfaction of nursing staff of the 35 units was 3.76 (sd= 0.19) ranging from 3.12 to 4.33 for the units. Multilevel analyses showed that job satisfaction differed significantly between individual staff members and units (see variance components for the empty model in Table 2.4). We first entered characteristics of nursing staff into the model on the level of individual staff members (Model 1). None of these characteristics were found to be related to job satisfaction in our sample. By taking characteristics of nursing staff into account, 15% of the variance could be ascribed to differences on the level of the units (as presented by the intra-class correlation in Model 2, Table 2.4). Next, we entered characteristics of the units into the model on unit-level. Type of care setting was not significantly related to job satisfaction of nursing staff (not in Table). Yet, a significant relationship was found between job satisfaction and the number of nursing staff on the units ($p < 0.05$). In units with less staff members, nursing staff were more satisfied with their job (see Model 2, Table 2.4). Finally, density of communication and advice networks were entered into the model on the level of the units (Model 3). Only communication networks were positively related to job-satisfaction ($p < 0.10$); in units where communication networks were more dense, nursing staff were more satisfied with their job. By adding communication networks into the model, the relationship between the number of nursing staff of the unit and job satisfaction ceased to exist. No effect was found for the density of advice networks of nursing staff (not in Table). By adding density of communication networks into the model, the variance that could be ascribed to differences on the level of the units decreased to 12% (as presented by the intra-class correlation in Model 3, Table 2.4).

Table 2.4 Results of the multilevel analyses for job satisfaction of nursing staff (N=410) on the units (N=35)

Job satisfaction	Empty model		Model 1		Model 2		Model 3	
	B	(SE)	B	(SE)	B	(SE)	B	(SE)
Intercept	3.758	(0.026)	3.757	(0.027)	3.905	(0.068)	3.604	(0.174)
Characteristics of nursing staff:								
Age			0.001	(0.002)	0.000	(0.002)	0.000	(0.002)
Gender			-0.068	(0.081)	-0.063	(0.081)	-0.063	(0.081)
Years on unit			-0.003	(0.003)	-0.002	(0.003)	-0.002	(0.003)
Permanent position			-0.057	(0.051)	-0.062	(0.051)	-0.061	(0.051)
Working full-time			0.041	(0.039)	0.044	(0.039)	0.044	(0.039)
Number of nursing staff					-0.006**	(0.003)	-0.001	(0.004)
Communication networks							0.352*	(0.188)
Variance components:								
Units	0.015	(0.006)	0.016	(0.006)	0.013	(0.005)	0.012	(0.005)
Nursing staff	0.090	(0.007)	0.088	(0.006)	0.088	(0.006)	0.088	(0.006)
ICC units	14%		15%		13%		12%	

bold font indicates a significant association

** significant association at $p < 0.05$

* significant association at $p < 0.10$

2.4 Discussion

In this study, we first looked at the structure of communication and advice networks of nursing staff in long-term care. Overall, social networks were relatively dense. Nursing staff of group projects communicated more often with each other than nursing staff of psychogeriatric units. Nursing staff of group projects also exchanged more advice with each other.

Second, we studied if social networks were related to the size of units and characteristics of staff members. As could be expected, differences in social networks were mainly due to the number of nursing staff of the units. Group projects provide care to a smaller group of residents than psychogeriatric units and, hence, have less nursing staff. As a consequence, it is probably easier to communicate with all staff members in this setting. This relationship between the size of a group and the structure of its social network is also found in other studies (McPherson et al., 2001). Furthermore, we found that communication and advice networks were denser when more staff members worked part-time. This finding is in contrast to the study of Heiligers et al. (2008). This difference may be due to the fact that the majority of the nursing staff in our sample worked part-time whilst most doctors in the study of Heiligers et al. worked full-time, indicating that differences in communication may not be ascribed to the differences in working full-time or part-time per se, but in belonging to the majority of part-time or full-time working employees in a group.

Third we investigated if communication and advice networks of nursing staff were related to job satisfaction. In our analyses job satisfaction was also related to the number of nursing staff of the units. However, this relationship disappeared when we took the density of communication networks into account. This finding corresponds with the results of Leppa (1996) and shows the importance of studying social networks when investigating work-related outcomes of nursing staff.

The results also illustrate the importance of studying informal social networks instead of solely focusing on the formal networks of staff members. Figure 2.3 shows that both staff member 1 and 3 are asked for advice by all other staff members, and therefore take a similar position in the advice network. However, staff member 1 is the unit supervisor whereas staff member 3 is one of the recreational therapists. By mapping informal social networks it is possible to identify key-players within the organization and, consequently, to disseminate information more effectively (Krackhardt and Hanson, 1993; Allen et al., 2007).

Our data should be interpreted with caution. An important problem in social network research is that data collection is difficult and very time-consuming. It was not possible to obtain complete social network data of all 37 units, and because of paucity of data the social networks of 35 units were analysed. Communication networks in our sample had an average response rate of 53%; the average response on advice networks was 50%. This response rate is comparable with the response rate of 58% in the study of Kravitz et al. (Kravitz et al., 2003). Kossinets (2006) argues that non-response in social network surveys can be partially balanced out by reciprocal nominations of actors. If actor A does not fill in the network questionnaire but actors B and C of the same network describe their interactions with A, information about the social network of actor A is still available. In our analyses of the communication networks we symmetrised our data, coding a tie between members of nursing staff when at least one staff member indicated a tie with this colleague. Through this, we also gained information on the communication networks of those who did not complete the questionnaire. In addition, it is found that social network centrality measures are relatively robust even when using imperfect data (Borgatti et al., 2006). We found that response rates were lower in units with more nursing staff. We studied whether this relationship between the size of the unit and social networks could be due to differences in response, as we found that the response on the social network questions was lower in larger units. When we controlled for the average response on the social network questions, the relationship between the number of nursing staff and the density of communication and advice networks remained significant (respectively $p < 0.01$ and $p < 0.05$). However, the relationship between the number of residents and the density of social networks ceased to exist. Evidently it is easier to answer questions for a limited group of colleagues than for a larger group. Thereto, the response rates on the social network questions may also be seen as a dependent variable in this study as it appears to be structured by organizational aspects of long-term care. Nevertheless, missing data on the larger units in our sample form an important limitation for this study. Further studies should focus on methods to obtain complete social network data of nursing staff.

The relatively high level of non-response may also have consequences for our findings on job satisfaction, perhaps even leading to non-response bias (Etter and Perneger, 1997). Unfortunately, we have no information on the job satisfaction of non-respondents in our study. However, we find that our respondents did not differ from nursing staff

in general in nursing homes and residential homes in the Netherlands, in terms of the percentage of females on the units, and their average age (Van der Windt et al., 2004). Furthermore, overall scores on job satisfaction are comparable with other findings in Dutch dementia care (Merten et al., 2007). Concerning job satisfaction, we also identify another limitation. In this study we adjusted the MAS-GZ job satisfaction questionnaire for the specific setting by deleting one item. Although internal consistency of the remaining 20 items is good, this may have consequences for the questionnaires psychometric properties of the scale. For this reason, we studied how our results (with one item of the MAS-GZ missing) tied in with the findings of Merten et al. (2007), in which data were collected of 236 staff members in Dutch dementia units. Average job satisfaction based on 21 items was 3,64 (sd= 0,43); for 20 items the average job satisfaction was 3,66 (sd= 0,43). It thus seems that the adjusted scale of job satisfaction results in a comparable score as when all 21 items were used.

Finally, we focused on the density of communication and advice networks as we were interested in social networks as a collective measure instead of the social networks of individual staff members (or dyads). Consequently, it is not possible to study if individual characteristics of staff members determine their social contacts. For instance, several studies have found that individuals are especially willing to form social connections with similar others (Creswick et al., 2009; McPherson et al., 2001; Raider and Krackhardt, 2001). This concept of homophily in social networks could also be applicable to nursing staff in long-term care settings. Furthermore, it would be interesting to investigate other aspects of networks, such as cliques that may be formed due to differences in work-shifts of nursing staff. In psychogeriatric units a selection of nursing staff work evening- and night-shifts to provide 24 hour care to residents. In group projects, nursing staff mostly only work day-shifts as activities are only provided during the day. This difference in shifts is likely to influence the formation of networks of staff. As yet, it is unclear if differences in social networks between the units in our sample can be ascribed to similarities between staff members or differences in work-shifts on the units.

Despite these limitations, this study is the first to study informal social networks of nursing staff in a large number of long-term care units. We focused on the number of connections (or density) between staff members as a base for information-exchange in communication and

advice networks. Burt (1992), in his theory of structural holes, argues that networks with low density are more productive than networks with a high density. Networks with low density seem to be especially efficient in competitive work-settings. Tasks that depend on cooperation, on the other hand, profit from networks with a high density (Flap and Völker, 2001). Our results support this finding. Overall density of the networks on the units is relatively high which is probably necessary when providing care for residents with dementia who, because of their problems in cognition, cannot clearly voice their needs and wishes.

2.5 Conclusions

This article investigates communication and advice networks of nursing staff in long-term care for the first time, using a social network approach. The study demonstrates that communication between nursing staff is important for job satisfaction and that networks are not solely shaped by the formal positions of staff members. Further research is needed to investigate the nature of the relationship between informal social networks and other work-related outcomes of nursing staff and to investigate if social networks also influence care processes in long-term care.

3

Social engagement and depressive symptoms of elderly residents with dementia: a cross-sectional study in 37 long-term care units

This article was published as:

Van Beek APA, Frijters DHM, Wagner C, Groenewegen PP, Ribbe MW. Social engagement and depressive symptoms of elderly residents with dementia: a cross-sectional study in 37 long-term care units. *International Psychogeriatrics*, 2011; 23(4):625-633.

Abstract

Social engagement and depression are important outcomes for residents with dementia in long-term care. However, it is still largely unclear which differences in social engagement and depression exist between residents of various long-term care settings and how these differences may be explained. This study investigated the relationship between social engagement and depressive symptoms on long-term care units, and studied whether differences in social engagement and depressive symptoms between units can be ascribed to the composition of the resident population or to differences in type of care setting.

37 long-term care units for residents with dementia in nursing- and residential homes in the Netherlands participated in the study. Social engagement and depressive symptoms were measured for 502 residents with the Minimum Data Set of the Resident Assessment Instrument. Results were analysed using multilevel analysis.

Especially residents in psychogeriatric units in nursing homes experienced low social engagement. Depressive symptoms were most often found in residents of psychogeriatric units in residential homes. Multilevel analyses showed that social engagement and depressive symptoms correlated moderately on the level of the units. This correlation disappeared when characteristics of residents were taken into account.

Social engagement and depressive symptoms are not only influenced by individual characteristics but also by the type of care setting in which residents live. However, in this study social engagement and depressive symptoms were not strongly related to each other, implying that separate interventions are needed to improve both outcomes.

3.1 Introduction

Social engagement and depression are important outcomes for residents in long-term care. Social engagement can be defined as social interactions with other residents and engagement in individual and social activities within the facility (Mor et al., 1995), and has been associated with a lower mortality risk of residents in nursing homes (Kiely and Flacker, 2003). Depression has also been linked to higher mortality rates in long-term care settings (Parmelee et al., 1992). Yet, studies show that residents in long-term care facilities frequently have low social engagement (Achterberg et al., 2003) and exhibit depressive symptoms which are often not recognized by nursing staff (Teresi et al., 2001).

Both social engagement and depressive symptoms are influenced by characteristics the residents' characteristics. For instance, cognitive problems are found to be predictive of both low social engagement (Bassuk et al., 1999) and depression (Gruber-Baldini et al., 2005; McCabe et al., 2006). Depression in elderly residents is associated with other characteristics of residents such as age (Jongenelis, 2006), personality, social resources, and physical health (Reker, 1997; Eisses et al., 2004). Social engagement is also related to problems in physical (activities of daily living) functioning, although studies yield contrasting results (Drageset, 2004). The type of care setting to which residents are admitted seems to be another important element that influences social engagement (Zimmerman, 2003; Dobbs et al., 2005; Schroll et al., 1997) and depression (Gruber-Baldini et al., 2005; Jongenelis, 2006). For instance Jongenelis (2006) found that depressive symptoms were higher among residents in nursing homes in comparison to residential homes. This result was partly explained by the quality of care residents experienced. However, the nature of the differences in social engagement and depression that exist between various care settings remains unclear as does the extent to which these differences can be ascribed to variations in the composition of the resident population or to the type of care setting. This is especially true for residents with dementia even though, because of their illness, these residents are particularly susceptible to low social engagement and depressive symptoms.

In addition, little is known about the relationship between social engagement and depressive symptoms for residents with dementia. Studies have found that social engagement and depression are related to each other for residents in long-term care settings, with feelings of

depression leading to low social engagement (Achterberg et al., 2003) or, conversely, depression leading to low social engagement (Tsai et al., 2009). Yet, these studies have focused on residents without (severe) cognitive problems. It remains unclear if this relationship is as strong for residents with dementia. For instance, apathy is a frequently observed behaviour in dementia patients which influences both depression and daily activities (Yeager and Hyer, 2008).

In this chapter, we investigated social engagement and depressive symptoms for residents with dementia in different types of long-term care settings. First, we looked at the prevalence of low social engagement and depressive symptoms in units for residents with dementia in long-term care. Second, we studied whether differences in social engagement and depressive symptoms between units were the result of differences in the composition of the resident population or resulted from differences in the type of care setting, while taking into account a possible relationship between social engagement and depressive symptoms.

We addressed the following research questions:

- 1 *'What is the prevalence of low social engagement and depressive symptoms in long-term care units for residents with dementia?'*
- 2 *'To what extent are differences in social engagement and depressive symptoms between units related to residents' characteristics and differences between care settings?'*
- 3 *'Is there a relationship between social engagement and depressive symptoms for residents with dementia in long-term care?'*

3.2 Methods

Setting

Long-term care in the Netherlands is provided in nursing homes and residential homes. Nursing homes provide multi-disciplinary care for elderly residents with long-term, complex health problems (Ribbe, 1993). Residential homes in the Netherlands provide daily and basic medical care for infirm elderly (Eisses et al., 2004). However, the

distinction between nursing homes and residential homes has become less clear over the years. Due to a growing number of elderly people in the Dutch population who require long-term care, complex multidisciplinary dementia care is provided in both nursing homes and residential homes in psychogeriatric units (Hoek et al., 2000). Residents in psychogeriatric units share living rooms and often also their bedroom with other residents. Residential homes, in addition, provide dementia care in psychogeriatric group projects. These group projects also provide multidisciplinary care and aim to delay or prevent admission of residents to a nursing home. Residents who attend these group projects live in their own apartments in the facility, but spend most of their day in a small group setting, with approximately 10 to 12 residents.

Participants

In four regions of the Netherlands: West-Brabant, Rotterdam, Amsterdam and Stedendriehoek, long-term care facilities were asked to participate in the study on a voluntary basis. Data were collected between October 2002 and June 2003 from one dementia unit in each of 37 long-term care facilities. In total, 26 psychogeriatric units participated in the research: 16 units in nursing homes and 10 units in residential homes. In residential homes, 11 group projects also took part. The number of nursing staff on the units varied from 4 to 39, with an average of 23 staff members. The group projects provided care to an average of 12 residents compared to 28 residents in psychogeriatric units in nursing homes.

According to Dutch regulations, no ethics approval for this study was necessary, as no intervention was investigated and data collection was based on proxy-report and not collected directly from residents. We asked for written informed consent from legal representatives of all residents in the units prior to data collection. Only those residents for whom written informed consent was given were included in the study. In addition, client councils of the participating facilities were informed of the study in advance and anonymity and confidentiality for residents was guaranteed. Informed consent was given for 502 residents; this was 64% of the 792 residents who lived in the units at the time of data collection. Of these residents, 249 lived in nursing homes and 253 residents lived in residential homes. None of the residents was comatose at the time of data collection.

Measures

Data were collected over three days from each unit using the Resident

Assessment Instrument (RAI) Minimum Data Set (MDS) for nursing home care (Morris et al., 1990). The MDS measures a wide array of characteristics of residents in nursing homes and several outcomes for residents and quality indicators can be computed (Morris et al., 1994). In this study, we used the Dutch version of the MDS 2.0 for residential long-term care.

We used the following specific scales of the MDS:

Depression Rating Scale: The MDS Depression Rating Scale (DRS) measures depressive symptoms of residents based on 7 items: negative statements, persistent anger, expressions of what seem to be unrealistic fears, repetitive health complaints, repetitive anxious complaints/concerns, sad/pained/worried facial expressions, crying/tearfulness. The scores of the DRS indicate depression and can vary from 0 (no depressive symptoms) to 14 (frequent depressive symptoms). The internal consistency (Cronbach's alpha) has been established at 0.71 and its sensitivity against a psychiatric diagnosis of depression was 91% (Burrows et al., 2000).

Index of Social Engagement: The Index of Social Engagement (ISE) (Mor et al., 1995) consists of 6 items that focus on the interaction with others, engagement in individual and group activities, goal-setting and involvement in the everyday life of the facility. The ISE adds the scores for all items (the score is 1 when the item is applicable) and has a range from 0 to 6. A higher score stands for higher social engagement.

In addition, we measured age, gender, the presence or absence of a partner, and cognitive and physical functioning of residents with the MDS. Cognitive functioning was measured with the Cognitive Performance Scale (CPS) (Morris et al., 1994). The CPS consists of five items. Scores on the CPS range from 0 (intact) to 6 (very severe impairment). Problems in physical functioning were measured using the ADL (Activities of Daily Living) hierarchy index of the MDS (Morris et al., 1999; Gerritsen, 2004). The index ranges from 'independent' (0) to 'totally dependent on others' (6). The MDS-data for each individual resident were collected by the researcher during an interview with a member of the nursing staff, who knew the resident well and provided care to this resident. To measure possible problems in recognizing depressive symptoms, we looked for a diagnosis of depression and the use of antidepressants in the individual care plan of residents in relation to the scores on the DRS. Information on the type of care setting was collected at the start of data collection on each unit in an interview with

the supervisor of the unit. During this interview information was collected on the number of residents and nursing staff on the units.

Analysis

Differences in social engagement and depressive symptoms between units and individual residents were first analysed using chi-square and t-tests. To study the relation between residents' characteristics, types of care setting, social engagement, and depressive symptoms, we then performed a multilevel analysis (Snijders and Bosker, 1999; Leyland and Groenewegen, 2003) using the statistical package MLwiN. To study the relationship between social engagement and depressive symptoms we analysed a random intercept multi-response model (Browne et al., 2007). This allowed us to look at social engagement and depressive symptoms separately while taking into account a possible relation with the outcomes.

The model consisted of three levels: units (Level 3), individual residents on these units (Level 2) and the relationship between social engagement and depressive symptoms within individual residents (Level 1; see technical Appendix 1 for a description of the model). We analysed the model in two steps: 1) after the empty model, we studied residents' characteristics (Model 1); and 2) we entered type of care setting into the analyses (Model 2).

3.3 Results

Characteristics of residents

Analyses showed that the 37 units participating in the study did not differ from nursing homes and residential homes elsewhere in the Netherlands in the age and qualifications of nursing staff, and the number of shared bedrooms (Mathijssen et al., 2004). Furthermore, residents in our sample did not differ from the psychogeriatric resident population in nursing homes in the Netherlands with regard to their psychosocial and somatic care requirements (Mathijssen et al., 2004).

Residents of the units differed in several important ways (see Table 3.1). Residents of psychogeriatric units in nursing homes were younger in comparison with residents of units in residential homes. The oldest residents were found in the group projects. These units also had the highest percentage of women and fewer residents with a partner, compared to residents of psychogeriatric units in nursing homes and

residential homes. There were also differences in cognitive functioning and physical functioning between residents of the units. Although psychogeriatric units in nursing homes and residential homes are designed for the same type of residents, residents of psychogeriatric units in nursing homes in particular suffered from severe problems in cognitive functioning (scores 5 and 6). Mild to moderate cognitive problems were most frequently reported in residents of residential homes. A majority of residents of psychogeriatric units in nursing homes were dependent on others in their physical functioning. Of the residents who participated in group projects in residential homes, the majority were independent in their physical functioning.

Table 3.1 Characteristics of residents with dementia in different care settings (N=502)

Variable	Psycho-geriatric units in nursing homes (N=249)	Psycho-geriatric units in residential homes (N=140)	Group projects in residential homes (N=113)	p
Age (mean, sd)	83.6 (8.24)	85.1 (6.26)	88.2 (5.66)	
Women	71.9% (179)	82.1% (115)	93.8% (106)	<0.001
Married/Partner	32.5% (81)	23.6% (33)	17.6% (20)	0.008
Cognitive performance				<0.001
Mostly intact (0-1)	8.4% (21)	11.4% (16)	12.4% (14)	
Mild to moderate (2-4)	34.5% (86)	62.9% (88)	57.5% (65)	
Severe (5)	36.9% (92)	20.7% (29)	25.7% (29)	
Severe (6)	20.1% (50)	5.0% (7)	4.4% (5)	
ADL-functioning (hierarchy)				<0.001
Non- or less-dependent (0-2)	24.8% (62)	52.2% (73)	66.4% (75)	
Dependent (3-6)	75.2% (187)	47.8% (67)	33.6% (38)	

Prevalence of social engagement and depressive symptoms

Table 3.2 shows the results for social engagement and depressive symptoms of residents. Residents with dementia in psychogeriatric units in nursing homes had less social engagement compared to

residents in residential homes. Scores on the ISE can be dichotomized in two categories: low social engagement (scores 0-2) and moderate to high social engagement (scores 3-6) (Achterberg et al., 2003). When we used this dichotomization, 42.6% of residents of psychogeriatric units in nursing homes had low social engagement. In residential homes the percentage of residents with low social engagement was significantly lower with 27.1% of residents in psychogeriatric units and 23.0% of residents in group projects.

Scores on depressive symptoms were higher for residents of psychogeriatric units in residential homes, compared to residents of psychogeriatric units in nursing homes and residents in group projects. Burrows et al. (2000) demonstrated that scale scores of 3 or more on the DRS indicate minor and major depressive disorders. In psychogeriatric units in nursing homes, 41.8% of residents had a score of 3 or higher. In residential homes, 57.1% of the residents of psychogeriatric units and 46.9% of residents in group projects scored 3 or higher on this scale. Of these residents, only a few were diagnosed with depression according to their individual care plan (varying between 5% of residents of psychogeriatric units in nursing homes and residential homes, and 0% in the group projects; not in Table). Slightly more residents with a DRS score of 3 or higher, used anti-depressants: 14%-16% of residents of psychogeriatric units in nursing homes and residential homes, and 8% of residents in group projects (not in Table).

Table 3.2 Social engagement and depressive symptoms of residents with dementia in different care settings (N=502)

Variable	Psycho-geriatric units in nursing homes (N=249)	Psycho-geriatric units in residential homes (N=140)	Group projects in residential homes (N=113)	p
Social engagement (mean, sd)	2.6 (1.67)	3.5 (1.75)	3.5 (1.54)	<0.001
Low social engagement (0-2)	42.6% (106)	27.1% (38)	23.0% (26)	
Moderate to high social engagement (3-6)	57.4% (143)	72.9% (102)	77.0% (87)	
Depressive symptoms (mean, sd)	2.6 (2.25)	3.6 (2.79)	2.8 (2.64)	<0.001
No depressive symptoms (0-2)	58.2% (145)	42.9 (60)	53.1% (60)	
Depressive symptoms (≥ 3)	41.8% (104)	57.1% (80)	46.9% (53)	

Table 3.3 Results of the multilevel multi-response analyses for social engagement* and depressive symptoms** of residents (N=502) on the units (N=37)

	Empty model		Model 1		Model 2	
	Social engagement (0-6) B (SE)	Depressive symptoms (0-14) B (SE)	Social engagement (0-6) B (SE)	Depressive symptoms (0-14) B (SE)	Social engagement (0-6) B (SE)	Depressive symptoms (0-14) B (SE)
Intercept	3.114 (0.125)	2.937 (0.173)	3.525 (0.834)	3.675 (1.390)	3.487 (0.836)	3.563 (1.385)
Characteristics of residents:						
Age			0.017 (0.010)	-0.010 (0.016)	0.016 (0.010)	-0.013 (0.016)
Female (ref: male)			0.022 (0.172)	0.283 (0.287)	-0.001 (0.173)	0.223 (0.288)
Partner (ref: no partner)			-0.167 (0.163)	0.807 (0.272)	-0.167 (0.163)	0.807 (0.270)
Problems in ADL			-0.170 (0.043)	-0.048 (0.071)	-0.164 (0.044)	-0.039 (0.073)
Problems in cognitive performance			-0.369 (0.053)	-0.060 (0.089)	-0.364 (0.053)	-0.046 (0.088)
Care setting:						
Psychogeriatric unit in residential home ¹					0.370 (0.242)	1.016 (0.365)
Group-setting in residential home ¹					0.180 (0.254)	0.272 (0.387)
Variance components:						
Units	0.383 (0.135)	0.665 (0.258)	0.226 (0.089)	0.593 (0.239)	0.200 (0.083)	0.368 (0.187)
Residents	2.556 (0.168)	5.788 (0.379)	2.038 (0.134)	5.683 (0.372)	2.040 (0.134)	5.709 (0.374)
Correlation between outcomes for units		0.34		0.11		-0.11
Correlation between outcomes for residents		-0.10		-0.11		-0.11
ICC units	21%	16%	10%	11%	11%	6%

* a higher score represents more social engagement

** a higher score represents more depressive symptoms

¹ ref: psychogeriatric unit in nursing home

bold font indicates a significant association at p<0.05

Next, we studied whether differences in social engagement and depressive symptoms between units were related to differences in the composition of the resident population on the units or to differences in care setting. To investigate a possible relation between social engagement and depressive symptoms, we analysed a multilevel, multi-response model with social engagement and depressive symptoms as the dependent variables (Table 3.3). As expected, social engagement and depressive symptoms varied significantly between individual residents. However, there were also significant differences between the units (see variance components for the empty model in Table 3.3). Social engagement and depressive symptoms were positively related to each other on the level of the units (correlation multilevel analyses 0.34), indicating that units with higher scores on social engagement also had higher scores on depressive symptoms. On the level of the residents, the correlation between both outcomes was negative but not very strong (correlation multilevel analyses -0.10); residents with high social engagement had less depressive symptoms. Of the variance, 21% and 16% could be ascribed to differences on the level of the units (as presented by the Intra Class Correlation in the empty model in Table 3.3).

