Sjenny Winters

TRINITY OF QUALITY IMPROVEMENT

Studies on structure, process and outcome related to quality improvement in long-term care in the Netherlands between 2007 and 2011

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For reasons of consistency within this thesis, some terms have been standardised throughout the text. As a consequence the text may differ in this respect from the publications that have been published.

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Chapter 1

GENERAL INTRODUCTION AND STUDY OUTLINE

This thesis discusses quality improvement in long-term care organisations in the Netherlands. It explores the influencing factors on quality improvement and aims at identifying opportunities for long-term care organisations to 'improve their improvement'. This introduction sketches the outline of the research questions, firstly by explaining more about the history of quality improvement in the Netherlands and secondly by explaining the setting of Dutch long-term care. Thirdly, we present a theoretical background of quality improvement and we conclude with the various research questions of this thesis.

HISTORY OF QUALITY IMPROVEMENT IN DUTCH HEALTHCARE

The rise of quality thinking

Over the past decades, quality improvement has become an important topic in healthcare all over the world. Methods to improve daily work have existed for years, but a quality theory on improvement in healthcare was as yet lacking. In the 1960s the industrial sector introduced models for quality improvement for multinationals.[1] One of the leading theories of quality improvement was stated in 1960 by Deming et al.[2] This theory hypotheses the presence of an improvement cycle, the Plan-Do-Study-Act cycle (PDSA-cycle). The model described a way of quality improvement in which the result of each phase serves as input for the subsequent phase. This theory presumes that providers are willing to improve when evaluations show poor quality of care. Knowledge about one's own performance on quality will (potentially) lead to quality improvement, and quality improvement activities will lead to better outcomes.[3] A market-oriented environment will encourage the push towards quality improvement.[4-7] In the industrial sector quality management became more and more successful and new quality models, standards and guidelines were developed.[8, 9]

The development of a quality improvement theory in the Dutch healthcare started in the 1980s. Two major transformations during the following decades were important for this development:

- the debate about the theory of quality improvement and how to implement this theory during several conferences at the end of the last century and
- the introduction of a market-oriented system in healthcare in the first decade of this century and the simultaneous growing need for transparency, including the search for valid and reliable outcomes.

The quality debate: towards a quality system

At the end of the 1980s, an urgent need became apparent to reframe the healthcare system in the Netherlands, due to rising costs. Healthcare was mainly government regulated with hardly any influence of healthcare providers, patients and health insurers for volume, costs, quality and efficiency of healthcare services.[10] In 1986 a national commission supervised by the CEO of Philips, mr Dekker, advised a market-oriented system in which the introduction of competition made