Factors that influence social engagement and depressive symptoms

We first entered residents' characteristics into the model: age, sex, having a partner, physical functioning and cognitive functioning (Model 1, Table 3.3). As expected, social engagement of residents was related to physical and cognitive functioning. Residents who were more dependent on others in their physical functioning and residents who experienced more cognitive problems had less social engagement ($p < 0.05$). Physical and cognitive functioning were not significantly related to depressive symptoms. We did find a significant relationship between depressive symptoms and having a partner. Residents with a partner experienced more depressive symptoms ($p < 0.05$). Gender and age were not significantly related, either to social engagement or depressive symptoms. When we added residents' characteristics to the model, differences remained significant both on the level of units and on the level of individual residents (see variance components Model 1, Table 3.3).

When taking residents' characteristics into account, the correlation between social engagement and depressive symptoms was low both on the level of units and on the level of individual residents (correlation multilevel analyses were 0.11 and -0.11 respectively).

Second, we entered the type of care setting into the model to see if social engagement and depression differed between care settings while taking residents' characteristics into account (Model 2, Table 3.3). Variations in types of care setting were related to depressive symptoms. Residents of psychogeriatric units in residential homes had a higher score on the Depression Rating Scale in comparison with residents of psychogeriatric units in nursing homes, even when we adjusted for residents' characteristics ($p < 0.05$). By adding type of care setting into the model for depressive symptoms, the variance between units decreased and was no longer significant. No such effect was found for social engagement, the variance on unit-level for this outcome remained significant (see variance components Model 2, Table 3.3). By adding residents' characteristics and type of care setting the Intra Class Correlation for units was reduced to 11% for social engagement and 6% for depressive symptoms. When taking the type of care setting into account, the correlation between social engagement and depressive symptoms remained low on the level of units and on the level of individual residents (correlation multilevel analyses were -0.11 for both levels).

3.4 Discussion

Differences between types of care setting were found for both social engagement and depressive symptoms. Low social engagement was most often found in residents of psychogeriatric units in nursing homes. Depressive symptoms were most often found in residents of psychogeriatric units in residential homes. Differences between units in social engagement and depressive symptoms were mainly due to differences in the composition of the resident population of the units. However, residents of psychogeriatric units in residential homes scored higher on depressive symptoms compared to residents in other settings even after we controlled for residents' characteristics. We also studied the relationship between depressive symptoms and social engagement of residents with dementia in long-term care. To this end, we analysed both outcomes in a multilevel multi-response model. Although we found a positive correlation between both outcomes in our initial model, this correlation ceased to exist when we took residents' characteristics into account.

As expected, residents with severe problems in cognitive and physical functioning had less social engagement. Unexpectedly, in our study

depressive symptoms were only significantly related to having a partner and not to other residents' characteristics. Residents with a partner had higher scores on depressive symptoms in comparison to those without a partner. This may be due to several factors. In the Netherlands, residents who are admitted to a psychogeriatric unit live separated from their partners. This means that in our sample, only the 20 residents with a partner in group projects lived together with their partner. The other 124 residents with a partner lived separately, which may have led to depressive symptoms. However, an explanation can also be found in the initial reason for admission to the psychogeriatric unit. Residents with dementia living at home with a spouse or partner are more often institutionalized for behaviour-related problems, such as depressive symptoms, as changes in behaviour of the person with dementia lead to increased caregiver burden (Gaugler et al., 2000).

The percentage of residents with scores of 3 or higher on the DRS is comparable to the 44% of residents with depressive symptoms found in an earlier Dutch study (Jongenelis, 2006). Contrary to our results, Jongenelis found more depressive symptoms among residents in nursing homes than in residential homes. This may be explained by the fact that Jongenelis excluded residents with moderate to severe dementia, while those residents were the focus of the present study. Another explanation may be found in our use of the DRS to measure depressive symptoms and the adequacy with which depressive symptoms were detected and recognized by nursing staff. There are concerns about the reliability of the DRS for residents with cognitive impairment, although internal consistency seems to be sufficient (Gerritsen, 2004). On the other hand, it is suggested that the DRS may be particularly appropriate as it was developed specifically for the frail nursing home population and is less dependent on physical conditions (Verkaik et al., 2011). Furthermore, nursing staff in the Netherlands are not often trained to identify symptoms of depression. To study the adequacy of the detection of depressive symptoms in our sample with the DRS, we looked at the internal consistency of the DRS items in the three settings. Although the internal consistency was sufficient for all three settings, we found that internal consistency was highest for psychogeriatric units (Cronbach's alpha 0.70) and group projects (Cronbach's alpha 0.69) in residential homes. In psychogeriatric units in nursing homes internal consistency on the DRS was 0.62 suggesting that differences between the care settings may indeed be caused by differences in the adequacy of detection by nursing staff. The lack of

training in identifying depressive symptoms may also account for the fact that few of the residents in our study were diagnosed with depression or treated with anti-depressants. This under-diagnosis of depressive symptoms for elderly residents with dementia is in line with other studies (Teresi et al., 2001).

This under-diagnosis of depressive symptoms might also partly explain the lack of a relationship between depressive symptoms and social engagement in our sample. The addition of another depression measure to the study would have been beneficial to the interpretation of our results. Unfortunately, this was not possible in the current study design. This study has two other important limitations. Because we used a cross-sectional design, it was not possible to measure changes in residents throughout their stay in the unit and a causal relationship between social engagement and depressive symptoms, resident characteristics and type of care setting could not be tested. In addition, due to the cognitive problems of the residents in our study, it was impossible to measure social engagement and depressive symptoms through self-report. Instead we used measurements based on proxy report: social engagement and depressive symptoms were assessed by nursing staff. We have no information on how nursing staff reports relate to residents' perception of their social engagement and depressive symptoms.

In summary, our results show that depressive symptoms and low social engagement are important problems in various long-term care settings for residents with dementia. Depressive symptoms and social engagement are not only influenced by the residents' characteristics but also by the setting in which residents live. Even when we control for differences in residents' characteristics, differences between units remain. The results indicate that both outcomes may be improved by focusing on care processes on unit-level as well as on the care for individual residents. In addition, by analysing social engagement and depressive symptoms in a multilevel multi-response model we take a first but important step in disentangling both outcomes for residents with dementia. In this study social engagement and depressive symptoms are not strongly related to each other, implying that separate interventions are needed to improve both outcomes for residents with dementia. Further research is required to determine which specific aspects of psychogeriatric units influence social engagement and depressive symptoms, while taking differences in the population of residents into account.

4

The ties that bind? Social networks of nursing staff and staff's behaviour towards residents with dementia

This article was published as:

Van Beek APA, Wagner C, Frijters DHM, Ribbe MW, Groenewegen PP. The ties that bind? Social networks of nursing staff and staff's behaviour towards residents with dementia. *Social Networks*, 2013; 35(3):347-356.

Abstract

This study investigated social networks of nursing staff and staff's behaviour towards residents with dementia. We focused on two types of networks: communication networks among staff, and networks between nursing staff and relatives/acquaintances of residents. Data was collected in 37 long-term care units in nursing and residential homes in the Netherlands.

In units with more networks between nursing staff and relatives of residents, staff treated residents with more respect and were more at ease with residents. Social networks were also positively related to staff's organizational identification which, in turn, related to their work motivation and their behaviour towards residents.

4.1 Introduction

Attitudes and behaviours of nursing staff towards patients are an essential aspect of quality of care in health-settings (Lothian and Philp, 2001; Boscart, 2009). Treatment of elderly patients is particularly important in long-term care settings. Because of their prolonged stay and health problems elderly residents in long-term care are extremely vulnerable and find themselves in an asymmetrical relationship with the nursing staff (Nelson 2000). This is especially true for elderly residents with cognitive disorders such as dementia. Several studies have shown the importance of good verbal and non-verbal communication skills of nursing staff in dementia care (Rundqvist and Severinsson, 1999; Perry et al., 2005). Yet, controlling and directive behaviours of nursing staff towards elderly occur frequently (Hewison, 1995). Nursing staff in nursing homes often only communicate with residents with dementia during care activities and then they predominantly give instructions and orders (Van Bilsen et al., 1998; Christenson et al., 2011). In addition, nursing staff cannot always understand the communication of residents resulting in low quality interaction (Van Bilsen et al., 1998), leaving nursing staff with feelings of frustration and helplessness (Pursey and Luker, 1995; Graneheim et al., 2001).

Long-term care can be characterized by the extreme frailty of its patients and an educationally diverse staff (Scott et al., 2004). In this particular setting, communication and teamwork between nursing staff are found to be important for quality improvement (Scott et al., 2004), and more open communication between nursing staff seems to be related to better resident outcomes such as mobility (Anderson et al., 2003). Contacts between nursing staff and relatives of residents are also deemed important for both care processes and outcomes for residents (Bluestein and Latham-Bach, 2007). However, at the moment it is still unclear how communication among nursing staff and between nursing staff and relatives of residents are related to care processes and through which mechanisms they influence quality of care.

In this chapter, we study care processes in long-term dementia care from a social network approach. We look at communication networks among nursing staff and networks of nursing staff with relatives and acquaintances of residents, and investigate how these networks are related to nursing staff's treatment of residents.

4.2 Theoretical background

Krackhardt and Hanson (1993) define communication networks as the informal networks of employees who talk about work-related matters on a regular basis. Ties between nursing staff and relatives and acquaintances of residents cross the boundary of the organization. In line with Reagans and Zuckerman (2001), we name these ties boundary-spanning or boundary-crossing networks because they place employees in direct contact with third parties outside the organization.

Networks are often described by the density of interpersonal ties of its members, where density is seen as a measure of social cohesion (Friedkin, 2004). Since Seashore's classical study (1954) there have been multiple studies that link cohesion of networks to group outcomes (see Lott and Lott, 1965; Evans and Dion, 1991). Yet, results remain inconclusive, partly because conceptualizations of social cohesion differ greatly (Friedkin, 2004). Festinger (1950) first proposed that social cohesion should be seen as the causal system that determines individuals' membership attitudes and behaviours (see Friedkin, 2004). In this manner, conditions at the group-level can be seen as antecedents of attitudes and behaviour of group-members at the individual level (Friedkin, 2004).

Over the years, several mechanisms are named through which networks influence behaviour of group-members. First, density of networks is believed to enable information-exchange between actors. Granovetter (1973) first identified the strength of weak ties: low density networks of socially distant actors are more effective in information-exchange and innovation than high density networks of closely knit actors (Flache and Macy, 1996). Burt (1992) argued that a network in which a person has contacts with few others who provide unique information (a network with structural holes) is more productive than a network in which one has contacts with many others who provide the same information. Low density networks seem to be especially efficient for information-exchange in more competitive work-settings. Tasks that depend on cooperation on the other hand seem to profit from networks with a high density (Flap and Völker, 2001).

Second, cohesive networks are deemed to affect trust between actors. Buskens and Raub (2002) name two aspects through which socially embedded relations affect trust: earlier experiences with actors (learning) and possibilities to sanction untrustworthy actors (control). Control in a social network can be the result of direct sanctioning

between actors, but can also be the result of sanctioning by third parties and may even lead to social isolation if untrustworthy behaviour is detected. Research of control has mainly focused on its positive effects. However, Flache and Macy (1996) also name a negative effect of social cohesion, or- as they name it- a weakness of strong ties. They argue that relations between two group-members evolve more rapidly than exchanges between all group-members in a group. When strong ties between two actors are established, social control is aimed at the maintenance of these interpersonal relationships instead of compliance with group obligations, which may decrease group effectiveness.

Third, cohesive networks enhance social support. Close-knit networks exchange more affective and instrumental support (Heaney and Israel, 2008), which in turn is related to individual wellbeing. In studies, social support has also been associated with lower levels of work stress and work strain, although overall results remain inconclusive (Viswesvaran et al., 1999).

Fourth, networks provide a sense of social identity (Podolny and Baron, 1997). According to the Social Identity Theory (Tajfel and Turner, 1979) a person's self-image is connected to the image of the group to which he or she belongs; individuals define themselves in terms of their group-membership and ascribe typical characteristics of the group to themselves. For social identification to occur, group-membership has to be made salient (Van Knippenberg, 2000); especially closed and cohesive networks are deemed to facilitate social identity (Jones and Volpe, 2011). Social identity theory forms the basis for organizational identification, which is related to feelings of attachment and loyalty to the organization (Mael and Tetrick, 1992). Several studies have investigated the relationship between social networks and organizational identification focusing on individual's networks (see Jones and Volpe, 2011 for an overview). Bartels et al. (2007) found that determinants of identification with the organization as a whole differ from the determinants of employees' identification with lower organizational levels. The climate of internal communication was especially important for the identification with the lower levels of the organization. Perceived external prestige appeared more important for employees' identification with the overall organization.

How are these mechanisms of social networks related to the treatment of residents with dementia in long-term care? We expect social networks to be related to behaviour of nursing staff both directly and indirectly. First, we expect that the existence of boundary-crossing ties

between nursing staff and relatives/acquaintances of residents will affect behaviour of nursing staff towards residents directly because these contacts provide information on the background and habits of residents. Information about elderly residents, that those residents cannot provide themselves due to their dementia.

In addition, we argue that boundary-crossing ties will also guide the appropriate treatment of residents because they enhance trust. We will explain this reasoning through the concept of embeddedness as described by Granovetter (1985, 2005) and Uzzi (1997). Uzzi (1997) noted that socially embedded ties in exchange networks are often formed through referrals by third-parties or previous personal relationships (Uzzi, 1997). Trust is seen as a primary feature of these embedded ties (Granovetter, 1985, 2005) and described by Uzzi (1997) as: *'the belief that an exchange partner would not act in self-interest at another's expense'*. When untrustworthy behaviour is detected, this not only affects further exchanges between two actors, but information about untrustworthy behaviour will also spread to others in the extended network that is shared by actors (Uzzi, 1997), increasing the chances of punishment (Granovetter, 2005).

Boundary-crossing ties of nursing staff with relatives or acquaintances of residents represent the manner in which staff members and residents are embedded in the community outside the organization. If these ties exist, we expect that staff members will be less likely to act in self-interest at the expense of the resident. For instance by treating residents poorly or by rushing aspects of care to be able to spend time chatting to colleagues. Furthermore, when a boundary-crossing tie exists, untrustworthy behaviour of staff members will not only affect the relationship with the resident. It will also influence the relationship between the staff member and family/acquaintances of this resident outside the long-term care facility, giving these third parties opportunities to sanction unwanted behaviour (control) (Buskens and Raub, 2002). Notably, an important distinction from the original (economic) exchanges described by Uzzi (1997) and Granovetter (1985, 2005) is that there exists no equal exchange relationship between staff members and residents with dementia, making residents with dementia extremely vulnerable. For this reason, we expect that the possibilities of control by third parties become even more important in this setting. Based on these expectations we define the following general hypothesis:

Hypothesis 1: On dementia units with more boundary-crossing networks residents are given a better treatment.

Second, we expect that boundary-crossing and communication networks will indirectly influence behaviour through staff members' identification with the organization. We specify our expectations on the level of individual staff members and at unit-level. First, we expect that boundary-crossing ties will increase identification with the organization as third parties will regard staff members as representatives of the facility, making staff's membership to the facility salient (see Van Knippenberg, 2000). Thus, we expect a relationship between boundary-crossing ties and organizational identification at the level of individual nursing staff. We believe that for nursing staff identification with the facility is especially important, as public opinion on quality of long-term care in the Netherlands has been mainly based on media attention to adverse events in facilities. Less attention has been paid to the quality of care of individual units or holdings to which facilities may belong. In addition, we expect that staff members' organizational identification is also influenced by the density of staff's communication networks as interpersonal relations affect a person's attitudes about the attractiveness of the group and their orientation towards group-membership (Hechter, 1987; West et al., 1999; Friedkin, 2004). Following Bartels et al. (2007), we expect that boundary-crossing ties are especially important for organizational identification as they are related to the reputation (or external prestige) of staff members in the community. When no boundary-crossing tie exists, we expect that the density of internal communication networks becomes more important for organizational identification.

Consequently, we hypothesize an interaction effect of boundary-crossing ties at the individual level and density of communication networks at unit-level, where density of communication networks becomes more important when no boundary-crossing ties exist.

Hypothesis 2: Boundary-crossing ties increase staff members' identification with the facility.

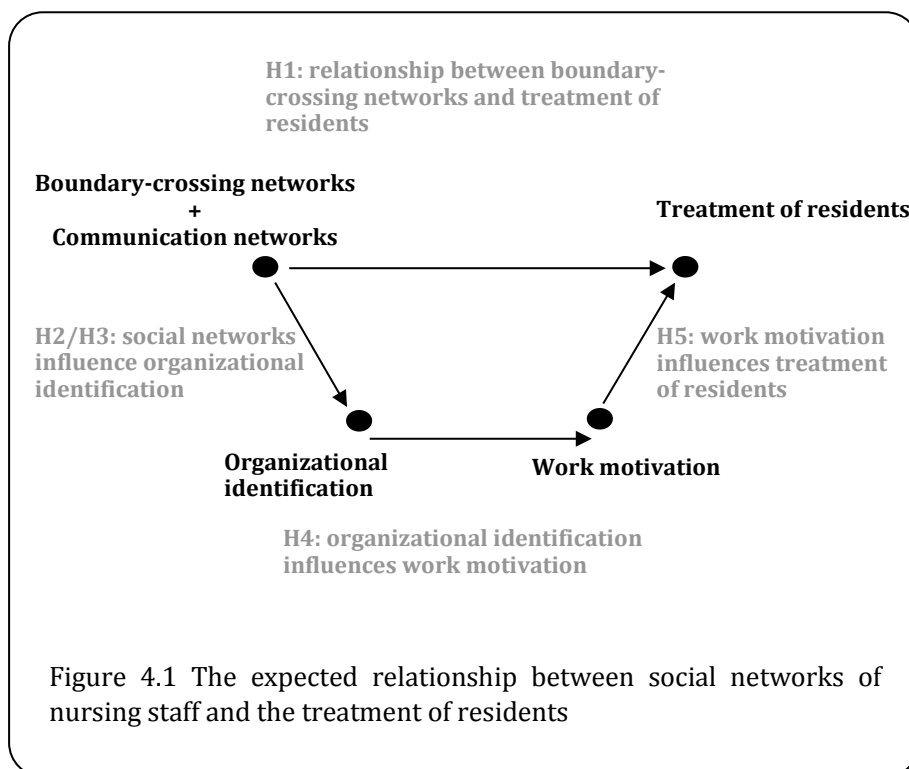
Hypothesis 3: Dense communication networks of nursing staff increase staff members' identification with the facility, particularly when no boundary-crossing ties exist.

Organizational identification motivates group-members to work in the group's interest (Van Knippenberg, 2000; Haslam, 2004). We expect that organizational identification is positively related to work motivation which results in a better treatment of residents in dementia units. Work

motivation is deemed to be especially important for nursing staff, as they often seem to choose their jobs on intrinsic values such as recognition, contacts with residents and task content over instrumental rewards such as salary (Tummers et al., 2002). We hypothesize that this relationship between organizational identification, work motivation and behaviour exists at the level of individual staff members but will affect the treatment of all residents of the unit (as staff members work for all residents of an unit).

Hypothesis 4: *Organizational identification results in higher work motivation.*

Hypothesis 5: *Residents are given better treatment on dementia units with more motivated nursing staff.*



In summary, this chapter investigates social networks of nursing staff and attitudes and behaviour of nursing staff at individual and group-level. It can best be described using the micro-macro scheme that was introduced by Coleman (1990) and is often used in sociology (Raub et al., 2011). The structure of the theoretical framework, and our hypotheses, are presented in Figure 4.1. At the macro-level, we study the relationship between social networks of nursing staff and the treatment of residents. To understand this macro-relationship we investigate how social networks affect organizational identification and work motivation on the micro-level, and study how work motivation is related to the treatment of residents of the unit on macro-level.

4.3 Methods

Design and ethical considerations

The study was guided by a cross-sectional design. Data were collected between October 2002 and June 2003 in 37 long-term care dementia units in the Netherlands. Each unit was visited by two researchers during three days. During these days, questionnaires were distributed among nursing staff of the units and the behaviour towards residents was systematically observed. According to Dutch regulation no approval of an ethics committee for this study was necessary, as no intervention was investigated and data were not directly collected from residents. Written informed consent from legal representatives of residents was obtained. In addition, client councils of the participating facilities were informed of the study in advance and anonymity and confidentiality for residents and nursing staff were guaranteed.

Setting

In the Netherlands, long-term dementia care is provided in psychogeriatric units in nursing homes and residential homes (Hoek et al., 2000). Residents who live in these psychogeriatric units receive multidisciplinary care and often share bedrooms. In addition, residential homes provide dementia care in psychogeriatric group projects. These group projects also provide multidisciplinary care and aim to delay or prevent admission of residents to a nursing home. Residents who attend group projects live in their own apartments in the facility, but spend most of their day in a small group setting.

For this study, a convenience sample of facilities was recruited in four regions in the Netherlands; data were collected in one unit in each

facility. Participating units consisted of 26 psychogeriatric units: 16 units in nursing homes and 10 units in residential homes. In addition, 11 group projects in residential homes also took part. Group projects provided care to an average of 12 residents compared to 28 residents in psychogeriatric units in nursing homes. Analyses showed that the 37 units in the study did not differ from psychogeriatric units in general in the Netherlands in terms of the psychosocial and somatic care requirements of residents (Mathijssen et al., 2004).

Social networks of nursing staff

We individualized the questionnaires for each unit by presenting the names of all staff. To measure communication networks we asked the following question: *'Please report for each colleague how often you speak to him or her about your work or things that happen at work'* (Krackhardt and Hanson, 1993). Frequency of contacts was presented in five categories ranging from a few times a day (5) to less than two times a month/never (0). Communication networks were analysed with the UCINET software package (Borgatti et al., 2006). First, responses of individual members of nursing staff were symmetrised (Hanneman and Riddle, 2005; Kossinets, 2006), coding a tie between two members of nursing staff when at least one indicated a relation with the other. Second, the answers were dichotomized (Borgatti et al., 2006; Hanneman and Riddle, 2005) into at least once a week and rare (twice a month or less). Third, density was computed as a measure of the general level of cohesion of the network (Hanneman and Riddle 2005).

For boundary-crossing networks we were interested in the ties between nursing staff and relatives or acquaintances of residents in the community. We collected information on these networks with a question based upon the work of Milgram (1967), known as the 'small world problem' (1967), that later became popularly known as the 'six-degrees-of-separation experiment' (Watts, 2004). Individual staff members were asked if they knew residents of their units through others and how many ties (steps) existed between them and this resident. We asked the following question: *'Please think randomly of a resident of this unit, for instance by choosing a resident whose surname starts with the same capital letter as yours. How many intervening steps of people you know are necessary to arrive at this resident?'*

Two examples were provided to clarify the question.

Example 1: *'I did not know resident Y. before she was admitted to this unit. However, I went to school with her daughter.'*

Example 2: *'My father knew resident X . when they were younger; they played billiards together. Resident X. visited my parents once in a while.'*

In both examples there is one intervening step between the resident and the member of nursing staff. For this study, the presence of boundary-crossing ties between residents and nursing staff was important, the number of intervening steps was less important. For this reason, answers were dichotomized for each member of nursing staff with a score of one representing a boundary-crossing tie (regardless of the number of intervening steps) and a score of zero representing no boundary-crossing ties with residents.

Organizational identification and motivation

Organizational identification was measured in two ways: identification with the dementia unit and identification with the facility. Identification with the unit was measured by an adaptation of the Dutch version of Mael and Ashforth's organizational identification scale (Ashforth and Mael, 1989; Mael and Tetrick, 1992; Van Knippenberg et al., 2001). This scale consists of six items. Answers are scored from 1 (totally disagree) to 5 (totally agree). For this study, the name of the unit was inserted into each item. Examples of items are: *'When someone criticizes <name unit>, I feel personally offended'* *'I'm very interested about others' opinion of <name unit>'*. For the total score, scores of all items were summed and then divided by six. The higher the score the more nursing staff identified with the unit. Cronbach's alpha of the scale in this study was 0.69. In addition to these questions for the unit, nursing staff were asked with one overall question if the answers applied in the same way for the facility the unit belonged to. Answers on this item were scored on a scale from 1 (to a far lesser extent) to 5 (to a far more extent). The score of this last question was used as the main variable for identification with the organization in our analyses.

Intrinsic work motivation was measured with six items derived from a scale developed by Warr et al. (1979). Examples of items are: *'I feel a sense of personal satisfaction when I do my job well'* and *'My opinion of myself decreases when I do this job badly'*. Answers are scored from 1 (totally disagree) to 5 (totally agree). For the total score, scores of all items were summed and then divided by six, a higher score representing a higher work motivation. Cronbach's alpha of the scale in this study was 0.71.

Treatment of residents by nursing staff

For the observations, an observation-list of 32 items was used that focused on different aspects of care for residents. The observation-list was derived from a list that was based on the aspects of quality of care defined by Rantz et al. (1998). Each item was scored on a five-point scale, with 5 representing the most positive score. Six items of the observation-list were related to the behaviour of nursing staff towards residents: starting a friendly conversation with residents, taking sufficient time for residents, calling residents by their name, treating residents with respect, actively caring for residents, and residents and nursing staff smiling at each other and seeming at ease with each other. The observation-list was completed at three times, one observation on each day of data collection. Observation-times represented three important moments of care: morning (around 9.00h), dinner-time (around 12.00h), and the afternoon (around 15.30h). The times of observation were not known to the units in advance. After an observation-period of twenty to thirty minutes, both researchers individually completed the list and, afterwards, discussed their findings. A total of 15 researchers carried out the observations on the 37 units. One researcher (and first author of this chapter) observed all the observation-moments (N=111), each time accompanied by one of the 14 other researchers. A score for each item was computed based on the average score of the two researchers over all three observation-moments. Inter-observer reliability of the separate items varied between 0.65 and 0.78 (based on Pearson's correlation coefficient), with a mean of 0.74. Cronbach's alpha of the six items was 0.84.

Data analysis

To test the hypotheses, data were analysed in several steps distinguishing between analyses on macro-level and micro-level. First, the correlation (Pearson's correlation coefficient) between boundary-crossing networks of nursing staff and the treatment of residents at the level of units was studied (Hypothesis 1). Second, we looked at the relationship between social networks of nursing staff, organizational identification and work motivation. The existence of boundary-crossing ties, organizational identification and motivation were all measured at the individual level. Density of communication networks was measured at unit-level. For this reason we carried out multilevel analyses (Snijders and Bosker, 1999; Leyland and Groenewegen, 2003) in MLwiN in which individual and unit variables could be combined. In addition, multilevel analyses show how much variance in outcomes can be ascribed to the

unit and to individual staff members. Two separate models were analysed, each with two levels: units (Level 2) and nursing staff on these units (Level 1). In Model 1, the relationship between boundary-crossing networks, density of communication networks and organizational identification was studied (Hypothesis 2 and Hypothesis 3). Model 2 investigated the relation between organizational identification and work motivation (Hypothesis 4).

In the multilevel analyses it was first investigated how organizational identification was influenced by characteristics of nursing staff and structural aspects of the units (type of care setting and number of nursing staff). Second, boundary-crossing and communication networks were entered into the model. Boundary-crossing networks were first entered into the analyses on the level of individual staff members; density of communication networks, measured on unit-level, was then entered into the model as a cross-level interaction, as it was expected that communication networks among nursing staff become more important when no boundary-crossing ties exist. For work motivation (Model 2) the analyses were repeated. In addition, organizational identification was added to the model.

Finally, we studied the relationship between work motivation and the treatment of residents at unit-level (based on Pearson's correlation coefficient; Hypothesis 5).

4.4 Results

A total of 474 nursing staff completed the questionnaire of this study. This was 55% of all 861 nursing staff in the units. The majority of nursing staff consisted of women (95%), with an average age of 38 years (ranging between 16 and 63). Nursing staff mostly worked part-time (77%) and the vast majority held a permanent position (89%).

The question on communication networks was answered by 380 staff members. Two units were excluded for analyses due to a response rate of less than 15%. The response percentage on the remaining 35 units varied between 18% and 100% per unit with an average response rate of 53%. In psychogeriatric units in nursing homes and residential homes the average response rate was 45%. In group projects the average response rate was 71%. Response rates were negatively related to the size of the units.

In units with more nursing staff, response rates on communication networks were lower (correlation between the number of nursing staff

and the response rate on communication networks was -0.61 , $p < 0.001$). The average density of the communication networks was 0.52 , varying between 0.22 and 1.0 for the participating units. Density of communication networks was also significantly related to the number of nursing staff in the unit (0.698 , $p < 0.01$). When we controlled for the average response on the social network questions, the relationship between the number of nursing staff and the density of communication networks of the units remained significant ($p < 0.01$).

The question on boundary-crossing networks was answered by 391 nursing staff in the 37 units (average response rate 45%). A boundary-crossing tie was mentioned by 44% of the nursing staff, varying between 0% and 100% of nursing staff on the units. On average, 35% of nursing staff in psychogeriatric units in nursing homes mentioned a boundary-crossing tie. For psychogeriatric units in residential homes this was 48%; for group projects it was 53%.

Direct relationship between boundary-crossing networks of nursing staff and treatment of residents

Table 4.1 gives an overview of the correlations between boundary-crossing networks of nursing staff and the observed treatment of residents in the 37 units. In units with more boundary-crossing ties, nursing staff treated residents with more respect, and nursing staff and residents seemed more at ease with each other ($p < 0.05$). Furthermore, boundary-crossing ties were related to the number of times nursing staff started a friendly conversation with residents and the amount of time they actively cared for residents ($p < 0.10$). The different items to measure treatment of residents were also positively related to each other. For instance, in units where nursing staff more frequently started a friendly conversation with residents, they also took more time for residents and treated residents with more respect. The results support Hypothesis 1.

Table 4.1 Correlations between social networks of nursing staff and the treatment of residents on the units (N=37)

	Nursing staff starts friendly conversation	Nursing staff takes sufficient time	Nursing staff call residents by their name	Nursing staff treats residents with respect	Nursing staff and residents seem at ease with each other	Nursing staff actively care for residents
% of nursing staff with a boundary-crossing network	0.314*	0.268	0.267	0.350**	0.342**	0.287*
Nursing staff starts friendly conversation		0.771***	0.605***	0.727***	0.771***	0.512***
Nursing staff take sufficient time			0.648***	0.739***	0.773***	0.595***
Nursing staff call residents by their name				0.785***	0.665***	0.363**
Nursing staff treats residents with respect					0.779***	0.592***
Nursing staff and residents seem at ease with each other						0.569***

*** correlation is significant at the 0.01 level

** correlation is significant at the 0.05 level

* correlation is significant at the 0.10 level

Table 4.2 Results of the multilevel analyses for organizational identification (range 1-5) of nursing staff (N=373) on the units (N=35)

Identification	Empty model:		Step 1:		Step 2:		Step 3:	
	B	(SE)	B	(SE)	B	(SE)	B	(SE)
Intercept	2.98	(0.067)	2.98	(0.065)	3.40	(0.263)	2.09	(0.496)
Characteristics of nursing staff:								
Age			0.004	(0.004)	0.003	(0.004)	0.003	(0.004)
Gender			0.293	(0.199)	0.321	(0.199)	0.319	(0.197)
Years on unit			-0.007	(0.009)	-0.002	(0.009)	-0.002	(0.009)
Permanent position (ref: temp position)			-0.081	(0.124)	-0.093	(0.123)	-0.093	(0.123)
Part-time (ref: full-time)			0.068	(0.102)	0.048	(0.101)	0.048	(0.101)
Structure:								
Psychogeriatric units in residential homes ¹					0.108	(0.144)	0.196	(0.139)
Group projects in residential homes ¹					-0.029	(0.202)	0.066	(0.195)
Number of nursing staff					-0.018	(0.008)	0.002	(0.011)
Networks:								
Boundary-crossing network							0.327	(0.227)
Density of communication network when no boundary-crossing network exists							1.568	(0.502)
Density of communication network when boundary-crossing network exists							0.878	(0.482)
Variance components:								
Units	0.10	(0.036)	0.09	(0.035)	0.07	(0.029)	0.05	(0.024)
Nursing staff	0.52	(0.040)	0.51	(0.039)	0.51	(0.039)	0.50	(0.039)
ICC units	16%		15%		12%		9%	

¹ ref: psychogeriatric unit in nursing home

bold font indicates a significant association at p<0.05

Table 4.3 Results of the multilevel analyses for work motivation (range 1-5) of nursing staff (N=373) on the units (N=35)

Motivation	Empty model:		Step 1:		Step 2:		Step 3:	
	B	(SE)	B	(SE)	B	(SE)	B	(SE)
Intercept	4.01	(0.027)	4.01	(0.025)	3.98	(0.112)	3.88	(0.245)
Characteristics of nursing staff:								
Age			0.007	(0.002)	0.007	(0.002)	0.006	(0.002)
Gender			0.155	(0.115)	0.152	(0.115)	0.114	(0.114)
Years on unit			-0.006	(0.005)	-0.006	(0.005)	-0.007	(0.005)
Permanent position (ref: temp position)			-0.006	(0.070)	-0.009	(0.071)	0.000	(0.070)
Part-time (ref: full-time)			-0.038	(0.059)	-0.038	(0.059)	-0.044	(0.058)
Structure:								
Psychogeriatric units in residential homes ¹					0.054	(0.060)	0.016	(0.065)
Group projects in residential homes ¹					-0.036	(0.084)	-0.073	(0.092)
Number of nursing staff					0.001	(0.003)	-0.002	(0.005)
Networks:								
Boundary-crossing network							0.062	(0.129)
Density of communication network when no boundary-crossing network exists							-0.190	(0.256)
Density of communication network when boundary-crossing network exists							-0.241	(0.241)
Identification with the facility							0.085	(0.030)
Variance components:								
Units	0.007	(0.005)	0.005	(0.005)	0.004	(0.005)	0.004	(0.005)
Nursing staff	0.181	(0.014)	0.178	(0.014)	0.177	(0.014)	0.177	(0.014)
ICC units	4%		3%		2%		2%	

¹ ref: psychogeriatric unit in nursing home

bold font indicates a significant association at p<0.05

Relationship between social networks and organizational identification of nursing staff

Next, the relationship between boundary-crossing networks, density of communication networks and nursing staff's organizational identification was studied. Average identification with the facility was 3.0 (sd= 0.81) on a scale from 1 to 5 (n=457). Table 4.2 presents the relationship between characteristics of nursing staff, structural aspects of the units, social networks and identification with the facility for nursing staff of 35 units. Identification with the facility varied significantly between staff members. There was also significant variance between units (see variance components for the empty model in Table 4.2). Of the variance 16% could be ascribed to differences on the level of the units (as presented by the Intra Class Correlation in the empty model in Table 4.2). Identification with the facility was not related to characteristics of the nursing staff in our sample (see Step 1, Table 4.2). However, it was related to structural aspects of the units. On larger units nursing staff identified less with the facility (Step 2, Table 4.2). This relationship between size of the units and identification ceased to exist when boundary-crossing networks and communication networks were entered into the model. No main effect for boundary-crossing networks was found. Yet, we did find an interaction effect of boundary-crossing networks and communication networks. When there were no boundary-crossing ties, the density of communication networks of staff in the unit was positively related to identification with the facility (Step 3, Table 4.2).

The results do not support Hypothesis 2. We found no main effect for boundary-crossing networks and identification with the facility. Yet, we found a cross-level interaction effect of boundary-crossing ties and communication networks for organizational identification. The results support Hypothesis 3.

Relationship between organizational identification and work motivation of nursing staff

Average work motivation was 4.0 (sd=0.47) on a scale from 1 to 5 (n=468). Table 4.3 shows that motivation varied significantly between individual members of nursing staff. No significant variation between the units was found (see variance components for the empty model in Table 4.3). For work motivation, 4% of the variance could be ascribed to differences on the level of the units (as presented by the Intra Class Correlation in the empty model in Table 4.3). Identical to the analyses for organizational identification, it was first investigated how

motivation was influenced by characteristics of nursing staff and structural aspects of the units. We found that older nursing staff was more motivated (Step 1, Table 4.3). Work motivation was not related to structural aspects of the units or the social networks of nursing staff (Step 2, Table 4.3). However, nursing staff who identified more with the facility were more motivated to provide better care (Step 3, Table 4.3). The results thus support Hypothesis 4.

Relationship between work motivation and treatment of residents

Finally, scores of work motivation were aggregated to the unit-level to investigate whether motivation was related to the treatment of residents of the units. For this, the percentage of nursing staff that scored higher than average (>4.0) on the scale for work motivation was assessed. These percentages of nursing staff with a high work motivation varied between 25% and 100% between the units with an average of 58%.

Table 4.4 Correlations between motivation of nursing staff and the treatment of residents in the units (N=37)

	Work motivation
Nursing staff start friendly conversation	0.282*
Nursing staff take sufficient time	0.261
Nursing staff call residents by their name	0.181
Nursing staff treat residents with respect	0.212
Nursing staff and residents seem at ease with each other	0.330**
Nursing staff actively care for residents	0.190

** correlation is significant at the 0.05 level

* correlation is significant at the 0.10 level

The percentage of highly motivated nursing staff related positively to the treatment of residents in the units. In units with more motivated nursing staff, nursing staff smiled at residents more often and seemed more at ease with residents ($p < 0.05$), and more often started a friendly conversation with residents ($p < 0.10$). The results support Hypothesis 5.

4.5 Discussion

This study is the first to examine the relationship between social networks of nursing staff and behaviour of nursing staff towards elderly residents with dementia. In units where nursing staff reported more contacts with relatives and acquaintances of residents (boundary-crossing ties), nursing staff treated residents more often with respect and approached residents in a friendly manner both by being at ease and by starting friendly conversations with residents. Social networks also indirectly affected the treatment of residents. Communication networks of nursing staff were positively related to staff's identification with the facility when no boundary-crossing ties existed. Organizational identification in turn was related to work motivation of nursing staff which, aggregated to unit-level, proved to be positively related to the treatment of residents of the unit. These results largely supported our hypotheses.

Several characteristics of nursing staff and characteristics of the units that could influence the relationship between social networks and organizational identification and work motivation were taken into account. Only one characteristic of nursing staff was found to be related to the dependent variables. Older nursing staff was more motivated to provide good care. More nursing staff on the unit was found to be negatively related to identification with the facility. However, this relationship between size of the unit and identification ceased to exist when social networks were entered into the model.

The results of this study should be interpreted with caution. First, the response rates on the social network measures were limited. The question regarding communication networks had a response rate of 53%, after we excluded two units with very poor response. We found that response rates were lower in units with more nursing staff. Evidently it is easier to answer questions for a limited group of colleagues than for a larger group. Kossinets (2006) argues that non-response in social network surveys can be partially balanced out by reciprocal nominations of actors. If A does not fill in the network questionnaire but B and C of the same network describe their interactions with A, information about the social network of A is still available. In the analyses data were symmetrised, coding a tie between members of nursing staff when at least one staff member indicated a tie with this colleague. Through this, information was gained on the communication networks of those who did not complete the

questionnaire. Furthermore, when low response rate leads to smaller numbers, the Empirical Bayes Estimation used in the multilevel analyses shrinks the estimates to the general mean, which results in a conservative approach.

The question on boundary-crossing networks was answered by 44% of nursing staff. It is not known whether the remaining nursing staff had no boundary-crossing tie (as this answer was not provided structurally with the question), or if they did not understand the question due to how it was constructed. The question used to obtain boundary-crossing information was relatively complex, not only asking after the presence of a boundary-crossing tie but also asking after the number of intervening steps. Perhaps response rates would be higher if the latter part of the question was omitted, as it would make the question easier to understand. Dementia care in the Netherlands is provided by an educationally diverse nursing staff and, due to the growing number of older people that need extensive care, often staff with a low education level is employed. As this is the first study to address networks between nursing staff and family and acquaintances of residents in long-term care, it is impossible to compare our findings or response rates to other studies. To address our response problem, we performed additional analyses in which all missing values were recoded into value 0 (no boundary-crossing tie exists). The findings of these analyses did not differ from the results that are presented in this chapter. Nevertheless, the limited response on both social networks questions is an important limitation of this study. Further studies should focus on methods to obtain more complete social network data of nursing staff.

Second, the study was guided by a cross-sectional design in which several outcomes were used. Overall, reliability of the scales used for organizational identification, intrinsic work motivation and behaviour towards residents with dementia was sufficient. Yet, several limitations can be identified. Organizational identification was measured in two ways: identification with the dementia unit and identification with the facility. The score of this last item - that measured deviations from the identification with the unit - was used as the main variable for identification with the organization in our analyses. This measure has to our knowledge not been used before. Further research is needed to see if similar results may be obtained in other settings. Cronbach's alpha for intrinsic work motivation was 0.71. Although not very high, this is comparable to other studies in the Netherlands in which the scale was

used. For instance, Janssen et al. (1999) reported a Cronbach's alpha of 0.70 in their study of nurses in a general hospital.

The behaviour of nursing staff towards residents with dementia was observed during three days on each unit by two researchers. Although the observations show sufficient interrater reliability, there were differences in how the researchers interpreted the interaction between nursing staff and residents. In addition, with the results of this study, it is impossible to determine whether treatment of residents differed over time in the units and whether nursing staff reacted to the presence of the researchers. However, precautions were taken to optimize the reliability of the findings. One researcher observed all 37 units on all occasions. The observations were carried out at three different moments which were not known to the nursing staff in advance and researchers were asked to report possible reactivity effects of nursing staff if they became aware of them. Overall, reactivity of nursing staff to the researchers was found to be limited, which is consistent with earlier research by Schnelle et al. (2006), who found no effects of reactivity of nursing staff when using observations to assess quality of care.

Third, although we corrected for several characteristics at staff- and unit-level, we expect that the relationship between social networks and identity may also be contingent on other characteristics (for instance trust in management and team leadership) that were not part of this study. Furthermore, the relationship may also be mediated by other mechanisms which we discussed in the theoretical background but were not part of this study, such as social support. The power of our multilevel analyses was restricted to 35 units at the highest level of analyses and only a limited amount of unit variables could be taken into account. Consequently, our analyses are not extensive and it is important that future research identifies which other aspects and mechanisms mediate the relationship between networks, identification, work motivation and behaviour of staff in long-term care. An important characteristic which we would like to mention separately is the experienced workload of nursing staff as it may be expected that especially workload is related to the time nursing staff spend interacting with residents. For the 35 units, the average workload was not extremely high (mean=2.9 on a scale from 1 to 5; sd: 0.60). Although we found a weak correlation between workload and the density of communication networks ($p=0.10$), we found no significant correlation between workload and organizational identification or motivation.

Workload was significantly correlated to nursing staff taking sufficient time for residents ($p < 0.05$) and the number of times nursing staff called residents by their name ($p < 0.10$). Interestingly, those two aspects of the treatment of residents were not significantly correlated to either the existence of boundary-crossing ties or to the work motivation of nursing staff. These results show that workload is important when studying the treatment of residents in long-term care, but seems to affect the treatment of residents through different mechanisms and on different aspects.

In this study, we focused on the relationship between social networks of nursing staff and the treatment of residents with dementia at the macro-level by studying the attitudes and behaviour of staff at the micro-level. For this, we followed the micro-macro scheme that is often used in sociological studies (Coleman, 1990). Raub et al. (2011) state that: *'micro-macro models aim at explanations of macro-outcomes and at incorporating macro-conditions in the explanation rather than at explaining individual behaviour as such'*. In the next paragraphs, we will discuss our findings in view of this micro-macro explanation.

Boundary-crossing ties of nursing staff with relatives/acquaintances of residents were investigated using a question based on the small-world problem. Although the accuracy of small world chains by respondents is questioned (Killworth et al., 2006) and the response in our study was limited, the results indicate that this type of question is suited to gain insight in indirect ties of nursing staff with residents who are extremely vulnerable. Our definition of boundary-crossing ties was closely linked to the concept of embeddedness as described by Granovetter (1985, 2005), and Uzzi (1997). We proposed two mechanisms through which boundary-crossing ties affect treatment of residents on the macro-level: 1) contacts provide information, and 2) boundary-crossing ties enhance trust and provide opportunities for control. In this study a positive relationship was found between the existence of boundary-crossing ties and the treatment of residents in dementia units. However, due to our study design we cannot unravel if this result is due to information-exchange or to the trust/control mechanism. Yet, the findings of this study indicate that when a boundary-crossing tie exists a staff member is more likely to treat all residents of the unit better, not only the resident with whom the boundary-crossing tie exists. This may be ascribed to the fact that the boundary-crossing ties in our study indeed can be seen as a measure of social embeddedness of staff and residents in the community, which decreases the inclination of staff to act in self-

interest at the cost of residents. For this mechanism, we focused on the behaviour of nursing staff and not on the behaviour of residents as they, due to their dementia, are the most vulnerable party in the exchange relationship and are not able to maintain their social networks themselves. Although we found a positive relationship between boundary-crossing ties and the treatment of residents by nursing staff, our findings must be seen as a first attempt to unravel how embedded ties may influence quality of care in healthcare settings. For instance, in our study no attention was paid to the fact that information about untrustworthy behaviour of relatives and acquaintances of residents may also find its way to the dementia unit and may affect the behaviour of nursing staff towards particular residents. Furthermore, we have no information of values and norms that are shared between staff members, residents, and third parties outside the organization. Baker and Faulkner (2009) name this cultural embeddedness, and they use the term 'double embeddedness' to include both structural (social) and cultural embeddedness. Our research is also closely linked to the concept of job embeddedness as constructed by Mitchell et al. (2001) to explain employee turnover. Job embeddedness not only incorporates connections to colleagues and organizations, but also includes connections of employees with the community and people in the community (Mitchell et al., 2001). All in all, the findings implicate that it may be beneficial for long-term care facilities to employ nursing staff who have ties with relatives and acquaintances of residents outside the organization, as this positively affects the treatment of residents. This may be achieved by recruiting staff from the community where residents originate from.

On the micro-level, we found a relationship between networks, organizational identification and work motivation. The results show that the communication network between nursing staff of a unit is important for organizational identification, especially when few or no boundary-crossing ties exist. No main effect for boundary-crossing networks at the individual-level was found. We have no explanation for this finding. We hypothesized that relatives and acquaintances of residents would regard nursing staff as representatives of the facility, which would make their group-membership to the facility salient. Yet, our results indicate that organizational identification is not so much the product of the salience of individual group-membership, but is shaped by closely-knit communication ties with other staff members at unit-level in combination with the existence of boundary-crossing networks at the individual-level. This finding does not correspond with earlier

findings of Bartels et al. (2007) who found that internal communication patterns were especially important for identification with the lower levels of the organization and external prestige was important for identification with the organization as a whole. Perhaps our findings are a result of our view on group-membership. Implicitly, we assumed that nursing staff would also regard residents as members of the facility. Yet, when nursing staff do not regard residents as members of the same group, contacts with residents will make staff's membership to the organization salient all the time and contacts with outsiders will become less important. This may explain why no main effect for boundary-crossing ties on organizational identification was found. It may also explain why especially communication ties with staff members seem to be important for identification with the facility, as only staff members are seen as the fellow members of the group.

Two more aspects of our study need to be discussed. First, we investigated the existence of boundary-crossing and communication ties of nursing staff and not the strength of these ties. It may be expected that very strong ties may hinder the treatment of residents. For instance, in our observations, we incidentally noted that strong ties may also result in nursing staff talking to each other during care, instead of interacting with residents. When ties with relatives are strong, this may lead to less criticism and an unwillingness of relatives to impose sanctions. This is the weakness of strong ties that Flache and Macy (1996) addressed in their study. Although, we found no indication for a negative relationship between the density of communication ties and the treatment of residents, such a negative relationship may exist if the ties are particularly strong. It is important that further research focuses on this possible adverse effect of strong ties.

Second, we based our study on the assumption that a good treatment of residents is an overall aim of the facility. Thus, we expected that resident-oriented behaviour of staff coincides with formal group-norms. Moments of observation, especially morning care and dinner-time, were specifically chosen because some interaction with residents was part of the job. In this regard, non-compliance with organizational norms was not a subject of this investigation. Yet, it would be interesting to study how behaviour of nursing staff towards residents is influenced by group-norms and under which conditions nursing staff will turn against organizational rules. Implicitly, our results emphasize an important point: to be able to provide good care to residents with dementia in

long-term care it is important that organizational norms and protocols focus on the interaction with residents.

The results show that social networks of nursing staff play an important role in care processes in long-term dementia care. The findings indicate that care may be improved by facilitating contacts between nursing staff and relatives of residents with dementia in the community. Although we did not look at the actual presence of relatives in the unit, our results tie in with other studies that underline the importance of contacts with relatives of residents in long-term care (for instance Fisher et al., 2008). Furthermore, care may be improved by facilitating informal communication among staff members, especially when no or few contacts between nursing staff and relatives of residents exist. Recent studies (Schnelle et al., 2004; Kim et al. 2009) have demonstrated that higher staffing levels are related to better quality of care in nursing homes. Although it is difficult for long-term care facilities to increase manpower because of costs, results of this study indicate that care may also be improved by changing extra- and intra-organizational communication patterns. Further research is needed to study how social networks of nursing staff affect other aspects of care.

5

Nursing staff communication in long-term care and challenging behaviour of residents with dementia: the importance of social support

This article is submitted as:

Van Beek APA, Gerritsen DL, Spreeuwenberg PPM, Wagner C, Frijters DHM, Ribbe MW, Groenewegen PP. Nursing staff communication in long-term care and challenging behaviour of residents with dementia: the importance of social support.

Abstract

Challenging behaviour is frequently reported for elderly residents with dementia in long-term care. Cohesive communication networks of nursing staff may decrease challenging behaviour of residents, as they facilitate information-exchange between staff members and increase experienced social support. In this study, we examine the relationships between communication networks of nursing staff, experienced social support, supportive staff culture, and challenging behaviour of residents of dementia units.

Nursing staff (N=474) of 37 long-term care units completed surveys about their communication ties with colleagues of the dementia unit and their experienced social support from colleagues and the unit supervisor. Challenging behaviour was measured for 502 residents of the same units. Data was analysed using multilevel analysis.

Analyses showed that communication networks of nursing staff were not directly related to challenging behaviour of residents. Yet, more cohesive communication networks of nursing staff were positively related to experienced social support from colleagues. Furthermore, in units with a more supportive staff culture less challenging behaviour of residents was reported.

The results indicate that cohesive communication networks of nursing staff are important for reducing challenging behaviour of residents with dementia, because they enhance social support. Based on these findings practical implications are reported.

5.1 Background

Problems in behaviour, or challenging behaviour, are frequently reported for elderly residents in long-term care (Cohen-Mansfield and Mintzer, 2005; Zuidema et al., 2007), and are considered a burden for both residents and nursing staff (Zuidema et al., 2007). Challenging behaviour is particularly found in residents with dementia (Wetzels et al., 2010) and is associated with a higher job strain of nursing staff of dementia units (Edvardsson et al., 2008).

Over the years, several studies have investigated aspects of staff behaviour with regard to challenging behaviour of residents with dementia (see for instance Van Weert et al., 2004; Teri et al., 2009) and have shown that staff training and staff supervision may diminish behaviour-related aspects of dementia care, such as antipsychotic use in nursing home residents (Fossey et al., 2006). Most of these studies focus on improving communication of nursing staff with residents; less attention is paid to the communication between staff members. Yet, increased communication between nursing staff has been found to improve resident outcomes such as mobility (Anderson et al., 2003), and especially open communication patterns seem to be beneficial in long-term care (Colón-Emeric et al., 2006).

In this study, we investigate the relationship between communication of nursing staff and challenging behaviour of residents with dementia, using a social network approach. For this, we look at informal communication networks of nursing staff as defined by Krackhardt and Hanson (1993). Krackhardt and Hanson distinguished three types of informal social networks in organizations: communication, advice and trust networks. Communication networks are the informal networks of employees who talk about work-related matters on a regular basis. The advice network is formed by the prominent players in an organization; the trust network shows which employees share delicate information and back one another in a crisis (Krackhardt and Hanson, 1993).

Networks are often described by the number of interpersonal ties: density, which can be seen as a measure of social cohesion (Friedkin, 2004). Cohesion of social networks is important for information-exchange. Research on social networks has focused especially on the functionality of weak ties (Granovetter, 1973) or structural holes (Burt, 1992) in networks. Sparse networks seem to be especially efficient for information-exchange in more competitive work-settings. Tasks that depend on cooperation on the other hand seem to profit from more

closely-knit networks (Flap and Völker, 2001). We expect that cohesive networks of staff in dementia care facilitate information-exchange between staff members on how to best approach residents, which may result in less challenging behaviour of residents in dementia units.

Cohesive networks are also important for outcomes of staff. For instance, cohesive groups of nursing staff have been found to be related to higher job satisfaction and quality of care (Leppa, 1996), and lower anticipated turnover (Shader et al., 2001). In addition, cohesive networks are linked to more social support: close-knit networks exchange more affective and instrumental support (Heaney and Israel, 2008).

In turn, social support of nursing staff has been related to challenging behaviour of residents. Chappell and Novak (1992) first proposed that social support of nursing staff may be important for staff to cope with challenging behaviour of residents. They hypothesized that social support may act as a buffer between behavioural problems of residents and the psychological well-being of nursing staff. However, up to now no relationship between social support and behaviour of residents has been found (Chappell and Novak, 1992; Cole et al., 2000). This may be a result of the operationalization of social support as an experience of individual staff members. Yet, social support can also be identified on the organizational level. Wallach (1983) specifies supportive culture - apart from bureaucratic and innovative culture - as one dimension of organizational culture. Supportive cultures can be described as i.a. open, harmonious, trusting, safe, collaborative and can be compared with an extended family (Erkutlu, 2010). Applying Wallach's classification, Lok and Crawford (1999) additionally differentiated between the supportive culture of the organization and the supportive culture of the unit. They found that especially the supportive culture of the units was related to the organizational commitment of nurses in hospitals (Lok and Crawford, 1999). The supportive staff culture of the unit - that part of social support that is felt by all staff members of the unit and that exceeds the social support of individual staff members - could be what is important for dealing with challenging behaviour. For example, Van Beek and Gerritsen (2010), in their study of dementia units in nursing homes, found that a clan culture of nursing staff was related to a better quality of care for residents. In this study, we investigate if supportive staff culture of dementia units is related to challenging behaviour of residents.

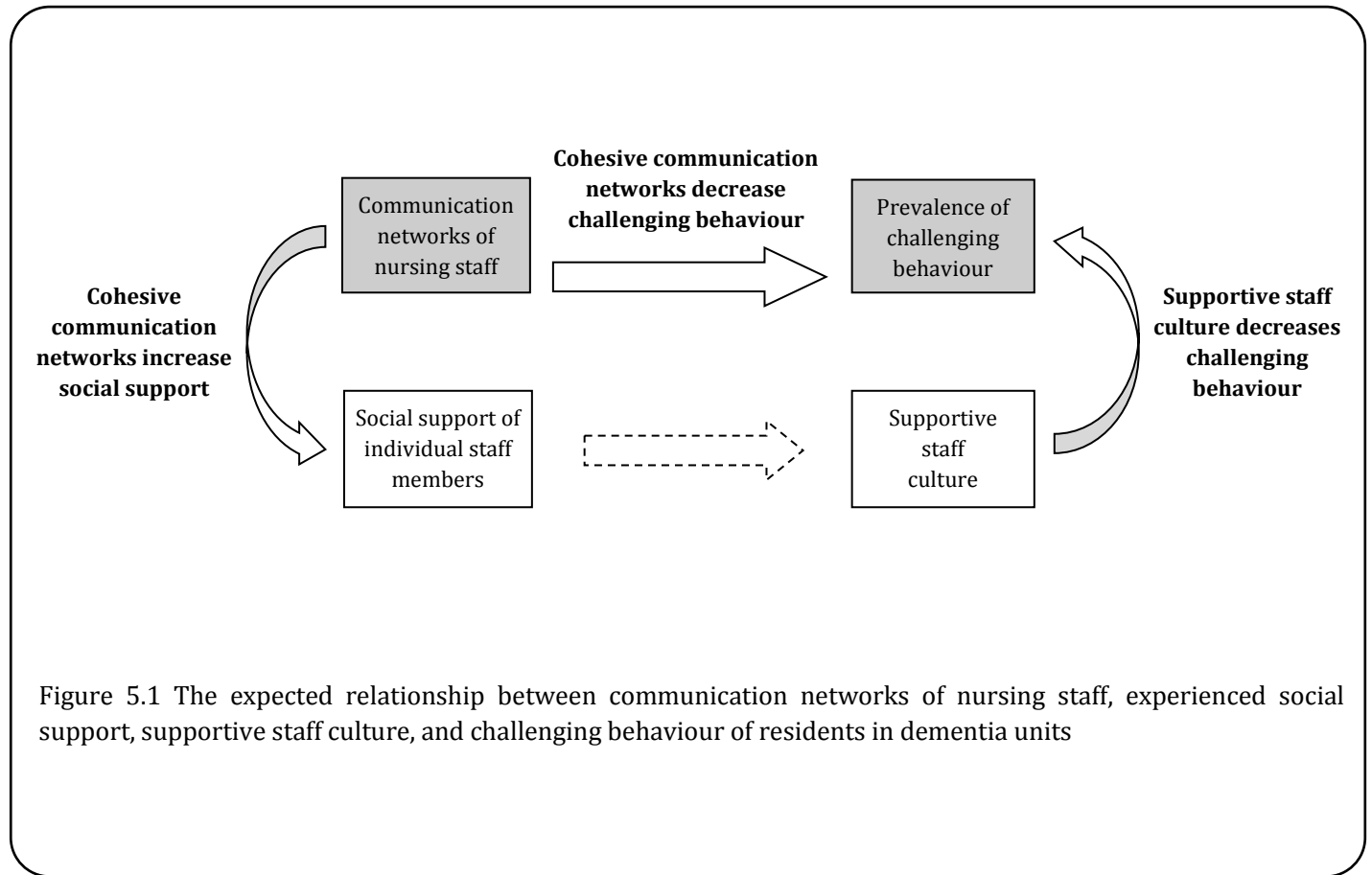


Figure 5.1 The expected relationship between communication networks of nursing staff, experienced social support, supportive staff culture, and challenging behaviour of residents in dementia units

In summary, this study examines the relationship between communication networks of nursing staff, social support, supportive staff culture, and challenging behaviour of residents with dementia. The structure of our study is presented in Figure 5.1. We study the relationship between communication networks of nursing staff and challenging behaviour of residents in dementia units. Apart from investigating a possible direct relationship between cohesive communication networks and challenging behaviour through information-exchange, we look at a possible indirect relationship between communication networks and challenging behaviour through social support. We propose that cohesive communication networks increase the social support of staff members. From this social support, we construct a measure of the supportive staff culture of the unit. We expect that this supportive culture is related to challenging behaviour of residents.

The following hypotheses are investigated:

Hypothesis 1: *In units with more cohesive communication networks of nursing staff, less challenging behaviour of residents is reported.*

Hypothesis 2: *Nursing staff in units with dense communication networks experience more social support.*

Hypothesis 3: *In units with a more supportive culture, less challenging behaviour of residents is reported.*

5.2 Method

This study was guided by a cross-sectional design. Data were collected in 37 long-term care dementia units in the Netherlands. Each unit was visited by two researchers during three days. During these days, questionnaires were distributed among all members of nursing staff of the units and outcomes of residents were recorded with the Resident Assessment Instrument (RAI) Minimum Data Set (MDS) 2.0 for nursing home care (Morris et al., 1999). The MDS measures a wide array of resident characteristics in nursing homes with which several outcomes for residents and quality indicators can be computed (Mor et al., 2003). Data on the MDS were collected through interviews with Licensed

Practical Nurses (LPN) and Certified Nursing Assistants (CNAs) who knew the residents well and provided care to these residents.

According to Dutch regulation no approval of an ethics committee for this study was necessary, as no intervention was investigated and data were not directly collected from residents. The study was undertaken in accordance with the declaration of Helsinki. We asked written informed consent from legal representatives of all residents on the units prior to data collection. Only those residents, for whom written informed consent was given, were included in the study. In addition, client councils of the participating facilities were informed of the study in advance and anonymity and confidentiality for residents and nursing staff were guaranteed.

Setting

In the Netherlands, long-term dementia care is provided in psychogeriatric units in nursing homes and residential homes (Hoek et al., 2000). Residents who live in these psychogeriatric units receive multidisciplinary care and often share bedrooms. In addition, residential homes provide dementia care in psychogeriatric group projects. These group projects also provide multidisciplinary care and aim to delay or prevent admission of residents to a nursing home. Residents who attend group projects live in their own apartments in the facility, but spend most of their day in a small group setting (Dijkstra et al., 1993). For this study, a convenience sample of facilities was recruited in four regions in the Netherlands; data were collected in one unit in each facility. Participating units consisted of 26 psychogeriatric units, 16 units in nursing homes and 10 units in residential homes. In addition, 11 group projects in residential homes participated. Group projects provided care to an average of 12 residents compared to 28 residents in psychogeriatric units in nursing homes.

Communication networks of nursing staff

To measure communication networks, we individualized the questionnaire for each dementia unit by presenting the names of all nursing staff in this unit. We asked nursing staff to answer the following question: *'Please report for each colleague how often you speak to him or her about your work or things that happen at work'*. The frequency of contacts was presented in categories varying between a few times a day (5) to less than two times a month or never (0).

Following Kossinets (2006), a tie between two members (dyads) was coded when at least one of the respondents indicated a relation with the

other. As nursing staff of dementia units in the Netherlands often meet formally every two weeks, to measure informal communication, responses of nursing staff were dichotomized into frequent (at least once a week; scores 5-2) and rare (twice a month or less; scores 0-1). We then computed the density of the networks, which describes the extent to which persons are tied to each other (West et al., 1999), and is the sum of the present ties divided by the total number of possible ties. Density is seen as a measure of cohesion and has a value between 0 and 1. A density of 1 represents a saturated network: all members of nursing staff communicate with each other. With a density of 0 none of the nursing staff communicate with each other (Hanneman and Riddle, 2005). Analyses on the communication networks were performed with the UCINET software package (Borgatti et al., 2006).

Social support of nursing staff

Social support of nursing staff was measured with a questionnaire for all members of nursing staff with 10 items (De Jonge, 1996). This social support scale distinguishes support from colleagues and support from the unit supervisor with two subscales. Each subscale consists of five questions. Questions address the relationship with colleagues and the unit supervisor, occurrence of conflicts, discussion of problems, exchanges of appreciation and the extent to which one can count on others when difficulties arise (see Table 5.1 for a description of the items). Scores vary between 1 (most negative) to 4 (most positive). Item 3 was recoded so that a higher score on all items represents more social support. Cronbach's alpha of the subscale 'social support from colleagues' in this study was 0.68, for the subscale 'social support from the unit supervisor' it was 0.76.

From the items of 'social support from colleagues' we constructed a measure for the supportive staff culture of the units. Thereto, we followed the procedure that is known as Ecometrics (Raudenbush and Sampson, 1999; Mohnen et al., 2011) in which dependencies between items and respondents are controlled for. We estimated supportive culture using a three-level multiple-response model in MLwiN (Rasbash et al., 2004), with the individual items of the subscale 'support from colleagues' at the lowest level, individual members of nursing staff at the second level and dementia units at the third level. We identified the variance of the social support from colleagues on the level of the units -the part that is not dependent on individual response patterns of nursing staff on the support questions. To this, we added the

overall mean of the subscale ‘social support from colleagues’ of the 37 units and used the resulting variable - with a scale of 1 to 4 - as a measure of the supportive staff culture of the units. This way, we were able to study social support as a collective unit-characteristics, i.e. supportive staff culture, instead of a characteristic of individual members of nursing staff.

Table 5.1 Items of social support from the unit supervisor and colleagues that were answered on a scale of 1 to 4

Social support from unit supervisor	Social support from colleagues
1. How is the relationship with your direct supervisor in general?	1. How is the relationship with your colleagues in general?
2. When there are problems at work, can you talk about it with your direct supervisor?	2. When there are problems at work, can you talk about it with your colleagues?
3. How often do you have conflicts with your supervisor?*	3. How often do you have conflicts with your colleagues?*
4. To what extent can you count on your direct supervisor when work gets more difficult?	4. To what extent can you count on your colleagues when work gets more difficult?
5. Do you feel appreciated in your work by your direct supervisor?	5. Do you feel appreciated in your work by your colleagues?

* recoded so that a higher score represents more social support

Challenging behaviour of residents

Challenging behaviour of residents was measured with the Challenging Behaviour Profile for long-term care (CBP; Gerritsen et al., 2008) of the RAI MDS. The CBP scale consists of 16 items, which measure several behaviours of residents in the last seven days. The items can be divided in four subscales: conflict, withdrawal, agitation and attention seeking. In addition, a total score can be computed with a range from 0 (no challenging behaviour occurred in the last 7 days) to 26 (challenging behaviour was frequent). Cronbach’s alpha of the total CBP scale in our study was 0.71.

Challenging behaviour may be influenced by other resident characteristics. For this reason, data were collected for the following resident characteristics: age, gender, having a partner, physical, and cognitive functioning. Cognitive functioning was measured using the MDS Cognitive Performance Scale (CPS). The CPS consists of five items.

Scores on the CPS range from 0 (intact) to 6 (very severe impairment; Morris et al., 1994). Problems in physical functioning were measured using the ADL (Activities of Daily Living) hierarchy index of the MDS. The index ranges from minor oversight (0) to major dependent (6) (Morris et al., 1999).

Data analysis

First, the correlation (Pearson's correlation coefficient) between density of communication networks of nursing staff and challenging behaviour of residents at the level of units was studied (Hypothesis 1).

Second, we looked into the role of social support. Therefore, data were analysed using multilevel regression analysis (Leyland and Groenewegen, 2003; Snijders and Bosker, 1999) in MLwiN (Rasbasch et al., 2004). In these analyses we first studied the relationship between communication networks of nursing staff and social support from colleagues and the unit supervisor. Thereto, two separate models were analysed. Each had two levels: units (Level 2) and nursing staff in these units (Level 1). Characteristics of nursing staff and the number of nursing staff were entered into both analyses to account for a possible relation between these characteristics and experienced social support. Characteristics of nursing staff included age, gender, tenure, position and years in the unit.

Next, the relationship between supportive staff culture and challenging behaviour of residents of dementia units was studied. We used the total score on challenging behaviour - as measured with the CBP - as main dependent variable. Again two levels were identified: units (Level 2) and residents in these units (Level 1). We first controlled for characteristics of residents: age, gender, having a partner, problems in physical functioning and problems in cognitive functioning. We then entered the following characteristics of the units into the model: type of care setting, and number of residents. Only characteristics on unit-level that were significant related to challenging behaviour, were included in the final analysis in which we entered supportive staff culture to our model. As we also studied if communication networks of staff were directly related to challenging behaviour or residents, we simultaneously entered the density of communication networks into this final analysis.

5.3 Results

Characteristics of nursing staff, communication networks and social support

A total of 474 nursing staff completed the questionnaire. This is 55% of all 861 nursing staff on the units. Almost half of all respondents were CNAs (46%). Other respondents were care assistants, trainees, nurses and recreational therapists. The majority of the responding staff members were women (95%), with an average age of 38 years (sd=10.6). Nursing staff mostly worked part-time (77%) and the vast majority held a permanent position (89%). Nursing staff worked on average between 4 and 5 years in the units, varying between one month and 28 years.

The question on communication networks was answered by 380 staff members. Two units were excluded for analyses due to a response rate of less than 15%. The response percentage of the remaining 35 units varied between 18% and 100% per unit with an average response rate of 53%. In psychogeriatric units in nursing homes and residential homes the average response rate was 45%. In group projects the average response rate was 71%. Response rates were negatively related to the size of the units. In units with more nursing staff, response rates on the question about communication networks were lower (correlation between the number of nursing staff and the response rate on communication networks was -0.61 , $p < 0.001$). The average density of the communication networks for all units was 0.52, varying between 0.22 and 1.0 between the units. Density of communication networks was also significantly related to the number of nursing staff in the unit (0.70 , $p < 0.01$).

For the 35 units, average experienced social support by staff members was 3.3 (sd=0.34) for the social support from colleagues, and 3.4 (sd=0.41) for the support from the unit supervisor. The average for the supportive staff culture of the unit was 3.3 (sd=0.09) varying between 3.14 and 3.46 between the dementia units.

Characteristics of residents and challenging behaviour

Data were collected for 502 residents for whom informed consent was given; this was 64% of the 792 residents who lived on the units at the time of data collection. Of these residents, 249 lived in nursing homes and 253 residents lived in residential homes. The average age of

residents was 85 years, ranging between 54 and 105. The majority of residents (80%) were women. Overall, the score of the CPS was 3.8 (sd=1.51); the score on the ADL hierarchy scale was 3.0 (sd=1.92).

Of the 16 items of the Challenging Behavior Profile, several behaviours were reported more frequently than others by nursing staff in our resident-sample. Almost one third of the residents resisted care in the week prior to data collection (31%), for 45% of the residents repetitive physical movements were reported and 61% of residents suffered from periods of restlessness. Repetitive verbalizations (8%), repetitive anxious complaints/concerns (13%) and conflicts with or repeated criticism of staff (15%) were less often reported. On average, the 502 residents scored 5.7 on the CBP (sd=4.48). Challenging behaviour was highest for residents in psychogeriatric units in residential homes compared to residents in psychogeriatric units in nursing homes and residents in group projects ($p<0.01$).

No relationship was found between density of communication networks and challenging behaviour of residents (correlation was -0.12, $p=0.51$). Hypothesis 1 was not supported.

Communication networks and social support of nursing staff

Table 5.2 presents the relationship between characteristics of nursing staff, the number of nursing staff, density of communication networks and experienced social support by staff members of the 35 units. Experienced social support from colleagues and the unit supervisor varied significantly between staff members. There was also significant variance between units (as presented by the variance components in Empty model, Table 5.2). Of the variance 11% (support from colleagues) and 17% (support from supervisor) could be ascribed to differences on the level of the units (as presented by the Intra Class Correlation in Empty model, Table 5.2). Social support from colleagues and the unit supervisor was significantly related to tenure of nursing staff: nursing staff with a temporary position received more social support from colleagues and their unit supervisor (see Model 1, Table 5.2).

Table 5.2 The relationship between the density of communication networks of nursing staff (N= 437) and social support from colleagues and the supervisor of the units (N=35)/Linear multilevel regression analyses

	Social support from colleagues		Social support from unit supervisor	
	Empty model B (SE)	Model 1 B (SE)	Empty model B (SE)	Model 1 B (SE)
Intercept	3.324 (0.025)	3.321 (0.020)	3.374 (0.034)	3.370 (0.034)
Individual staff level:				
Age		-0.003 (0.002)		0.002 (0.002)
Female (ref: male)		-0.003 (0.081)		-0.026 (0.094)
Full-time (ref: part-time)		-0.001 (0.040)		-0.130 (0.047)
Permanent position (ref: temporary position)		-0.140 (0.051)		-0.159 (0.061)
Years on unit		0.000 (0.003)		0.002 (0.004)
Unit level:				
Number of nursing staff		0.003 (0.003)		0.002 (0.004)
Density of communication networks		0.617 (0.155)		0.440 (0.250)
Variance components :				
Units	0.013 (0.005)	0.005 (0.003)	0.028 (0.010)	0.026 (0.009)
Nursing staff	0.102 (0.007)	0.099 (0.007)	0.137 (0.010)	0.132 (0.009)
ICC units	11%	5%	17%	17%

bold font indicates a significant association at p<0.05

In addition, nursing staff who worked part-time also experienced more support from the unit supervisor. The number of staff members in the unit was not related to experienced social support. Density of communication networks was positively related to the support from colleagues (p<0.05); on units with more cohesive communication networks, nursing staff received more social support from colleagues.

We found no significant positive relationship between cohesive communication networks and social support from the unit supervisor. When we added characteristics of nursing staff, the number of nursing staff and density of communication networks to the model, variance between units for support from colleagues ceased to be significant. The variance between units for support from the unit supervisor remained significant (see variance components in Model 1, Table 5.2). The results partially support Hypothesis 2.

Relationship between supportive staff culture and challenging behaviour of residents

To study the relationship between supportive staff culture and challenging behaviour of residents, the amount of challenging behaviour was taken as the main dependent variable. In Table 5.3 the results are presented. The amount of challenging behaviour varied especially between residents. There was less variation between the units ($p < 0.10$; see variance components for the Empty model, Table 5.3). Of the variance 6% could be ascribed to differences on the level of the units (as presented by the Intra Class Correlation in Empty model, Table 5.3).

First, resident characteristics and characteristics of the units were entered into the model (Table 5.3, Model 1). Residents with a partner showed more challenging behaviour compared to residents without a partner. No other resident characteristics were significantly related to challenging behaviour in our sample. The number of residents in the units was not related to the occurrence of challenging behaviour (not in Table). Yet, more challenging behaviour was reported in psychogeriatric units of residential homes compared to psychogeriatric units in nursing homes or group project in residential homes (see Table 5.3, Model 1).

We then entered supportive staff culture and the density of communication networks into the analyses on the level of the units. Supportive staff culture was negatively related to challenging behaviour of residents; in units where nursing staff experienced more social support less challenging behaviour of residents was reported. Density of communication networks was not related to challenging behaviour of residents. These results support Hypothesis 3. Again no support for Hypothesis 1 was found.

Table 5.3 The relationship between challenging behaviour of residents (N=476), communication networks and the supportive culture in the units (N=35)

	Empty model B (SE)	Model 1 B (SE)
Intercept	5.694 (0.276)	5.384 (0.537)
Characteristics of residents:		
Age		0.006 (0.028)
Female (ref: male)		-0.590 (0.533)
Problems in physical functioning		-0.035 (0.137)
Problems in cognitive functioning		0.903 (0.637)
Problems in cognitive functioning-2 (quadratic)		-0.107(0.091)
Having a partner (ref: having no partner)		1.506 (0.489)
Psychogeriatric unit residential home (ref: psychogeriatric unit nursing home or group unit in residential home)		
		1.367 (0.512)
Density of communication networks		1.919 (1.314)
Supportive staff culture		-8.065 (3.073)
Variance components:		
Units	1.224 (0.637)	0.302 (0.400)
Residents	18.954 (1.275)	18.381 (1.236)
ICC units	6%	2%

bold font indicates a significant association at $p < 0.05$

5.4 Discussion

The aim of this study was to investigate the relationship between communication networks of nursing staff and challenging behaviour of residents with dementia. We proposed two mechanisms through which networks influence challenging behaviour: 1) directly through information-exchange, and 2) indirectly through social support.

We expected that more cohesive communication networks of nursing staff increase experienced social support. Based on this experienced social support of individual staff members, we identified the supportive staff culture of the unit: that part of social support that is felt by all staff members. We expected this supportive staff culture of the unit to be

related to challenging behaviour of residents. Our results showed that cohesive communication networks of nursing staff were not directly related to challenging behaviour of residents. Yet, we found support for an indirect relationship. Cohesive communication networks were positively related to the support staff received from colleagues. In addition, in units with a more supportive staff culture, less challenging behaviour of residents was reported.

This study also shows which characteristics of staff members, residents and units are related to social support of nursing staff and challenging behaviour of residents. Nursing staff with a permanent position received less social support from colleagues and their unit supervisor. In addition, nursing staff that worked full-time also received less support from their supervisor. It is not clear how these differences can be explained. Perhaps these staff members needed less support as they felt more secure in their job. However, the results may also be interpreted negatively: it may be that staff members with a permanent position who work full-time especially feel the emotional demands of providing care to residents with dementia, and therefore have a need for more social support.

Residents with a partner displayed more challenging behaviour in our sample. This finding may have different causes. Residents of psychogeriatric units often live separated from their partner, which may lead to behavioural problems. However, an explanation can also be found in the initial reason for admission to the unit. Residents with dementia living at home with a spouse or partner are often institutionalized for behaviour-related problems as these lead to increased caregiver burden (Gaugler et al., 2000). In contrast to other studies (see for instance Vance et al., 2003) we found no relationship between cognitive impairment of residents and challenging behaviour. Possibly this is due to the fact that the vast majority of the residents in our sample - in contrast to the study of Vance et al., (2003) - showed considerable cognitive impairment.

This study has several limitations. First, we used a cross-sectional design in which communication networks, support of nursing staff and challenging behaviour of residents were collected at one moment. Therefore, it is not possible to see changes over time and causal relationships cannot be established. For this reason, all hypotheses were tested two-sidedly, although it may be expected that communication

networks will affect social support of nursing staff and not the other way around.

Second, it was not possible to obtain complete data of the communication networks in the units. The average response rate of nursing staff on the communication question was 53% for 35 units, varying between 18% and 100%. The missing data may have influenced the results. Kossinets (2006) argues that non-response in social network surveys can be partially balanced out by reciprocal nominations of actors. If actor A does not fill in the network questionnaire but actors B and C of the same network described their interactions with A, information on the social networks of actor A is still available. In this study, this principle was followed. Data was symmetrised, coding a tie between two members of nursing staff when at least one staff member indicated a tie with this colleague. In this manner information was gained about the communication networks of those who did not complete the questionnaire.

Third, the power of our multilevel analyses was restricted to 35 units at the highest level of analyses and, hence, only a limited amount of unit variables could be taken into account. In our analyses we corrected for the size of the unit, as this was related to the density of communication networks, and the type of care setting. Yet, other characteristics of units may also be relevant in studying social networks and resident outcomes in dementia care. Although Pekkarinen et al. (2004) found that a larger unit size was related to both increased time pressure on nursing staff and reduced quality of life of residents, we found no relationship between size of the units (as measured with the number of residents) and challenging behaviour of residents. This finding is in line with a recent study on small-scale dementia care in the Netherlands, which found that smaller units do not have less challenging behaviour of residents (Verbeek et al., 2010). However, challenging behaviour in our sample was especially found in psychogeriatric units in residential homes in comparison to psychogeriatric units in nursing homes. This finding differs from findings of Moniz-Cook et al. (2000) who, also using multilevel analyses, found more challenging behaviour in nursing homes. It is yet unclear how this difference may be explained, but interestingly an answer may be found in the same study of Moniz-Cook et al. (2000). They found that qualified staff have greater difficulty in managing challenging behaviour than care assistants. Although in our study nursing staff of the units overall mostly consisted of CNA's, more care assistants in our sample worked in psychogeriatric units in nursing homes (27%) than in psychogeriatric units in residential homes (18%).

In this study, we found no support for our assumption that cohesive communication networks between staff directly affect challenging behaviour of residents through information-exchange (Hypothesis 1). Based on these findings however, we do not conclude that exchange of information is not important for (dealing with) challenging behaviour of residents in long-term care. Maybe it is not so much the informal information-exchange between staff members that is important, but the information-exchange of nursing staff with other disciplines in the facility, for instance with psychologists or elderly care physicians.

Furthermore, information-exchange with relatives may be important with regard to challenging behaviour, as relatives can provide unique information on the habits and background of residents with dementia that may help to better understand behaviour of residents. Unfortunately, these networks fell beyond the scope of the current study.

As proposed, a positive relationship was found between cohesive communication networks of nursing staff and experienced social support from colleagues. However no relationship was found with regard to the support from the unit supervisor (Hypothesis 2). We also found a positive relationship between supportive staff culture and challenging behaviour of residents (Hypothesis 3). Social support of nursing staff in healthcare settings has been associated with less work-related stress (McGilton et al., 2007), increased job-satisfaction (McGilton et al., 2007), less staff turnover (Van der Heijden et al., 2010), high job control and high job performance (Park et al., 2004). Our results show that social support of nursing staff is also important for outcomes of residents. Our findings may also explain why up to now no relationship between social support and challenging behaviour of residents was found. The relationship is not so much based on the differences in support that are experienced by individual staff members, but by that part of social support that experienced by all staff members of the unit: the supportive staff culture. Our findings furthermore affirm the assumption of Snijders (2006) that social networks can be seen as the intermediate variable between the social context and individual behaviours ('macro-micro connection') and are also important for the manner in which individual behaviours influence greater societal elements ('micro-macro connection').

Van der Heijden et al. (2010) advocate not to neglect possible positive effects of social support from close colleagues and supervisors, stressing the importance for healthcare organizations to find opportunities to enhance social support for staff members. Several practical implications may be drawn from this study. The findings clearly demonstrate that more social support can be achieved by enhancing informal communication ties between staff members by creating moments and places for staff members to meet each other. For instance, by providing more opportunities for staff members of the units to meet each other informally outside work hours. This may be realized by organizing informal activities for staff on a voluntary basis, but - for instance - also by giving a financial incentive to join a particular sports club outside work hours. These opportunities seem to be particularly important for staff members who work full-time and have a permanent position as our study showed that they experience less social support. More cohesive communication networks among staff will not directly decrease challenging behaviour of residents with dementia. Yet, the results indicate that care strategies for reducing challenging behaviour can be more successful when, apart from adequate behavioural assessments (Kovach et al., 2006) and staff education (Hagen and Sayers, 1995; Chrzescijanski et al., 2007), they also aim at increasing a supportive staff culture in the units.

6

Social networks of nursing staff and organizational performance in long-term dementia care

Van Beek APA, Hirdes JP, Flap H, Wagner C, Frijters DHM, Ribbe MW, Groenewegen PP. Social networks of nursing staff and organizational performance in long-term dementia care.

Abstract

This chapter investigates the relationship between social networks of nursing staff and organizational performance of long term care dementia units. We focus on different types of social networks: communication and advice networks between members of nursing staff, and networks between nursing staff and relatives/acquaintances of residents (boundary-crossing networks). Organizational performance is measured with three resident outcomes: frailty, depressive symptoms and social engagement of residents.

Data were collected in 37 long-term care units for residents with dementia in the Netherlands. Social networks of nursing staff were measured with a questionnaire. Outcomes for residents were collected with the Dutch version of the Resident Assessment Instrument (RAI) Minimum Data Set (MDS) for nursing home care. Results were analysed using multilevel analysis.

All three types of social networks were related to the social engagement of residents. In units with many ties between staff members in communication and advice networks, and many ties between nursing staff and family/acquaintances of residents, residents were more socially engaged. No relationship was found between networks of nursing staff and depressive symptoms and frailty of residents. Also no relationship was found between hierarchy in advice networks and resident outcomes.

This study is the first to link social networks of nursing staff to organizational performance in long-term care and shows that it is important to take network structures of staff into account when studying outcomes of care.

6.1 Introduction

Since the 1990's, there has been increasing attention for the role of social networks, or broader social capital, in explaining performance differences in organizations (Nohria and Eccles, 1992; Völker and Flap, 2005). For instance, studies on social networks and organizational performance have included elementary schools (Friedkin and Slater, 1994), business schools (Thompson, 2005), restaurants (Shaw et al., 2005), a call-center (Castilla, 2005), and combinations of organizations (Sparrowe et al., 2001). Yet, very little is known about the social networks of employees and organizational performance in healthcare settings. In this chapter, we study organizational performance in long-term dementia care by investigating the relationship between resident outcomes and the social networks of nursing staff.

According to Scott et al. (2000) healthcare organizations differ from the business sector in several ways. First, as a consequence of the uncertainty of provision of care, desired outcomes of care cannot be guaranteed and good quality of care is difficult to assess, especially for the patient. Second, the demand for care is not directly determined by the choices and needs of the patient, but often by an intermediate agent, such as a physician, who determines the type and amount of care that is required. Third, healthcare providers have a monopoly on the care they provide through which they can influence the price of care.

Performance in long-term care is in particular difficult to measure because of the vulnerability of its residents. Residents in long-term care have complex needs that frequently derive from multiple health problems. Especially elderly persons with dementia can often be typified by a deteriorating health status that cannot be reversed by good quality of care. As a consequence, performance in healthcare organizations was traditionally measured by process indicators (Donabedian, 1980; Wagner et al., 2001). Over the years, however, this emphasis on processes in long-term care has shifted to outcomes of care, with quality of life of residents as the main measure of performance (Sloane et al., 2005). Quality of life is seen as a multidimensional construct, which at least contains the physical health of residents, their psychological well-being and their social well-being (Gerritsen et al., 2004).

In this chapter, we address the following question:

‘To what extent do social networks of nursing staff explain differences in organizational performance of long-term care dementia units?’

Because of the difficulties to assess outcomes of care, and the frailty and vulnerability of residents with dementia, we expect that social networks of nursing staff are especially important in explaining performance differences. We measure organizational performance with three resident outcomes that are closely related to the three main dimensions of quality of life: frailty (as an aspect of physical health), depressive symptoms (as an aspect of psychological well-being) and social engagement (as an aspect of social well-being).

We investigate three different types of informal social networks of nursing staff. In line with Krackhardt and Hanson (1993), we distinguish between informal communication and advice networks of nursing staff in the units. According to their definition, communication networks consist of employees who talk about work-related matters on a regular basis. The advice network is formed by the prominent players in an organization, the employees on which others depend to solve problems and provide information (Krackhardt and Hanson, 1993)². In addition to these networks in the units, we investigate the informal networks between nursing staff and relatives and acquaintances of residents. These, we call boundary-crossing networks because they cross the boundary of the organization (Reagans and Zuckerman, 2001).

Hypotheses

Providing care to elderly with dementia requires patience, empathy, and knowledge on how to best approach a resident. Communication between staff members of units is essential for care processes as this provides information on how to best care for residents. Following Völker and Flap (2005), we expect that work performance will benefit from having many ties to colleagues in both communication and advice networks. Numerous contacts with other members of nursing staff at work provide information on how to best approach residents, which

² Krackhardt and Hanson (1993) also identify a third network: the trust network. This is the network showing which ‘participants share delicate political information and back one another in a crisis’. This type of network is not addressed in the present study.

residents need extra help, the preferences of residents, and their health status and behaviours. This information will positively influence the care for residents. Subsequently, we expect that care processes benefit from a hierarchical structure in the advice network. Because nursing staff in long-term care form an educationally diverse group, it may be unclear whom to ask for advice. When the hierarchy in the advice network is clear, members of nursing staff who want to gather information on residents can do so efficiently.

Hypothesis 1: *Nursing staff with many ties to colleagues in communication and advice networks, have more relevant information of residents, which will positively influence care processes of the dementia unit and, hence, outcomes of residents.*

Hypothesis 2: *Nursing staff with hierarchical advice networks with colleagues, will have more efficient access to relevant information, which will positively influence care processes of the dementia unit and outcomes of residents.*

Contacts between nursing staff and relatives of residents are also deemed important for care processes and outcomes for residents (Blustein and Latham-Bach, 2007). We expect that the existence of boundary-crossing networks directly affects behaviour of nursing staff, because relatives/acquaintances of residents (boundary-crossing ties) provide information on the background and habits of residents. In addition, these contacts give indirect opportunities for control. Third parties, such as family members, will regard the nursing staff as representatives of the unit. Negative reports on the quality of care hurt the reputation of nursing staff and boundary-crossing ties might be able to impose sanctions, as in general in socially embedded relationships (Buskens and Raub, 2002). Expectedly, boundary-crossing networks will particularly influence behaviour of nursing staff towards residents and will influence the compliance of nursing staff to everyday care procedures, such as reporting incidents in individual care-plans of residents and taking appropriate steps.

Hypothesis 3: *As contacts with relatives of residents provide information and may influence the reputation of staff members in the community, it is expected that in dementia units with more boundary-crossing networks the behaviour nursing staff towards residents is more positive, which will result in better resident outcomes.*

6.2 Methods

Setting

In the Netherlands, long-term dementia care is provided in psychogeriatric units in nursing homes and residential homes (Hoek et al., 2000). Residents who live in these psychogeriatric units receive multidisciplinary care and often share bedrooms. In addition, residential homes provide dementia care in psychogeriatric group projects. Group projects in residential homes aim to delay or prevent admission of residents to a nursing home. Residents who attend these group projects live in their own apartments in the facility, but spend most of their day in a small group-setting of approximately 10 to 12 residents (Dijkstra et al., 1993). Data were collected during October 2002 - June 2003 in 37 dementia units (one unit per facility). These units consisted of 26 psychogeriatric units and 11 psychogeriatric group projects. Facilities were asked to participate in the study on a voluntary basis. In our sample, the number of nursing staff in the units varied from 4 to 39 with an average of 23 staff members. The group projects provided care to an average of 12 residents compared to 28 residents of psychogeriatric units in nursing homes.

According to Dutch regulation no approval of an ethics committee for this study was necessary, as no intervention was investigated and data collection of resident outcomes was based on proxy-report and not collected directly from residents. We asked written informed consent from legal representatives of all residents prior to data collection. Only those residents for whom written informed consent was given were included in the study. In addition, client councils of the participating facilities were informed of the study in advance and anonymity and confidentiality for residents and nursing staff was guaranteed.

Measurement of social networks

Social networks were measured with a questionnaire for nursing staff of the units. To measure communication and advice networks, we individualized the questionnaire for each unit by presenting the names of all nursing staff.

For communication networks we asked staff to answer the following question: *'Please report for each colleague how often you speak to him or her about your work or things that happen at work'*. The frequency of contacts had a range between a few times a day (5) to less than two times a month/never (0). Responses of individual members of nursing staff were symmetrised (Hanneman and Riddle, 2005; Kossinets, 2006),

coding a tie between two members of nursing staff (dyads) when at least one of those two indicated a relation with the other. The answers were then dichotomized into at least once a week and rare (twice a month or less).

Advice networks were measured with the question: *'Sometimes, we all need advice on how to best do our job. Who comes to you for advice on this unit and how often?'*. For this question, the frequency of contacts also ranged between a few times a day (5) to less than two times a month/never (0). For the advice network we were interested in the direction of ties. Therefore, answers for this network were not symmetrised and, as we expected advice networks to be less frequent as compared to communication networks, answers were dichotomized into frequent (at least two times a month) and rare (less often or never).

Boundary-crossing networks between nursing staff and family or acquaintances of residents in the community were measured with a question based upon the six-degrees-of-separation experiment of Milgram (1967). We asked nursing staff if they knew residents in their units through others and how many steps (ties) existed between them and this resident: *'Please think randomly of a resident of this unit, for instance by choosing a resident whose surname starts with the same capital letter as yours. How many intervening steps of people you know are necessary to arrive at this resident?'*. We provided two examples to clarify the question.

Example 1: *'I did not know resident Y. before she was admitted to this unit. However, I went to secondary school with her daughter.'*

Example 2: *'My father knew resident X. when they were younger, they played billiards together. Resident X. visited my parents once in a while.'*

In both examples there is one intervening step between the resident and the staff member. For our analyses we were primarily interested in the presence of boundary-crossing networks between residents and nursing staff and less interested in the number of intervening steps. Therefore, answers were dichotomized for each member of nursing staff with a score of one representing a boundary-crossing network (regardless of the number of intervening steps) and a score of zero representing no boundary-crossing networks with residents.

Measurement of resident outcomes

Resident outcomes were collected with the Dutch version of the Resident Assessment Instrument (RAI) Minimum Data Set (MDS), version 2.0, for nursing home care (Morris et al., 1990). The MDS

measures a wide array of characteristics of residents in nursing homes with which several outcomes for residents and quality indicators can be computed (Morris et al., 1994).

We investigated the following outcomes for residents:

Depressive symptoms: Depressive symptoms were measured with the Depression Rating Scale (DRS). The DRS measures depressive symptoms of residents based on 7 items: negative statements, persistent anger, expressions of what seem to be unrealistic fears, repetitive health complaints, repetitive anxious complaints/concerns, sad/pained/worried facial expressions, crying/tearfulness. The scores of the DRS indicate depression and can vary from 0 (no depressive symptoms) to 14 (frequent depressive symptoms). The internal consistency (Cronbach's alpha) is 0.75 and its sensitivity against a psychiatric diagnosis of depression is 91% (Burrows et al., 2000).

Social engagement: Social engagement was measured with the Index of Social Engagement (ISE) which consists of 6 items that focus on the interaction with other residents, engagement in individual and group activities, goal-setting and involvement in the everyday life of the facility (Mor et al., 1995). The ISE adds the scores for all items (the score is 1 when the item is applicable) and has a range from 0 to 6. A higher score stands for higher social engagement.

Frailty: Frailty was measured by the Changes in Health, End-stage disease and Symptoms and Signs scale (CHESS). The CHESS measures instability in health and consists of 9 items that focus on deterioration in functioning, shortness of breath, dehydration, weight loss and end-stage disease. Scores range from 0 (no instability) to 5 (a high level of instability) (Hirdes et al., 2003).

Depressive symptoms, social engagement and frailty may be influenced by other characteristics of residents. For this reason we controlled for: age, sex, having a partner, and level of physical and cognitive functioning of residents. Having a partner was taken into account because earlier studies have found a relationship between marital status and depression (Wu and DeMaris, 1996). Problems in physical functioning were measured using the ADL (Activities of Daily Living) hierarchy index of the MDS (Morris et al., 1999; Gerritsen, 2004). The index ranges from minor oversight (0) to major dependent (6). Cognitive functioning was measured using the MDS Cognitive Performance Scale (CPS). Score on the CPS range from 0 (intact) to 6 (very severe impairment; Morris et al., 1994).

Data analysis

Communication and advice networks

Answers on communication and advice networks were analysed with the UCINET software package (Borgatti et al., 2006), which models the relationships of subjects in groups. We computed the density (or number of contacts) both for communication and advice networks. Density is a measure of the general level of cohesion of the network; it describes the extent to which actors are tied to each other (West et al., 1999). Density has a value between 0 and 1. A density of 1 represents a saturated network: all members of nursing staff interact with each other. With a density of 0 none of the nursing staff interacts (Hanneman and Riddle, 2005).

In addition, we analysed the hierarchy of advice networks on the units in UCINET. For this, we looked at the ties of nursing staff with the unit supervisor. In the Netherlands, the supervisor of the dementia unit usually has the highest level of education and is often a registered nurse. To measure hierarchy, we calculated the out-degree centrality of the advice network of the unit supervisor. Actors with high out-degree centrality are able to exchange with many others and are often found to be influential actors (Hanneman and Riddle, 2005). Out-degree centrality was based on the number of nursing staff who asked the unit supervisor for advice at least once a month (according to the unit supervisor).

To compare hierarchy across our networks which differed in size, we computed the standardized out-degree centrality by dividing the degree count by the number of actors in the network minus one (ego) (Hanneman and Riddle, 2005). Standardized out-degree-centrality thus varies between 0 (indicating no central position of the actor) to 100 (indicating a central position of the actor).

Social networks of nursing staff and resident outcomes

Subsequently, we investigated the relationship between social networks of nursing staff and resident outcomes using multilevel analyses (Snijders and Bosker, 1999; Leyland and Groenewegen, 2003) in MLwIN. Because the dependent variables, e.g. outcomes for residents in our study may be related, we analysed a random intercept multi-response model (Browne et al., 2007). This allowed us to look at frailty, depressive symptoms and social engagement separately while taking a possible relationship between the outcomes into account. The model consisted of three levels: units (Level 3), individual residents of these units (Level 2) and the relationship between the three different

outcomes within individual residents (Level 1). We analysed the model in several steps. After the empty model, we first studied characteristics of residents (Model 1) and studied how the outcomes of residents were clustered. Thereto, we calculated the ICC (intra class correlation) for the unit-level which is the unit-level variance divided by the total variance. This gives a relative measure of the influence of the unit on resident outcomes and indicates if the outcomes can be seen as a measure for organizational performance. Second, we entered characteristics of the units -number of nursing staff and type of care setting- into the analyses (Model 2). Third, we entered social networks of nursing staff into the analyses one by one (Model 3).

6.3 Results

Social networks of nursing staff

A total of 474 nursing staff completed the questionnaire. This was 55% of all 861 nursing staff on the units. The majority of nursing staff consisted of women (95%). Average age was 38 years (ranging between 16 and 63). Nursing staff mostly worked part-time (77%) and the vast majority held a permanent position (89%).

Results with regard to the social networks in the different types of care setting are presented in Table 6.1. The question on boundary-crossing networks was answered by 391 nursing staff on the 37 units (average response rate 45%). A boundary-crossing tie was mentioned by 44% of the nursing staff, varying between 0% and 100% of nursing staff on the units.

The question on communication networks was answered by 380 staff members. Due to a low response rate of less than 15% two units were excluded for analyses. The response percentage on the remaining 35 units varied between 18% and 100% per unit with an average response rate of 53%. The question on advice networks was answered by 347 staff members of these 35 units, the response rate between the units varied from 18% to 100% with an average rate of 50%.

Average density of the communication networks was 0.52, varying between 0.22 and 1.0 for the participating units. Advice networks were overall smaller and had an average density of 0.26, varying between 0.09 and 0.83.

Data on the hierarchy of advice networks were available for 25 units (as 25 supervisors of the units completed the questionnaire) and out-degree centrality was based on the nursing staff who asked their unit

supervisor for advice at least once a month. Centrality of unit supervisors varied between 15.2 and 100.0 between the units, with a mean of 77.8, indicating a relatively central position of the unit supervisor in the participating units.

Table 6.1 Social networks of nursing staff in the units, divided for the different types of care setting

	Psychogeriatric units in nursing homes (mean, sd)	Psychogeriatric units in residential homes (mean, sd)	Group projects in residential homes (mean, sd)
% of nursing staff with a boundary-crossing network	34.65 (22.1) N=16	47.67 (22.8) N=10	52.64 (35.2) N=11
Density of communication networks of nursing staff	0.44 (0.1) N=14	0.43 (0.2) N=10	0.69 (0.3) N=11
Density of advice networks of nursing staff	0.20 (0.1) N=14	0.22 (0.2) N=10	0.38 (0.2) N=11
Hierarchy of advice networks	71.78 (31.4) N=11	84.85 (15.9) N=8	79.30 (24.0) N=6

Resident outcomes as a measure for organizational performance

Informed consent was obtained for 502 residents; this was 64% of the 792 residents who lived in the units at the time of data collection. The average age of residents was 85 years, ranging between 54 and 105. The majority of residents (80%) were women. Overall, the score of the CPS was 3.8 (sd=1.51); the score on the ADL hierarchy scale was 3.0 (sd=1.92).

On average, the 502 residents scored 3.1 for social engagement, a score of 2.9 for depressive symptoms and 1.3 for frailty. Social engagement was highest in residential homes, both in psychogeriatric units (mean 3.5) as in group projects (mean 3.5), compared to psychogeriatric units in nursing homes (mean 2.6; p<0.01). Residents in psychogeriatric units in residential homes scored higher on depressive symptoms (mean 3.6) compared to residents in psychogeriatric units in nursing homes (mean 2.6), and residents in group projects (mean 2.8; p<0.01).

Table 6.2 Multilevel analyses: outcomes of residents (N=476), and the relationship with characteristics of residents and characteristics of the units (N=35)

	Model 1		Model 2			
	Depressive symptoms (0-14) B (SE)	Frailty (0-5) B (SE)	Social engagement (0-6) B (SE)	Depressive symptoms (0-14) B (SE)	Frailty (0-5) B (SE)	Social engagement (0-6) B (SE)
Intercept	2.928 (0.176)	1.300 (0.075)	3.113 (0.103)	2.696 (0.686)	1.497 (0.321)	3.091 (0.454)
Characteristics of residents:						
Age	-0.008 (0.016)	0.015 (0.007)	0.018 (0.010)	-0.008 (0.016)	0.015 (0.007)	0.018 (0.010)
Female (ref: male)	0.140 (0.295)	0.293 (0.135)	-0.037 (0.181)	0.140 (0.295)	0.293 (0.135)	-0.037 (0.181)
Partner (ref: no partner)	0.724 (0.276)	0.089 (0.125)	-0.175 (0.169)	0.724 (0.276)	0.089 (0.125)	-0.175 (0.169)
Problems in ADL	-0.028 (0.072)	0.082 (0.033)	-0.174 (0.044)	-0.028 (0.072)	0.082 (0.033)	-0.174 (0.044)
Problems in cognitive performance	-0.086 (0.089)	0.048 (0.041)	-0.369 (0.055)	-0.086 (0.089)	0.048 (0.041)	-0.369 (0.055)
Characteristics of units:						
Psychogeriatric unit in residential home ¹				1.083 (0.384)	0.165 (0.180)	0.300 (0.255)
Group project in residential home ¹				0.228 (0.558)	0.155 (0.261)	0.052 (0.368)
Number of nursing staff				-0.007 (0.022)	-0.012 (0.010)	-0.004 (0.014)
Variance components:						
Units	0.658 (0.258)	0.108 (0.047)	0.217 (0.089)	0.391 (0.193)	0.090 (0.042)	0.199 (0.089)
Residents	5.530 (0.372)	1.173 (0.079)	2.058 (0.139)	5.553 (0.373)	1.170 (0.079)	2.059 (0.139)
ICC Units	15%	22%	16%	9%	19%	11%

¹ ref: psychogeriatric unit in nursing home
bold font indicates a significant association at p<0.05

We found no differences between the types of care settings in the frailty of residents (mean 1.2 in psychogeriatric units in nursing homes, 1.3 in psychogeriatric units in residential homes and 1.5 for residents in group projects).

We then studied how the outcomes of residents were clustered in the 35 units of which information on the social networks of nursing staff was available. The relationship between the outcomes and characteristics of the 476 residents is presented in Table 6.2. For all three outcomes, we found significant differences between units after we controlled for resident characteristics. ICC's at unit-level ranged from 15% for depressive symptoms to 22% for frailty. We examined the correlation between the outcomes on resident level and unit-level. At resident-level correlations were small. Depressive symptoms were positively related to frailty (0.14) and negatively related to social engagement (-0.12). At unit-level the correlation between depressive symptoms and frailty was high (0.94); the correlation between depressive symptoms and social engagement remained small (0.09).

We found no relationship between the number of nursing staff in the units and resident outcomes.

The type of care setting was related only to depressive symptoms of residents; residents of psychogeriatric units in residential homes experienced more depressive symptoms compared to residents in psychogeriatric units in nursing homes. We found no such relationship for frailty and the social engagement of residents (Table 6.2).

Social networks and resident outcomes

In Table 6.3, the relationship between residents' outcomes and the social networks of nursing staff are presented, after we corrected for characteristics of residents and characteristics of the units. To study the relationship between each type of social network and our organizational performance measures, we entered the different types of networks separately in the analyses. We found no significant relationship between communication networks, advice networks, and boundary-crossing networks of nursing staff, and the occurrence of depressive symptoms or frailty of residents. Yet, all three types of networks were related to the social engagement of residents. In units with more ties in boundary-crossing networks, communication networks, and advice networks, residents were more socially engaged. After we added the social networks into the model, we still found significant variance between the

units (not in Table). We found no relationship between the hierarchy on the units and any of the resident outcomes in our study.

Table 6.3 Multilevel analyses: the relationship between outcomes of residents (N=476) and the different social networks of nursing staff of the units (N=35), after we corrected for characteristics of residents, number of nursing staff and type of care setting. Relations between the type of networks and resident outcomes were analysed in separate multi-response models

	Outcomes for residents		
	Depressive symptoms (0-14) B (SE)	Frailty (0-5) B (SE)	Social engagement (0-6) B (SE)
Density of communication networks of nursing staff	0.329 (1.154)	0.472 (0.535)	1.655 (0.724)
Density of advice networks of nursing staff	-0.599 (1.264)	0.136 (0.592)	1.930 (0.779)
% of nursing staff with a boundary-crossing network	-0.008 (0.006)	0.002 (0.003)	0.008 (0.004)
Hierarchy of advice networks	0.001 (0.001)	0.000 (0.000)	0.000 (0.001)

note: all analyses are controlled for age, gender, having a partner, physical functioning and cognitive functioning of residents, type of care setting and number of nursing staff

note: data on the hierarchy of advice network are based on 25 units and 343 residents
bold font indicates a significant association at $p < 0.05$

6.4 Discussion

In this chapter, we studied to what extent social networks of nursing staff are related to organizational performance in long-term dementia care. Organizational performance was measured with three outcomes for residents that are closely related to their quality of life: the prevalence of depressive symptoms, frailty and social engagement. First, to study if these outcomes could be used as a measure for organizational performance, we investigated if the outcomes differed between dementia units. The Intra Class Correlation on unit-level varied between 15% to 22% for the different outcomes after we corrected for

characteristics of residents. This indicates that differences in resident outcomes cannot be ascribed solely to characteristics of residents, but can be partly ascribed to the units and thus indeed may be seen as a measure for organizational performance.

We then investigated if social networks of nursing staff were related to our measures of organizational performance. All investigated social networks of nursing staff were related to the social engagement of residents. In units with many ties in staff's communication and advice networks residents experienced a higher social engagement, even after we corrected for resident characteristics. This finding supports our hypothesis on information-exchange (Hypothesis 1). In addition, we found that residents were more socially engaged in units with more boundary-crossing networks between nursing staff and relatives and acquaintances of residents. This finding lends support to our hypothesis with regard to nursing staff and boundary-crossing networks (Hypothesis 3).

Our hypothesis that more hierarchy in advice networks results in better outcomes for residents (Hypothesis 2) was not supported by this study. We also found no relationship between social networks and depressive symptoms and frailty of residents. It is yet unclear what factors might explain the differences between units for these outcomes. We found that the type of care setting was related to depressive symptoms of residents. For residents of psychogeriatric units in residential homes more depressive symptoms were reported. Furthermore, depressive symptoms and frailty were highly correlated on unit-level, even after we corrected for resident characteristics. This result is interesting as it was suggested by Blazer et al. (2001) that depressive symptoms may result in a higher mortality rate for elderly and the CHES score was found to be a good predictor of resident mortality in long-term care (Hirdes et al., 2003). Further research is needed to detect which aspects of dementia care influence these outcomes.

Our results should be interpreted with caution. First, we used a cross-sectional design in which resident outcomes were collected at one moment. As a result it was not possible to measure changes in residents throughout their stay in the unit and a causal relationship between social networks and organizational performance could not be tested.

Second, outcomes for residents were assessed by nursing staff. Although we used validated scales for each outcome, we have no information on how nursing staff reports relate to residents' perceptions or the perceptions of their relatives.

Third, it is not possible to assess how our results on social networks of nursing staff relate to findings in other studies. As far as we know no other studies are available about the communication and advice networks in long-term care. We found one study by Cott (1997) that looked at decision making in long-term care and found that nursing teams could be defined as hierarchical with clear lines of authority in comparison to multidisciplinary long-term care teams. These results tie in with the average high level of authority we found in our study.

As we have no comparable data of social networks in long-term care, we cannot estimate how the non-response rates in our study will have influenced our results. Communication networks in our sample had an average response rate of 53%; the average response on advice networks was 50%. This response rate is comparable with the response rate of 58% in the study of Kravitz et al. (2003). Kossinets (2006) argues that non-response in social network surveys can be partially balanced out by reciprocal nominations of actors. If actor A does not fill in the network questionnaire but actors B and C of the same network describe their interactions with A, information about the social network of actor A is still available. In our analyses of the communication networks we symmetrised our data, coding a tie between members of nursing staff when at least one staff member indicated a tie with this colleague. Through this, we also gained information on the communication networks of those who did not complete the questionnaire.

The question on boundary-crossing ties was answered by 44% of nursing staff. It is not known whether the remaining nursing staff had no boundary-crossing tie as this answer was not provided structurally with the question. Further studies should focus on methods to obtain complete social network data of nursing staff.

Due to the varying response rates of nursing staff, information on communication and advice networks were available for 35 units. As a result, the power of our multilevel analyses was restricted to 35 units at the highest level of analyses and only a limited amount of organizational variables could be taken into account. For the hierarchy of advice networks data of only 25 units could be used. This may explain why we found no relationship between hierarchy of advice networks and outcomes of residents.

Despite these important limitations, this study is the first to examine the relationship between social networks of nursing staff and organizational performance in long-term care and the outcomes may be used to guide further research.

The findings of this study demonstrate that informal network structures of nursing staff are important for the social engagement of residents with dementia in long-term care. This finding is particularly important as residents with dementia, due to their illness, have few possibilities to initiate contact with others and to maintain social relationships. It implies that care strategies to improve the social engagement of residents with dementia should take informal social contacts of nursing staff - among each other and with relatives and acquaintances of residents - into account. Furthermore, the results indicate that social networks of employees are important for organizational performance in healthcare settings and may be used to improve performance. Further research is needed to study through which mechanisms social networks influence care processes, and if social networks are related to other organizational outcomes in healthcare settings.

7

General summary and discussion

The aim of this thesis was to investigate social networks of nursing staff in long-term care and their relationship to organizational performance. As a measure of organizational performance, we focused on aspects of quality of life of residents with dementia in different care settings in the Netherlands. This final chapter summarizes the main findings and conclusions of the study. Second, we consider theoretical issues and methodological limitations of this study and discuss recommendations for further studies on social networks in long-term care and other healthcare settings. Finally, the relevance of our findings for long-term care settings is presented.

7.1 Main findings and conclusions

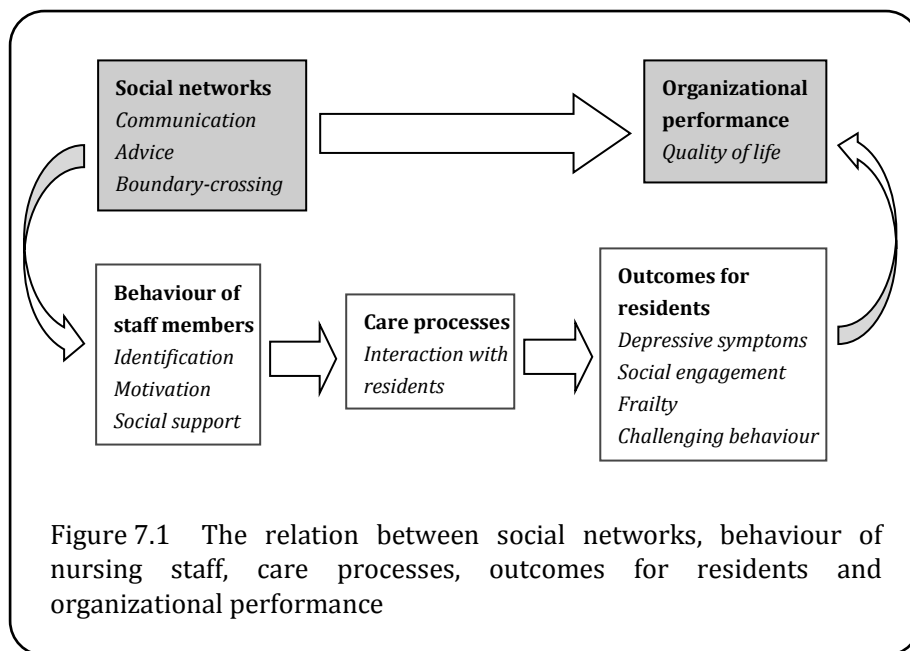
Research question and theoretical framework

Over the years, there has been increasing attention for the role of social networks, or broader social capital, in explaining performance differences between organizations (Nohria and Eccles, 1992; Sparrowe et al., 2001; Völker and Flap, 2005). Yet, research on social networks within healthcare organizations in general and long-term care facilities specifically has been rare, despite growing interest in explanations for differences in performance.

In this study we looked at informal social networks of nursing staff in long-term dementia care and organizational performance. The following general question was answered:

'Is there a relationship between social networks and performance, and how can this relationship be explained?'

To understand this macro-relationship we investigated several mechanisms on the micro-level, and studied how these mechanisms were related to outcomes on the macro-level. We argued that social networks influence the behaviour of nursing staff which in turn influences care processes in the unit and, hence, the quality of life of residents. Organizational performance was defined as the aggregated quality of life of residents (see Figure 7.1).



Three types of social networks were studied in this thesis:

1. informal communication networks between nursing staff in dementia units;
2. advice networks between nursing staff in dementia units;
3. networks between nursing staff and relatives or acquaintances of residents.

Ties between nursing staff and relatives/acquaintances of residents cross the boundary of the organization. For this reason, we named these ties boundary-crossing networks as they place employees in direct contact with third parties outside the organization.

Networks are often described by the density of interpersonal ties of its members, where density is seen as a measure of social cohesion. Based on social network literature, we distinguished four mechanisms through which cohesive social networks influence care processes: information-exchange, social support, opportunities for control, and identification with the organization. The first two mechanisms address the informal social networks of staff in dementia units. We reasoned that social networks influence the behaviours of nursing staff through *information-exchange*, as numerous contacts with other staff members provide information on how to best approach residents, which residents need

extra help and residents' preferences and behaviours. Secondly, we argued that social networks of nursing staff enhance *social support*. When more social support is given, nursing staff will experience less work stress and, consequently, find more time to interact with residents. With regard to the networks between nursing staff and relatives/acquaintances of residents (boundary-crossing ties), we reasoned that these networks affect care processes because relatives provide information on the background and habits of residents with dementia (*information-exchange*). Furthermore, cohesive networks affect trust between actors as they provide possibilities to sanction untrustworthy behaviour. Relatives regard nursing staff as representatives of the unit, where negative reports on the quality of care may hurt the reputation of staff members in the community. Therefore, boundary-crossing ties provide indirect *opportunities for control*. Furthermore, the existence of boundary-crossing ties will increase the nursing staff's *identification with the organization* as the membership of nursing staff to the long-term care facility is made salient by the contacts with outsiders. We reasoned that identification with the organization was also formed by cohesive communication networks between staff, especially when no boundary-crossing ties existed.

Structure of social networks

This thesis is the first to study informal social networks of nursing staff in 35 long-term care units, and provides unique network data of staff in healthcare settings. We first examined the structure of informal communication and advice networks of nursing staff. In doing so, we focused on the number of connections (or 'density') between staff members in communication and advice networks. On average, the density of communication networks was relatively high, varying between sparse networks to fully connected networks in which all members of staff communicated with each other frequently. Overall, advice networks were smaller than communication networks. We found that social networks were more cohesive in smaller units and that networks were also shaped by characteristics of staff members. For instance, communication and advice networks were denser when more staff worked part-time and when the staff in the units was older. Perhaps part-time staff need to communicate more frequently with each other in order to provide care, as they spent less time in the unit and therefore have less information about residents.

We studied the hierarchy of advice networks by looking at the ties ('centrality') of nursing staff with the unit supervisor. In the

Netherlands, the unit supervisor usually has the highest level of education and is often a registered nurse. Overall, the units were typified by a relatively high level of hierarchy.

We studied if informal networks between staff were related to staff's job satisfaction. Analyses showed that job satisfaction differed significantly between units and was negatively influenced by the number of nursing staff in the units. However, this relationship between the size of the units and job satisfaction disappeared when density of communication networks was added to the analyses. In units with more cohesive communication networks, staff was more satisfied.

Secondly, we looked at boundary-crossing networks between nursing staff and relatives or acquaintances of residents with dementia. Staff members were asked if they knew residents of their units through others outside the organization. A boundary-crossing tie was mentioned by two-fifths of the nursing staff. In some units, no boundary-crossing ties were present, whereas in other units a boundary-crossing tie was mentioned by all members of nursing staff.

Organizational performance

In this thesis we defined organizational performance as the aggregated quality of life of individual residents in long-term care units. Quality of life in long-term care is seen as a multidimensional construct consisting of the physical health of residents, their social well-being and psychological well-being. We studied several outcomes of residents that were closely related to quality of life: depressive symptoms, social engagement, frailty and challenging behaviour. The results indicate that all outcomes are relevant for residents in long-term dementia care. Especially residents in psychogeriatric units in nursing homes experienced low social engagement. Depressive symptoms and challenging behaviour were most often reported for residents of psychogeriatric units in residential homes. We found no differences between the types of care settings with regard to the frailty of residents.

Outcomes were foremost influenced by individual characteristics of residents, such as age or physical and cognitive impairments, but varied between units. Social engagement, depressive symptoms, and frailty differed significantly between units, even when characteristics of residents were taken into account. The implication is that the occurrence of these outcomes can be seen as a characteristic of the unit and not only of the residents living in these units. Only for challenging

behaviour no significant differences between units were found after we corrected for characteristics of residents. Overall, the findings confirm that resident outcomes can be considered as a measure of organizational performance. However, to be actually used as a measure of organizational performance, it is necessary that long-term care facilities can influence these resident outcomes effectively.

Evidence of the relationship between social networks and organizational performance

Based on the theoretical framework, we formulated several hypotheses on the relationship between social networks of nursing staff and quality of life of residents in long-term dementia care. The hypotheses and our findings are presented in Table 7.1.

We tested if social networks of nursing staff were related to better outcomes of residents directly and indirectly. We hypothesized that communication networks and advice networks directly influence outcomes of residents through *information-exchange*. The results showed a positive relationship between cohesive communication and advice networks of nursing staff and social engagement of residents with dementia. No direct relationship was found between social networks and depressive symptoms, frailty and challenging behaviour of residents. We also found no relationship between the hierarchy of advice networks and outcomes of residents. Our findings thus only partially support the first and second hypothesis of our study (see Table 7.1).

With regard to the indirect relationship, we hypothesized that communication networks influence outcomes of residents through *social support*. The results showed that in units with denser communication networks, staff members received more support from colleagues. No relationship was found between the density of communication networks and social support from the unit supervisor. We then studied if social support was related to challenging behaviour of residents by looking at the supportive staff culture of the unit: that part of support from colleagues that is experienced by all staff members in the unit. We discovered that in units with a more supportive culture, less challenging behaviour of residents was reported. As we only found a relationship between cohesive communication networks and social support from colleagues and not from the unit supervisor, our third hypothesis was partially supported (see Table 7.1).

We expected that boundary-crossing ties affected care processes and, hence, outcomes of residents because they provide *opportunities for control* as relatives and acquaintances will regard nursing staff as representatives of the unit and may elicit sanctions when nursing staff give inadequate care to residents. In units with more boundary-crossing ties between nursing staff and relatives/acquaintances of residents, nursing staff treated residents with more respect and were more at ease with residents. Furthermore, boundary-crossing ties were related to the number of times nursing staff started a friendly conversation with residents and the amount of time they actively cared for residents. In addition, we found a positive relationship between the existence of boundary-crossing ties and social engagement of residents. Yet, no relationship was found between boundary-crossing networks and depressive symptoms or frailty of residents (see our results for the fifth hypothesis in Table 7.1).

We also looked at the indirect relationship between boundary-crossing networks and communication networks of nursing staff and organizational performance through staff's *organizational identification*. Identification with the facility varied significantly between units. In larger units nursing staff identified less with the facility. This relationship between size of the units and identification ceased to exist when communication networks and boundary-crossing networks were entered into the analyses. Although predicted, no main effect of boundary-crossing networks on identification with the facility was found. We found an interaction effect of boundary-crossing networks and communication networks. When there was no boundary-crossing tie, the density of communication networks was positively related to identification with the long-term care facility. We then studied if identification with the facility was related to work motivation. We found that nursing staff who identified more with the facility were more motivated to provide better care and that in units with more motivated staff, residents were given a better treatment (see Table 7.1, Hypothesis 6).

All in all, this study demonstrates differences in organizational performance of long-term care dementia units with regard to relevant outcomes for residents. These differences can be partly explained by the informal social networks of nursing staff of the units.

Table 7.1 Overview of hypotheses and results of this thesis

Nr.	Hypotheses	Sub hypotheses	Result: += supported +/-= partly supported -= not supported	Type of network	Chapter
H1	Nursing staff with many ties to colleagues in communication and advice networks, have more relevant information of residents, which will positively influence care processes in the dementia unit and, hence, outcomes of residents	1.A In units with dense communication networks better outcomes for residents are reported	+/- A relationship was only found for social engagement, not for the other outcomes	Communication Advice	Chapter 6
		1.B In units with dense advice networks better outcomes for residents are reported	+/- A relationship was only found for social engagement		
H2	Nursing staff with hierarchical advice networks with colleagues will have more efficient access to relevant information, which will positively influence care processes in the dementia unit and outcomes of residents	2.A In units with hierarchical advice networks better outcomes for residents are reported	- No relationship was found	Advice	Chapter 6

Nr.	Hypotheses	Sub hypotheses	Result: += supported +/- partly supported -= not supported	Type of network	Chapter
H3	Nursing staff with dense communication networks will receive more social support from colleagues, which will positively influence their well-being and their interaction with residents, which in turn will result in better resident outcomes	3.A In units with dense communication networks, less challenging behaviour of residents is reported	- No relationship was found	Communication	Chapter 5
		3.B Nursing staff in units with dense communication networks experience more social support	+/- A relationship was found for social support from colleagues, not for support from the unit supervisor		
		3.C In units with a more supportive staff culture, less challenging behaviour of residents is reported	+		
H4	Nursing staff with strong ties in their communication networks will be more often distracted from work, having a negative effect on the time they interact with residents	n.a.	Not tested	Communication	n.a.

Nr.	Hypotheses	Sub hypotheses	Result: += supported +/-= partly supported -= not supported	Type of network	Chapter
H5	As contacts with relatives of residents provide information and may influence the reputation of staff members in the community, it is expected that on dementia units with more boundary-crossing networks residents are given a better treatment, which will result in better resident outcomes	5.A In dementia units with more boundary-crossing networks residents are given a better treatment	+	Boundary-crossing	Chapter 4
		5.B In dementia units with more boundary-crossing networks better outcomes for residents are reported	+/-		A relationship was only found for social engagement, and not for other outcomes
H6	The existence of boundary-crossing networks and communication networks of nursing staff increases staff members' identification with the organization, which in turn will result in higher work motivation. Communication networks between nursing staff will be especially relevant when no or few boundary-crossing ties exist	6.A Boundary-crossing ties increase staff members' identification with the facility	-	Boundary-crossing Communication	Chapter 4
		6.B Dense communication networks of nursing staff increase staff members' identification with the facility, particularly when no boundary-crossing ties exist	+		
		6.C Organizational identification results in higher work motivation	+		
		6.D Residents are given better treatment on dementia units with more motivated nursing staff	+		

7.2 Theoretical considerations

Not all hypotheses were supported by the results of this thesis. First, the hypothesis on information-exchange was only partly supported for all three types of networks. Studies on information-exchange in social networks have mainly focused on sparse networks and weak ties that provide unique information that cannot be obtained through others (Burt, 1992; Granovetter, 1973). Overall, the cohesion of communication and advice networks of nursing staff of the units in this thesis was relatively high, making it easy for nursing staff to obtain information. When information was not provided by one member of nursing staff, it may well have been provided by another staff member in the closely-knit network, making information-exchange a less critical aspect of social networks in this setting. This may explain the partial support of our hypothesis. It may also account for the fact that we found no relationship between hierarchy of advice networks and outcomes of residents: when information is not provided by the unit supervisor, it may easily be provided by another member of staff of the unit.

Another explanation may be that information-exchange through informal social networks is especially important for social aspects of quality of life of residents, such as social engagement. Possibly, physical health and mental wellbeing are more directly affected by effective formal information-exchange with the elderly care physician or psychologist in multidisciplinary care teams.

Second, the findings of our study revealed that when a boundary-crossing tie existed a staff member was more likely to treat all residents of the unit better, indicating that representatives or acquaintances of residents indeed regard nursing staff as representatives of the unit and that inadequate care may elicit sanctions. We found that in units with more boundary-crossing ties, nursing staff more often started a conversation with residents and more actively cared for residents. This may partly explain the positive relationship we found between boundary-crossing networks and social engagement of residents. More research is needed to investigate the mechanisms through which social networks affect residents outcomes in healthcare settings, and which part of social engagement may be ascribed to information-exchange between nursing staff and relatives/acquaintances of residents, and which part is an indirect result of the opportunities of control these third parties have.

Third, no support was found for our assumption that especially boundary-crossing ties affect identification with the facility as relatives

and acquaintances would regard nursing staff as representatives of the facility, making staff's membership to the facility salient. Perhaps this finding is due to our assumption that nursing staff regard residents as members of the unit, and that salience of group-membership would only be confirmed by interaction with outsiders. If this assumption is false, this may explain why we found no main effect for boundary-crossing ties with identification. Indeed, when nursing staff regard residents as outsiders, group-membership becomes salient all the time. Yet, our findings may also implicate that organizational identification is not so much the product of the salience of individual group-membership but is shaped by closely-knit communication ties with other staff members at unit-level in combination with the existence of boundary-crossing ties at the individual level. Although these findings do not support earlier findings of Bartels (2007) who found that communication patterns between employees were especially important for identification with the lower level (or units) of the organization, they underline the proposition of Festinger (1950) that social cohesion should be seen as the causal system that determines individuals' membership attitudes and behaviours.

Fourth, we formulated a hypothesis on the possible negative effect on social networks (Hypothesis 4, see Table 7.1). This hypothesis was based on what Flache and Macy (1996) termed as the 'weakness of strong ties'. Flache and Macy state that relations between two group-members evolve more rapidly than exchanges between all group-members in a group. When strong ties between two actors are established, social control is aimed at the maintenance of these interpersonal relationships instead of compliance with group obligations, which may decrease group effectiveness. This hypothesis was not investigated in this thesis as we focused on networks at unit-level and not on dyads between two staff members or cliques. We found no indication for a negative relationship between cohesion of social networks and care processes or resident outcomes. Yet, we believe such a relationship may exist if ties between members nursing staff are particularly strong, This was also clearly illustrated by the observation by which we started this thesis.

Overall, we found a positive relationship between social networks of nursing staff and outcomes of residents and identified several mechanisms through which this relationship may be explained. The findings show that social networks can be seen as the intermediate variable between the social context and individual behaviours ('macro-

micro connection') and are also important for the manner in which individual behaviours influence greater societal elements ('micro-macro connection') (Snijders, 2006). The findings on boundary-crossing networks also raise the general issue of organizational embedding in the environment. This thesis shows that performance is not only influenced by social networks within the organization, but also by network structures between employees and third parties outside the organization.

7.3 Methodological considerations

This thesis is based on cross-sectional data that was collected in 37 long-term care units, in four regions of the Netherlands: West-Brabant, Rotterdam, Amsterdam and Stedendriehoek. The long-term care facilities were asked to participate in the study on a voluntary basis. In total, 26 psychogeriatric units participated in the research: 16 units in nursing homes and 10 units in residential homes. In addition, in residential homes 11 group projects also participated.

During a three day visit to each unit, information was gathered from nursing staff and residents, and aspects of care were observed. In total, 474 staff members participated in the study; resident outcomes were collected for 502 residents. In this section we consider methodological limitations for the two basic variables of our study: the social networks of nursing staff and quality of life of residents.

Social networks

An important problem in social network research is that data collection is difficult and very time-consuming. The question on communication was answered by 380 staff members. Due to a low response rate of less than 15% two units were excluded from further analysis. The response percentage on the remaining 35 units varied between 18% and 100% per unit with an average response rate of 53%. The question on advice networks was answered by 347 staff members of the 35 units. Although our response rates are comparable to other studies (see for instance Kravitz et al., 2003), missing data in our sample are an important limitation.

We addressed this problem in several ways. Following Kossinets (2006), we symmetrised the data for communication networks coding a tie between members of nursing staff when at least one staff member indicated a tie with this colleague. Through this, information was gained

on the communication networks of those who did not complete the questionnaire. For advice networks, data were not symmetrised as we were interested in the direction of advice exchange. As we have no comparable data of social networks in long-term care, we cannot estimate how the non-response rates in our study may have influenced our results. Yet, we found one study by Cott (1997) that looked at decision making in long-term care and found that nursing teams could be defined as hierarchical with clear lines of authority in comparison to multidisciplinary long-term care teams. These results tie in with the average high level of hierarchy in advice networks we found in our study.

In addition, we found that response rates were lower in units with more nursing staff. Evidently, it is easier to answer questions for a limited group of colleagues than for a larger group. In fact, we found that response rates on the social network questions in our study may also be seen as a dependent variable as it appears to be structured by organizational aspects of long-term care. For this reason, we took the size of units into account in all analyses.

The question on boundary-crossing networks was answered by 44% of nursing staff. It is not known whether the remaining nursing staff had no boundary-crossing tie (as this answer was not provided structurally with the question), or whether they did not understand the question due to how it was constructed. The question used to obtain boundary-crossing information was relatively complex, not only asking after the presence of a boundary-crossing tie but also asking the number of intervening steps. Perhaps the question was too difficult. We performed additional analyses in which all missing values on the question about boundary-crossing networks were recoded into value 0 (no boundary-crossing tie exists). The findings of these analyses did not differ from the analyses presented in this thesis.

Despite these limitations, this study is the first to study informal social networks of nursing staff in a large number of long-term care units. Traditionally, social networks research focused on the collection of data in one or two organizations. Our approach makes it possible to determine how social networks are related to organizational characteristics and to investigate systematically how social networks are related to organizational performance.

Quality of life of residents

Outcomes of residents were collected with the Resident Assessment Instrument (RAI) Minimum Data Set (MDS) for nursing home care

(Morris et al., 1990). The MDS measures a wide array of characteristics of residents in nursing homes with which several outcomes for residents can be computed. We used four validated scales of the MDS. The Depression Rating Scale (DRS) (Burrows et al., 2000), the Index of Social Engagement (ISE) (Mor et al., 1995), the Changes in Health, End-stage disease and Symptoms and Signs scale (CHESS) (Hirdes et al., 2003), and the Challenging Behaviour Profile (CBP) (Gerritsen et al., 2008). In addition, two scales of the MDS were used to assess cognitive and physical problems of residents: the Cognitive Performance Scale (CPS) (Morris et al., 1994) and the Activities of Daily Living hierarchy index (ADL-H index) (Morris et al., 1999). All scales were completed during an interview with a member of nursing staff who knew the residents well and who provided care to these residents. The participating units in this study provided care to a diverse group of residents. Differences between residents could be partly ascribed to differences in care setting. For instance, residents in group projects were overall less cognitively impaired compared to residents in psychogeriatric units in nursing homes. Yet, care requirements also varied within the different care settings. We addressed this issue by systematically correcting for age, cognitive and physical problems of residents in our analyses.

Despite this thorough approach, it is important to note that all our resident outcomes were based on the observations of nursing staff. Due to the cognitive problems of the residents in our study it was impossible to measure outcomes through self-report, but it would have been interesting to study if observations by relatives of residents would have yielded the same results. Furthermore, due to our cross-sectional study design, we have no information of how outcomes of residents change over time.

7.4 Recommendations for future research

Social networks

First, it is important that future studies on social networks in long-term care focus on collecting complete social network data of nursing staff, especially in larger units. Secondly, we focused on the cohesion (or density) of communication and advice networks as we were interested in collective aspects of social networks instead of the social networks of individual staff members (or dyads). Consequently, we did not study how individual characteristics of staff members determine their

informal contacts with others. This is important as several studies have found that individuals are especially willing to form social connections with similar others (Creswick et al., 2009; McPherson et al., 2001; Raider and Krackhardt, 2001). In future studies, it would also be interesting to investigate cliques that may be formed through differences in work-shifts of nursing staff in larger units. In psychogeriatric units a selection of nursing staff works evening- and night-shifts to provide 24 hour care to residents. In group projects, nursing staff mostly only work day-shifts as activities are only provided during the day. This difference is likely to influence the formation of informal networks. As yet, it is unclear if differences in social networks between the units in our sample can be ascribed to similarities between staff members or to differences in work-shifts.

Context of the organization

We focused in this thesis on the social networks of nursing staff of dementia units and their relationship with organizational performance. Yet, it is also essential that further studies investigate inter-organizational networks (Galaskiewicz, 1985; Gulati and Gargiulo, 1999) and performance. For instance, through studying board interlocks (ties among organizations through a member of one organization sitting on the board of another) or inter-firm alliances (Borgatti and Foster, 2003). This fell beyond the scope of the present study, but may also be relevant when trying to explain organizational performance of long-term care facilities.

In this study, several characteristics of long-term care units were taken into account when studying the relationship between social networks of nursing staff and organizational performance. However, the overall number of dementia units that participated in this study was limited to 35, meaning we could only correct for few unit characteristics in our multilevel analyses. As a result, the inclusion of unit characteristics was not extensive. Although it may be difficult to gather more social network data in one study, we recommend that further studies should take different organizational aspects into account when studying social networks in healthcare settings. Also relevant is the fact that we gathered data of long-term care facilities at one dementia unit per facility. Therefore, we have no information about variation between units of the same long-term care facility and the manner in which organizational aspects may influence long-term care units of facilities in different ways.

Furthermore, we expect that contextual aspects of the organization may affect the relationship between social networks of nursing staff and organizational performance. For instance, the employment of temporary staff in the summer period may influence social network structures of staff. Another important aspect that was not investigated is the engagement of volunteers in dementia care. Volunteers may be relatives of residents of the unit, but voluntary care is also provided by persons who have no personal connection to residents but who live close to the long-term care facility. Following the outcomes of this thesis it may be expected that both types may influence resident outcomes:

1. through information-exchange when volunteers are relatives of residents of the units;
2. through opportunities for control when volunteers live in the vicinity of the facility.

It would be interesting to investigate the role of voluntary care in organizational performance.

Finally, our findings indicate that the social embeddedness of organizations is also important for organizational performance. In this study, we focused on the relationship between embedded ties of staff members and the quality of life of residents. Yet, embeddedness of staff is also named as a relevant factor for staff turnover (Mitchell et al., 2001). Further research on the relevance of embeddedness of healthcare organizations - for instance through embedded ties of employees or residents - is needed.

7.5 Relevance for long-term care settings

In this thesis, we have looked at several outcomes of residents that are closely linked to residents' quality of life. Overall, we found that residents with dementia were frail and that depressive symptoms, low social engagement and challenging behaviour of residents occurred frequently. These results show that residents with dementia are vulnerable and that attention for quality of life of residents is essential when providing long-term care. In addition, the results show that providing care to elderly residents with dementia is complex, and that nursing staff face multiple challenges in their everyday tasks. We found that social networks of nursing staff may enhance care and outcomes of residents directly and indirectly. In this section we describe the implications of our findings for long-term care.

Quality of life of residents and organizational culture

This thesis shows that social networks of nursing staff are related to the quality of life of residents. This indicates that interventions to improve elements of quality of life of residents with dementia in long-term care, should not only focus on the residents themselves, or on the interaction between nursing staff and residents but also on the social contacts between staff members who provide care to these residents. Yet, although our results show that more informal communication between staff members is beneficial for residents' social engagement and (indirectly) for less occurrence of challenging behaviour, caution is called for. The observation with which we started the thesis clearly shows that communication between staff members may not always result in more resident-oriented care, especially when staff members focus on each other instead of on the residents of the units. This study shows that in units with more motivated staff, residents receive better treatment. Furthermore, we found that a more supportive staff culture is related to less challenging behaviour of residents. These findings raise the point of shared values of staff members –or organizational culture– to provide good quality of care. We believe that staff members should not only communicate frequently with each other or exchange advice, but should also reflect on what they believe is proper care. In our opinion, it is this aspect that makes projects such as 'De Werkvloer Centraal' (www.dewerkvloercentraal.nl) successful (Van Beek et al., 2009). Such projects not only increase communication and advice exchange between nursing staff, but in these projects staff members also discuss what they perceive as good quality of care. Furthermore, these projects make it possible for staff members to give feedback to each other with regard to their behaviour towards residents. Generally, we recommend that projects aimed at improving quality of life of residents not only take social networks of nursing staff into account, but also the shared values of staff in the unit.

Organizational performance

The results of this thesis show that outcomes regarding the quality of life of residents can be considered as measure for organizational performance. Furthermore, our findings demonstrate that informal network structures of nursing staff are important for the social engagement of residents with dementia in long-term care. This finding is important as residents with dementia, due to their illness, have few possibilities to initiate contact with others and to maintain social relationships.

In the Netherlands, resident outcomes are commonly used as a measure of organizational performance, for instance by healthcare insurers to compensate costs that are made by long-term care facilities for providing care to residents. Yet, our results clearly demonstrate that not all outcomes regarding quality of life are suited equally for this purpose. For instance, differences in the frailty and challenging behaviour of residents could only in a small part be ascribed to units. This means that caution is needed when using resident outcomes for financial incentives. Furthermore, the results show that - apart from performance measured by quantitative data - it is important to look at qualitative measures of organizational performance. In this study incidental and structural observations were carried out. We believe that especially these qualitative measures provide insight in care processes in long-term care and should also be taken into account when conclusions about organizational performance are drawn.

Working environment of nursing staff, turnover and recruitment of staff

The number of elderly persons with dementia is growing rapidly. In the Netherlands there are at the moment 235.000 persons with dementia, which will increase to over 500.000 in 2050 (Alzheimer Nederland). At the same time, there is a decrease in professionals who can care for these persons, increasing the pressure on long-term care facilities and the care they can provide to residents.

The results of this thesis indicate that informal social networks of nursing staff may be particularly important in these circumstances to establish a good working environment as we found that communication networks are important for nursing staff's experienced social support and job satisfaction. Social support is named as a relevant factor for reducing stress of nursing staff (McGilton et al., 2007) and decreases the intention of nursing staff to find another job (Van der Heijden et al., 2010), leaving more nursing staff available in long-term care. More job satisfaction is also related to less job turnover (Castle et al., 2007; Karantzas et al., 2012). As our results show that informal contacts between nursing staff are important, we believe that emphasis should not lie in organizing more formal meetings between staff members, but in creating moments and places to meet, allowing staff members to meet each other informally during and outside work-hours. During work-hours, this can be achieved by restructuring the working hours of staff, so that part-timers who work in the mornings are able to meet part-time staff who normally works in the afternoon or evening. This will be

especially relevant for larger units for two reasons: 1) these units more often work with shifts, and 2) because of the large number of staff members it is more difficult to meet all other staff members of the unit regularly. Outside work-hours, more informal contacts may be realized by organizing informal activities for staff on a voluntary basis, but also e.g. by providing a financial incentive to join a particular sports club. Creating these opportunities seem to be particularly important for staff members who work full-time and have a permanent position as they experience less social support.

Overall, our findings also emphasize the importance of contacts between nursing staff and relatives of residents in long-term care (see for instance Fisher et al., 2008). Yet, our findings also illustrate that not only the contacts in the dementia unit, but also the contacts outside the organization are relevant for the quality of dementia care. These findings may also be relevant for the recruitment of staff. The results indicate that care can be improved by selecting staff from the same community as the residents. It is important to note that we expect this to be easier in less urbanised areas. Long-term care facilities in urbanised areas often have to deal with staff shortages because vacancies cannot be fulfilled. Furthermore, communities in urbanised areas are often more diverse in culture and religion.

Organization of long-term care

At the moment long-term care in the Netherlands is funded by the Exceptional Medical Expenses Act, a social security fund covering long-term care. However, in the recent government coalition agreement of October 2012, long-term care is restructured. Care activities are to be financed on the municipal-level; nursing activities need to be financed by healthcare insurers. The coalition agreement in addition states that in the future long-term care is to be provided mainly at home, and in a large part by informal caregivers. Only a small percentage of elderly persons will be admitted to a long-term care facility in the future. These plans indicate a major transition in long-term care for elderly persons with dementia in which nursing staff will provide more and more care in the community instead of in facilities. Likewise, ActiZ - the Dutch association of i.a. residential and home care organizations - focuses in its Deltaplan (2012) on the maintenance of independency of elderly persons within the community to delay or prevent admission to a long-term care facility. The plan states that organizations should explicitly use contacts in the community of elderly persons to provide good care.

Are our findings also relevant for these proposed changes? Our results underline the importance of embedded ties of nursing staff in the community when providing care to vulnerable elderly persons. Contacts in the community can indeed be used for improving care. We found that nursing staff interacted more positively with residents with dementia, when they had ties with relatives and acquaintances of residents outside the organization. Furthermore, these ties were beneficial for the social engagement of residents.

However, when care is provided mainly at home, it may be more difficult for nursing staff to meet each other and exchange information. Apart from information-exchange between staff members, the restructuring of long-term care will most probably also affect the experienced social support of staff members. Municipalities, healthcare insurers and healthcare organizations must cooperate to reduce these possible adverse effects of the reorganization of long-term care for care processes, to be able to preserve the quality of life of elderly patients with dementia.

In conclusion, this thesis demonstrates the importance of looking at the social structures of nursing staff when improving not only the behaviour of staff members towards residents, but also staff's perception of work, quality of life of residents and organizational performance. Although this study focused on dementia care, we believe that our findings are also applicable to other healthcare settings. Especially for settings that are characterized by vulnerable patients and longer periods of care.

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Appendix 1

Multilevel Multi-response Model

(Chapter 3)

Technical appendix multilevel multi-response model

To answer our research questions a three level multilevel multi-response model for the two continuous responses was fitted. This allowed us to analyse the two responses conditional on covariates and on each other. The model was constructed as follows:

$$y_{1ij} = (X_1\beta_1)_{ij} + (Z_1\beta_1)_j + \mu_{1j} + e_{1ij}$$

$$y_{2ij} = (X_2\beta_2)_{ij} + (Z_2\beta_2)_j + \mu_{2j} + e_{2ij}$$

$$\begin{pmatrix} e_{1ij} \\ e_{2ij} \end{pmatrix} \sim N(0, \Omega_e), \quad \Omega_e = \begin{pmatrix} \sigma_{e1}^2 & \\ & \sigma_{e2}^2 \\ \sigma_{e12} & \sigma_{e12} \end{pmatrix}$$

$$\begin{pmatrix} \mu_{1j} \\ \mu_{2j} \end{pmatrix} \sim N(0, \Omega_\mu), \quad \Omega_\mu = \begin{pmatrix} \sigma_{\mu1}^2 & \\ & \sigma_{\mu2}^2 \\ \sigma_{\mu12} & \sigma_{\mu12} \end{pmatrix}$$

i = residents (1...n)

j = units (1...N)

X = covariates measured at the level of residents

Z = covariates measured at the unit-level

e = residents residual

σ_e^2 = between residents within unit variance

σ_{e12} = covariance between residents residuals for the two dependents responses

μ = unit residual

σ_μ^2 = between unit variance

$\sigma_{\mu12}$ = covariance between unit residuals for the two dependents responses

subscript 1= indicator first dependent response

subscript 2= indicator second dependent response

Level 1 stays unspecified; no variance was defined at this level. If in the above model the two covariances are equal to zero, the results would be the same as if the dependent variables would be analysed separately.

The correlation, between the two dependent variables, at the residents' level was calculated as: $\frac{\sigma_{e12}}{\sqrt{\sigma_{e1}^2 * \sigma_{2e}^2}}$

The ICC's was calculated as: $\frac{\sigma_u^2}{\sigma_e^2 + \sigma_u^2}$, so the ICC's for the two dependent variables are corrected for the dependence (covariance) at the residents level.

Appendix 2

Computation Supportive Staff Culture

(Chapter 5)

Estimating the units systematic (the amount that affects the score of every individual in that unit in the same way) influence on individual nursing staff members. Normally when using different items, the average of the scores on the different items is calculated per individual and then aggregated to the unit-level. This method makes strong assumptions, such as equal item average's and variance's (especially if there are missing items).

A more appropriate way to measure the units effect, is using a multilevel latent variable model. The first level of the model serves as a measurement model. It describes the linkage between the items and the latent true scores for each person. The two highest levels of the model may be viewed as a two-level model for the latent true scores. At the second level, the true scores are the outcomes estimated by the individual nursing staff member based on its scores on the individual items. It shows the variation between individuals within units. The third level shows the variance between units. Based on the overall average and between unit variance for every unit a scale score can be calculated (Raudenbush and Sampson, 1999).

The model:

$$resp_{ijk} \sim N(XB, \Omega)$$

$$resp_{ijk} = \beta_{5jk}cons + \beta_6citem2_{ijk} + \beta_7citem3_{ijk} + \beta_8citem4_{ijk} + \beta_9citem5_{ijk} + e_{0ijk}item1_{ijk} + e_{1ijk}item2_{ijk} + e_{2ijk}item3_{ijk} + e_{3ijk}item4_{ijk} + e_{4ijk}item5_{ijk}$$

$$\beta_{5jk} = \beta_5 + v_{5jk} + u_{5jk}$$

$$\begin{bmatrix} v_{5jk} \end{bmatrix} \sim N(0, \Omega_v) : \Omega_v = \begin{bmatrix} \sigma_{v5}^2 \end{bmatrix}$$

$$\begin{bmatrix} u_{5jk} \end{bmatrix} \sim N(0, \Omega_u) : \Omega_u = \begin{bmatrix} \sigma_{u5}^2 \end{bmatrix}$$

$$\begin{bmatrix} e_{0ijk} \\ e_{1ijk} \\ e_{2ijk} \\ e_{3ijk} \\ e_{4ijk} \end{bmatrix} \sim N(0, \Omega_e) : \Omega_e = \begin{bmatrix} \sigma_{e0}^2 & & & & \\ 0 & \sigma_{e1}^2 & & & \\ 0 & 0 & \sigma_{e2}^2 & & \\ 0 & 0 & 0 & \sigma_{e3}^2 & \\ 0 & 0 & 0 & 0 & \sigma_{e4}^2 \end{bmatrix}$$

resp_{ijk} = response per item per nursing staff member

i = item 1 ... n

j = individual 1 ... N(nursing staff members)

k = unit 1 ... N(units)

β_{5jk} = intercept parameter , average for latent variable

$\beta_{(5-9)}$ = item regression coefficients, deviation for item from average for latent variable

ν_{5k} = between unit variance for latent variable (normally distributed)

μ_{5jk} = between staff member within unit variance (normally distributed)

$\varepsilon_{(0,1,2,3,4)ijk}$ = for every item measurement error variances (normally distributed)

cons intercept variable (vector of one's)

item item dummy variable (indicator coding, (0,1)), n variables

item item dummy variable (deviation coding, ((0,1)-(1/n)), n-1 variables

unit scores on latent variable = $\beta_{5jk} + \nu_{5k}$

Summary

Over the years, there has been increasing attention for the role of social networks in explaining performance differences between organizations. Yet, research on social networks within healthcare organizations in general and long-term care facilities specifically has been rare, despite growing interest in explanations for differences in performance.

The group of elderly persons in long-term care is growing rapidly and especially the group of patients with dementia who need intensive care will increase significantly in years to come. The growing group of dementia patients coincides with a decline in caregivers that can care for these patients, and restricted growth of healthcare budgets, making it particularly important to understand how care processes can be optimized.

In this thesis, we study informal social networks of nursing staff and organizational performance in different care settings for residents with dementia in the Netherlands. Three types of social networks are investigated: communication and advice networks between nursing staff of dementia units, and networks between nursing staff and relatives or acquaintances of residents. Ties between nursing staff and relatives/acquaintances of residents cross the boundary of the organization. For this reason, we name these ties boundary-crossing networks as they place employees in direct contact with third parties outside the organization. We argue that social networks of nursing staff influence behaviour of nursing staff and care processes of dementia units, which in turn will influence the quality of life of residents, and ultimately organizational performance in long-term care.

In **Chapter 1**, a theoretical framework is provided for the relationship between social networks of nursing staff and organizational performance in long-term dementia care. Networks are often described by the number of contacts of its members ('density'). Density is a measure of the general level of cohesion of the network; it describes the extent to which actors are tied to each other. We name four mechanisms through which cohesive social networks influence care processes: information-exchange, social support, opportunities for control, and identification with the organization.

Main findings

In **Chapter 2**, the structure of informal communication and advice networks of nursing staff is described. Overall, communication and advice networks of nursing staff in long-term care are relatively

cohesive. This fits with the high level of cooperation that is needed to provide good care to residents. Communication and advice networks are more cohesive in smaller units and are also shaped by characteristics of staff members. The results furthermore show that communication networks are important for staff's job satisfaction.

In this thesis, organizational performance is defined as the aggregated quality of life of individual residents in long-term care units. Quality of life in long-term care is seen as a multidimensional construct consisting of the physical health of residents, their social well-being and psychological well-being. In **Chapter 3**, two aspects of quality of life are investigated: depressive symptoms and social engagement of residents with dementia. Especially residents in psychogeriatric units in nursing homes experience low social engagement. Depressive symptoms are most often found in residents in psychogeriatric units in residential homes. The results show that social engagement and depressive symptoms are not only influenced by individual characteristics but also by the type of care setting in which residents live.

In Chapter 4 to 6, the mechanisms through which social networks affect organizational performance are investigated. In **Chapter 4**, we examine two types of networks: communication networks of nursing staff in the unit, and boundary-crossing networks of staff members with relatives and acquaintances of residents. A boundary-crossing tie is mentioned by two-fifths of the nursing staff. Our findings show that in units with more networks between nursing staff and relatives/acquaintances of residents, staff treat residents with more respect and are more at ease with residents. Social networks are also positively related to staff's organizational identification which, in turn, is related to their work motivation and their behaviour towards residents.

In **Chapter 5**, we look at the relationship between communication networks of staff, social support, supportive staff culture and challenging behaviour of residents. Communication networks of nursing staff are not directly related to challenging behaviour of residents. Yet, more cohesive communication networks of nursing staff are positively related to the social support that is experienced by staff members. Furthermore, in units with a more supportive culture less challenging behaviour of residents is reported.

Chapter 6 illustrates the relationship between social networks of nursing staff and organizational performance. All three types of social networks are studied. Furthermore, we look at the hierarchy of advice

networks in this chapter. As a measure of performance, we investigate three outcomes of residents that are closely linked to quality of life: frailty, depressive symptoms and social engagement. Our results show that cohesive communication, advice, and boundary-crossing networks of nursing staff are positively related to the social engagement of residents. We find no relationship with frailty or depressive symptoms of residents. Also no relationship is found between hierarchy of advice networks and resident outcomes.

Conclusions and recommendations

This thesis is the first to study informal social networks of nursing staff in 35 long-term care units, and provides unique network data of staff in healthcare settings. In **Chapter 7**, a general summary and discussion of the findings of this thesis is presented. Overall, the study demonstrates differences in organizational performance of long-term care dementia units with regard to the quality of life of residents. These differences can be partly explained by the cohesiveness of informal social networks of nursing staff of the units.

Based on our findings, we provide recommendations for future studies on social networks and describe the relevance for long-term care settings. An important limitation of our study is the non-response on the network questions. It is important that future studies on social networks try to collect more complete data of social networks. Furthermore, in this thesis we have only looked at social networks at the unit-level. However, it is also important to study how individual characteristics of nursing staff determine interactions with other staff members. In addition, our findings show that the context of the organization is relevant for the structure of social networks and organizational performance. However, in our study the number of dementia units is limited and we could only take few unit characteristics into account. Although it may be difficult to gather more social network data in one study, we recommend that further studies look at different organizational aspects when studying social networks in healthcare settings. Our findings show the importance of cohesive informal networks between nursing staff of units and between nursing staff and relatives of residents outside the organization. The findings indicate that social networks can be used to improve outcomes of staff, such as job satisfaction and social support. Furthermore, by restructuring social networks, care processes and quality of life of residents may be improved.

Samenvatting

Inleiding

Het aantal ouderen met dementie in de Nederlandse samenleving zal in de komende jaren sterk toenemen. Deze toename valt samen met een afname in de beroepsbevolking en een afname in het beschikbare gezondheidszorgbudget per individu. Hierdoor is het van groot belang om na te gaan hoe met de beschikbare middelen de kwaliteit van de zorg voor ouderen met dementie kan worden geoptimaliseerd.

Er is steeds meer aandacht voor de rol van sociale netwerken van personeel bij het verklaren van prestaties van zorgorganisaties. Echter, nog weinig is bekend over de netwerken van verzorgend personeel in zorgorganisaties en hoe deze netwerken uitkomsten van zorg beïnvloeden. In dit proefschrift onderzoeken we sociale netwerken van verzorgend personeel op afdelingen voor bewoners met dementie in verpleeg- en verzorgingshuizen.

Het onderzoek richt zich op informele netwerken van medewerkers. Daarbij worden drie soorten netwerken onderzocht: communicatienetwerken van verzorgend personeel op afdelingen voor bewoners met dementie, adviesnetwerken van verzorgend personeel op afdelingen voor bewoners met dementie, en netwerken tussen verzorgend personeel en familieleden/kennissen van bewoners met dementie. Dit laatste type netwerk overschrijdt niet alleen de grenzen van de afdeling waar de bewoner wordt verzorgd, maar ook de grenzen van de zorgorganisatie. Om deze reden noemen we deze netwerken 'grensoverschrijdende netwerken' (*boundary-crossing networks*).

Hoofdstuk 1 beschrijft allereerst het theoretisch model dat is gebruikt om de relatie tussen netwerken van verzorgend personeel en prestaties van zorgorganisaties te verklaren. We beargumenteren dat sociale netwerken van invloed zijn op het gedrag van verzorgend personeel en zo zorgprocessen beïnvloeden. Deze zorgprocessen dragen vervolgens bij aan de kwaliteit van leven van bewoners. Kwaliteit van leven van alle bewoners op de afdeling kan worden gezien als prestatie maat voor de zorgorganisatie.

We beschrijven vier mechanismen waardoor sociale netwerken uitkomsten van zorg kunnen beïnvloeden: informatie-uitwisseling, sociale steun, mogelijke controle en identificatie met de organisatie. We lichten de mechanismen hieronder kort toe.

Allereerst beïnvloeden sociale netwerken het gedrag van verzorgend personeel omdat het de *uitwisseling van informatie* bevordert. We

veronderstellen dat contacten met collega's ervoor zorgen dat medewerkers beter op de hoogte zijn van gedragingen, behoeften en voorkeuren van bewoners. Hierdoor kan men betere zorg verlenen. Daarnaast leiden meer contacten met collega's tot meer *sociale steun*. Meer sociale steun heeft een gunstige invloed op de ervaren stress van verzorgend personeel, wat weer een positieve invloed heeft op uitkomsten voor bewoners.

Contacten tussen verzorgend personeel en familie of bekenden van bewoners met dementie (grensoverschrijdende netwerken) zijn allereerst van belang omdat familie/kennissen van bewoners informatie kunnen geven over de achtergrond en gewoonten van bewoners (*informatie-uitwisseling*). Dit is informatie waarover bewoners zelf vaak niet meer kunnen communiceren als gevolg van hun ziekte. Daarnaast veronderstellen we dat dergelijke netwerken de zorg beïnvloeden omdat ze mogelijkheden geven om (indirect) *controle* uit te oefenen op het gedrag van medewerkers. Naasten van bewoners met dementie zien verzorgend personeel als vertegenwoordigers van de zorgorganisatie waar zij werken. Een slechte beoordeling van de zorg door familie/kennissen van bewoners kan de reputatie van verzorgend personeel buiten de organisatie schaden. Wanneer er meer contacten zijn tussen verzorgend personeel en familie/kennissen van bewoners zullen medewerkers meer genegen zijn om betere zorg te verlenen aangezien een slechte beoordeling van hun werk negatieve consequenties kan hebben voor hun dagelijks leven.

Informeel contacten met familie en kennissen van bewoners buiten de organisatie beïnvloeden ook het gedrag van verzorgend personeel via een ander mechanisme, namelijk *identificatie met de organisatie*. We veronderstellen dat medewerkers zich meer identificeren met de zorgorganisatie wanneer zij contact hebben met familie/kennissen van bewoners buiten de organisatie. We beargumenteren dat ook de onderlinge communicatie tussen verzorgend personeel van belang is voor identificatie met de organisatie, vooral wanneer een medewerker niet beschikt over een informele relatie met familie/kennissen van bewoners. We veronderstellen dat meer identificatie met de zorgorganisatie positief samenhangt met de werkmotivatie van medewerkers, wat weer positief samenhangt met de bejegening van bewoners.

De structuur van communicatie en adviesnetwerken van verzorgend personeel

Hoofdstuk 2 beschrijft de structuur van de communicatie- en adviesnetwerken van verzorgend personeel op afdelingen voor bewoners met dementie. Een veel gehanteerde maat in de beschrijving van netwerken is de dichtheid van het netwerk. Dichtheid wordt ook wel gezien als een maat voor sociale cohesie en bestaat uit het aantal aanwezige netwerkverbindingen gedeeld door het totaal aantal mogelijke netwerkverbindingen binnen het netwerk.

De gemiddelde dichtheid van de communicatienetwerken op de onderzochte afdelingen was hoog, variërend tussen afdelingen met weinig contacten tussen verzorgend personeel en afdelingen waar alle medewerkers regelmatig met elkaar communiceerden. Ook adviesnetwerken verschilden per afdeling, al waren adviesnetwerken gemiddeld kleiner dan communicatienetwerken. We onderzochten ook of communicatienetwerken en adviesnetwerken samenhangen met de grootte van de afdeling en kenmerken van personeelsleden. Kleinere afdelingen hadden een hogere dichtheid in communicatie- en adviesnetwerken. Het is overduidelijk gemakkelijker om met alle collega's regelmatig te communiceren wanneer afdelingen kleiner zijn. Daarnaast vonden we dat communicatie- en adviesnetwerken een hogere dichtheid hadden wanneer meer medewerkers op de afdeling parttime werkten. Waarschijnlijk is meer communicatie voor parttimers noodzakelijk voor een goede zorgverlening, aangezien zij minder uren op de afdeling aanwezig zijn en daardoor over minder informatie over bewoners beschikken.

In dit hoofdstuk onderzochten we ook de relatie tussen sociale netwerken en medewerkerstevredenheid. Medewerkerstevredenheid varieerde significant tussen afdelingen en hing negatief samen met het aantal personeelsleden op de afdeling. Echter, deze relatie tussen de grootte van de afdeling en medewerkerstevredenheid was niet langer significant wanneer we de dichtheid van communicatienetwerken toevoegden aan de analyses. De resultaten tonen aan dat communicatienetwerken van belang zijn voor de medewerkerstevredenheid van verzorgend personeel.

Uitkomsten van kwaliteit van leven

In dit proefschrift beschouwen we de kwaliteit van leven van bewoners met dementie als prestatiegraad van zorgorganisaties. Onderzoek naar kwaliteit van leven in de ouderenzorg kent een lange traditie. Daarbij wordt kwaliteit van leven gezien als een multidimensionaal concept waarin in ieder geval een fysiek element, een sociaal element en een mentaal element kunnen worden onderscheiden. In dit proefschrift worden de volgende uitkomsten van kwaliteit van leven onderzocht: broosheid, sociale betrokkenheid, depressieve symptomen en probleemgedrag.

Hoofdstuk 3 gaat in op twee aspecten van kwaliteit van leven: depressieve symptomen en sociale betrokkenheid van bewoners met dementie. Met name bewoners op gesloten afdelingen in verpleeghuizen hadden een lage sociale betrokkenheid. Depressieve symptomen werden vooral gevonden bij bewoners van gesloten afdelingen in verzorgingshuizen. De resultaten tonen aan dat depressieve symptomen en sociale betrokkenheid belangrijke uitkomsten zijn die niet enkel kunnen worden toegeschreven aan individuele kenmerken van bewoners, zoals zorgbehoefte en leeftijd. Ook de afdeling waar de bewoner verblijft, is van belang voor de sociale betrokkenheid en de aanwezigheid van depressieve symptomen van bewoners.

De relatie tussen sociale netwerken van verzorgend personeel en prestaties van zorgorganisaties

In hoofdstuk 4 tot en met 6 wordt ingegaan op de samenhang tussen informele netwerken van verzorgend personeel en de prestaties van zorgorganisaties. Daarbij worden de mechanismen onderzocht die in hoofdstuk 1 zijn gepresenteerd. In **hoofdstuk 4** beschrijven we de relatie tussen communicatienetwerken van verzorgend personeel op de afdeling en grensoverschrijdende netwerken tussen verzorgend personeel en familie/kennissen van bewoners. Voor het vaststellen van deze laatste netwerken vroegen wij aan verzorgend personeel of zij familie of kennissen van bewoners kenden buiten de zorgorganisatie. Twee vijfde van het verzorgend personeel benoemde een dergelijke relatie. Dit varieerde tussen afdelingen waar niemand van het verzorgend personeel contact had met familie/kennissen van bewoners tot afdelingen waar de meerderheid een dergelijke relatie benoemde. De resultaten in hoofdstuk 4 tonen aan dat wanneer er meer van dit soort

netwerken waren op een afdeling, verzorgend personeel de bewoners met meer respect behandelde en dat zij meer op hun gemak leken met bewoners. De aanwezigheid van deze netwerken hing ook samen met het aantal keren dat verzorgend personeel een vriendelijk gesprek begon met bewoners en de tijd dat zij actief voor bewoners zorgde. In dit hoofdstuk is ook gekeken naar de identificatie met de organisatie. We vonden geen relatie tussen de aanwezigheid van netwerken met familie/kennissen van bewoners en identificatie met de organisatie. We vonden wel een relatie tussen identificatie met de organisatie en dichte communicatienetwerken van verzorgend personeel op de afdeling. Met name wanneer personeelsleden geen netwerk hadden met familie/kennissen van bewoners. Meer identificatie met de organisatie hing positief samen met de werkmotivatie van verzorgend personeel wat weer positief samenhangt met de bejegening van bewoners.

In **hoofdstuk 5** onderzoeken we de samenhang tussen communicatienetwerken, ervaren sociale steun van het verzorgend personeel en gedragsproblemen van bewoners. In dit proefschrift vonden we geen directe relatie tussen communicatienetwerken en gedragsproblemen van bewoners. Echter, de resultaten tonen aan dat dichtere communicatienetwerken positief samenhangen met de ervaren sociale steun van collega's. Op basis van de sociale steun van collega's berekenden we de sociale cultuur op de afdeling; dat deel van sociale steun dat gedeeld wordt door alle medewerkers op de afdeling. Op afdelingen met een meer sociale cultuur werd minder probleemgedrag van bewoners gerapporteerd.

Hoofdstuk 6 beschrijft de relatie tussen sociale netwerken en prestaties van zorgorganisaties. Hierbij keken we naar drie uitkomsten van kwaliteit van leven van bewoners met dementie: broosheid (als aspect van fysiek welbevinden), depressieve symptomen (als aspect van mentaal welbevinden) en sociale betrokkenheid (als aspect van sociaal welbevinden). We vonden een positieve relatie tussen sociale netwerken van verzorgend personeel en sociale betrokkenheid van bewoners met dementie. Op afdelingen met meer sociale netwerken van verzorgend personeel (communicatienetwerken, adviesnetwerken én netwerken van personeel met familie/kennissen van bewoners) werd een hogere sociale betrokkenheid van bewoners gerapporteerd, ook wanneer we rekening hielden met de zorgbehoefte van bewoners. Er werd geen relatie gevonden tussen sociale netwerken en broosheid of depressieve symptomen van bewoners.

Discussie

Dit proefschrift beschrijft voor het eerst de sociale netwerken van verzorgend personeel in verpleeg- en verzorgingshuizen in Nederland. Daarbij is informatie verzameld van een groot aantal afdelingen voor bewoners met dementie. Dit levert unieke informatie op over de informele sociale netwerken van personeel in zorgorganisaties én geeft inzicht in hoe deze netwerken samenhangen met zorgprocessen en prestaties van zorgorganisaties.

In **hoofdstuk 7** geven we een algehele beschrijving van de resultaten, bediscussiëren we de beperkingen van het onderzoek en formuleren we aanbevelingen voor onderzoek en praktijk.

Alhoewel in dit onderzoek een grote hoeveelheid informatie is verzameld, vormt de non-respons op de netwerkvragen een belangrijke beperking. Om de effecten van de non-respons te beperken hebben we verschillende acties ondernomen. Bij de communicatienetwerken van verzorgend personeel is uitgegaan van 'ongerichte' netwerkverbindingen: wanneer persoon A aangeeft te communiceren met persoon B, kan worden aangenomen dat persoon B ook communiceert met persoon A. Door dit principe toe te passen is informatie verkregen van medewerkers die de vragen niet hebben ingevuld. Voor adviesnetwerken zijn we niet uitgegaan van deze ongerichte netwerken, omdat hierbij ook relevant was aan wie advies werd gevraagd. Omdat er nog weinig onderzoek is gedaan naar netwerken van personeel in de ouderenzorg is het lastig om onze resultaten te toetsen. Echter, een studie van Cott (1997) lijkt onze bevindingen met betrekking tot de relatief hiërarchische adviesnetwerken van verzorgend personeel te bevestigen.

Onze resultaten tonen aan dat de respons lager was op grotere afdeling met meer verzorgend personeel. Het is overduidelijk makkelijker om netwerkvragen te beantwoorden voor een beperkt aantal collega's. Om deze reden is in alle analyses in dit proefschrift gecorrigeerd voor de grootte van de afdeling.

Voor de vragen over netwerken met familie/kennissen van bewoners was het niet duidelijk of medewerkers die deze vraag niet hadden ingevuld a) geen dergelijke netwerkverbinding hadden of b) de vraag hadden overgeslagen omdat ze deze te ingewikkeld vonden. Om deze reden hebben we de analyses herhaald, waarbij we alle missende waarden hebben omgecodeerd in een score 0 (geen netwerkverbinding aanwezig). Dit leverde geen andere resultaten op.

Een andere beperking van dit onderzoek vormt de wijze waarop uitkomsten van kwaliteit van leven zijn vastgesteld. Helaas was het niet mogelijk om bewoners met dementie zelf te ondervragen over hun kwaliteit van leven. Alle uitkomsten zijn vastgesteld aan de hand van een interview met een verzorgende of een verpleegkundige die de bewoner goed kende en zorg verleende aan deze bewoner. Hierbij is gebruik gemaakt van gevalideerde schalen en is consequent gecorrigeerd voor kenmerken van bewoners zoals leeftijd en zorgbehoefte. Desalniettemin, is de meting van kwaliteit van leven in ons onderzoek slechts een momentopname. Hierdoor was het niet mogelijk om veranderingen in kwaliteit van leven te constateren en de causaliteit van de relatie met sociale netwerken te onderzoeken.

Ondanks deze beperkingen geeft het onderzoek inzicht in de mechanismen waardoor sociale netwerken samenhangen met de prestaties van zorgorganisaties. Samenvattend toont dit proefschrift aan dat prestaties van zorgorganisaties van elkaar verschillen wanneer we de kwaliteit van leven van bewoners als uitkomstmaat nemen. Deze verschillen kunnen deels worden verklaard door de dichtheid van de informele sociale netwerken van het personeel.

Aanbevelingen voor toekomstig onderzoek en de praktijk

Het is van groot belang dat toekomstig onderzoek probeert meer complete netwerkgegevens te verzamelen, vooral bij grotere afdelingen. In dit proefschrift hebben we enkel gekeken naar netwerken van verzorgend personeel op afdelingsniveau. Het is van belang om te onderzoeken hoe kenmerken van individuele medewerkers de totstandkoming van sociale netwerken beïnvloeden. Dit viel buiten het kader van dit proefschrift, maar is zeker relevant aangezien mensen geneigd zijn om relaties aan te gaan met soortgelijke anderen. Ook onderzoek naar de aanwezigheid van subgroepen van personeel en contacten tussen medewerkers van verschillende afdelingen is wenselijk om meer inzicht te krijgen in de samenhang tussen netwerken van medewerkers en uitkomsten van zorg.

Bovendien toont het onderzoek aan dat de context waarin de zorg wordt geleverd - bijvoorbeeld het type afdeling - van belang is voor de kwaliteit van leven van bewoners. Omdat het aantal deelnemende afdelingen beperkt was, konden we in dit onderzoek slechts een beperkt aantal kenmerken van afdelingen meenemen in de analyses. Het is van

belang dat toekomstig onderzoek zich richt op andere contextfactoren, zowel op afdelings- als organisatieniveau. In dit kader is onderzoek naar de inzet van vakantiekrachten en vrijwilligers ook relevant, omdat men kan verwachten dat de inzet van deze krachten van invloed kan zijn op de informele netwerken van verzorgend personeel binnen en buiten zorgorganisaties.

Tot slot formuleren we aanbevelingen voor de praktijk. De resultaten van dit proefschrift tonen aan dat aandacht voor aspecten van kwaliteit van leven essentieel is wanneer men zorg verleent aan ouderen met dementie. Toch waren niet alle gehanteerde uitkomstmaten even geschikt als prestatie maat voor zorgorganisaties. Zo vonden we nauwelijks verschillen tussen de onderzochte afdelingen in de mate van probleemgedrag van bewoners. Meer sociale netwerken van verzorgend personeel hingen direct samen met een hogere sociale betrokkenheid van bewoners. Dit is een belangrijke uitkomst omdat bewoners met dementie door hun ziekte vaak moeilijk contact kunnen leggen met anderen en - naarmate de ziekte vordert - steeds minder mogelijkheden hebben om sociale relaties te onderhouden.

Het onderzoek laat ook het belang zien van informele netwerken voor het verzorgend personeel zelf. Communicatienetwerken zijn van belang voor medewerkerstevredenheid en sociale steun van collega's. Deze uitkomsten zijn belangrijk in tijden van personeelstekorten, toenemende werkdruk en bezuinigingen. Informele contacten kunnen worden gestimuleerd door medewerkers meer mogelijkheden te bieden om elkaar te ontmoeten. We pleiten hierbij niet voor meer formele ontmoetingen bijvoorbeeld door werkoverleg, maar juist voor mogelijkheden om elkaar informeel te ontmoeten. Dit kan op het werk door diensten van medewerkers anders in te delen, maar ook door buiten het werk contact te stimuleren. Alhoewel we in dit proefschrift een positieve relatie vonden tussen sociale netwerken van verzorgend personeel en uitkomsten voor bewoners, laat de observatie aan het begin van dit proefschrift zien dat meer communicatie tussen medewerkers ook nadelig kan zijn voor een goede zorgverlening wanneer medewerkers zich meer concentreren op elkaar dan op bewoners. Enkel het stimuleren van contacten is dan ook niet zondermeer voldoende om zorg te verbeteren. Ook aandacht voor de normen en waarden van medewerkers - of de afdelingscultuur - is hierbij van belang. Dit wordt ook duidelijk uit de positieve relatie die in

dit onderzoek wordt gevonden tussen de werkmotivatie van verzorgend personeel en de bejegening van bewoners.

De resultaten tonen daarnaast het belang aan van contacten tussen verzorgend personeel en familie en kennissen van bewoners met dementie. Dit belang wordt ook door ander onderzoek bevestigd. Echter, onze resultaten illustreren dat niet enkel contacten met familie op de afdeling van belang zijn, maar ook de contacten buiten de organisatie. Dit impliceert dat kwaliteit van zorg kan worden verbeterd door medewerkers in te zetten uit dezelfde gemeenschap als bewoners. We verwachten dat dit makkelijker te realiseren is in minder stedelijke gebieden. Verpleeg- en verzorgingshuizen in meer stedelijke gebieden hebben vaker te maken met structurele personeelstekorten en meer diverse gemeenschappen in termen van cultuur en religie.

Zijn de resultaten van dit proefschrift ook van belang voor de wijzigingen die momenteel worden doorgevoerd in de zorg? Centraal uitgangspunt van deze wijzigingen is dat ouderen zolang mogelijk thuis blijven wonen. Onze resultaten onderschrijven het belang van contacten van verzorgend personeel met naasten van cliënten in de gemeenschap voor het leveren van een goede kwaliteit van zorg. Wanneer een groot deel van de zorg in de thuissituatie wordt geleverd zullen deze contacten naar verwachting toenemen. Onze resultaten impliceren dat de zorg aan ouderen met dementie hierdoor zou kunnen verbeteren. Echter, wanneer de zorg extramuraal wordt geleverd wordt het waarschijnlijk moeilijker voor verzorgend personeel om met elkaar te communiceren en informatie met elkaar uit te wisselen. De verwachting is dat daardoor ook de sociale steun tussen verzorgend personeel zal afnemen, wat kan doorwerken in uitkomsten voor bewoners. Het is belangrijk dat gemeenten, zorgverzekeraars en zorgorganisaties gericht met elkaar samenwerken om deze mogelijk negatieve effecten van de wijzigingen in de ouderenzorg zoveel mogelijk te beperken, zodat een maximale kwaliteit van leven van cliënten kan worden behouden.

Dit proefschrift toont het belang om te kijken naar sociale structuren van medewerkers in relatie tot prestaties van zorgorganisaties. Alhoewel deze studie zich specifiek richtte op de zorg aan ouderen met dementie, gaan we ervan uit dat onze bevindingen ook van belang zijn voor andere zorgsectoren, met name sectoren die worden gekenmerkt door zeer kwetsbare cliënten en een langere periode van zorg.

Dankwoord

'Maak het maar niet te lang', zei mijn promotor. Bij deze dus een kort en bondig dankwoord.

Allereerst wil ik graag de medewerkers, bewoners en familieleden van de afdelingen bedanken die aan dit onderzoek hebben meegewerkt. Onderzoek op afdelingen voor bewoners met dementie brengt altijd extra werk met zich mee in een situatie die van zichzelf al complex genoeg is. Ik waardeer het dan ook zeer dat zoveel zorgorganisaties wilden participeren in het onderzoek.

De leden van de leescommissie, prof. dr. P.G.M. van der Heijden, prof. dr. A.P.W.P van Montfort, prof. mr. dr. B.A.M. The, prof. dr. B.G.M. Völker en prof. dr. J.J.M. van Delden wil hartelijk danken voor hun beoordeling en de waardevolle feedback op dit proefschrift.

Een proefschrift maak je niet alleen. Mijn promotoren en co-promotor wil ik bedanken voor hun hulp en steun bij het tot stand komen van dit proefschrift. Miel en Dinnus, hartelijk dank voor jullie input met betrekking tot het vaststellen van kwaliteit van leven van ouderen met dementie en het delen van jullie kennis over RAI en de setting waarin dit onderzoek is uitgevoerd. Cordula, met jou heb ik niet alleen gewerkt aan dit proefschrift, maar ook aan een groot aantal andere onderzoeksprojecten. Het waren niet altijd de makkelijkste projecten, maar onze samenwerking verliep altijd heel prettig. Dank voor je inzet en enthousiasme. Peter, er is niemand die zo'n rotsvast vertrouwen had in dit onderwerp als jij. Bedankt voor al je hulp en de plezierige samenwerking. Hopelijk werken we het onderwerp in de toekomst nog wat verder uit.

Prof. dr. Henk Flap wil ik graag bedanken voor zijn onmisbare input met betrekking tot sociale netwerken tijdens dit promotie-traject. Prof. dr. John Hirdes wil ik hartelijk danken voor zijn bijdrage aan dit proefschrift en de mogelijkheid om vier maanden te werken aan de University of Waterloo in Canada. Thanks John, to you and your team. I expect that you are quite able to read this in Dutch.

Dank ook aan Debby Gerritsen voor haar bijdrage aan dit proefschrift. Debby, gelukkig hebben we ook altijd veel plezier bij het schrijven van artikelen. Hopelijk blijven we samenwerken in de toekomst.

Peter Spreeuwenberg, bedankt voor je ondersteuning bij de multilevel analyses.

Christel, zonder jou had dit proefschrift er niet zo goed uit gezien. Heel erg bedankt voor al je hulp bij de lay-out.

Graag bedank ik ook mijn oud-collega's op het NIVEL en mijn huidige collega's van ActiZ voor de prettige samenwerking en hun interesse in mij en in dit proefschrift.

Ivette, super bedankt voor het ontwerpen van de kافت voor dit proefschrift. Net wat ik nodig had.

Lieve vrienden en familie, zonder jullie had ik dit proefschrift natuurlijk helemaal niet kunnen schrijven. Floor, op dag één van mijn promotietraject hadden we al besloten dat jij paranimf zou zijn. Helaas loopt het in het leven niet altijd zoals gepland. Ik hoop dat je erbij kunt zijn op 30 september. Perre en Rens, wat ben ik blij met jullie als broers en (reserve)paranimfen.

Papa en Mama, heel erg bedankt voor het oppassen op de kinderen en het klussen in huis, terwijl ik nog eens een hoofdstuk ging schrijven op mijn vrije middag. Fijn dat jullie altijd voor me klaar staan.

Wilfried, er is niemand die zoveel heeft moeten laten voor dit proefschrift als jij. Heel erg bedankt voor je inzet en je steun, maar vooral voor je liefde. Sjaantje, Pieter en Thomas, ik houd van jullie! Het is tijd voor iets anders, we gaan op vakantie!

Curriculum Vitae

Sandra van Beek was born on December 4 1971 in Breda, the Netherlands.

In 1990, she graduated from the Onze Lieve Vrouwe Lyceum in Breda, and then studied Social Psychology at Utrecht University, with the specialisation of researcher. She graduated from university in 1999.

During and after her study, she worked for two years at the 'Regionaal Indicatie Orgaan' of the GG&GD Utrecht.

From 2001 to 2011, she worked as a researcher at the Netherlands institute for health services research (NIVEL). Here she was involved in research on the quality of care and quality improvement in long-term care facilities, measurement of quality of life of elderly persons, and caregiver burden of family-members of patients with dementia.

In 2006, she worked for four months as a visiting researcher with the interRAI Canada research group at the University of Waterloo Canada, investigating outcome indicators for long-term care.

Since February 2011, she works as a senior policy advisor at ActiZ, the Dutch association for residential and home care organizations and infant and child health clinics. The members of ActiZ annually provide care for more than 2 million clients and employ around 430,000 people. In her current position, she is involved in (national) quality policies and quality improvement in long-term care and maternity care.

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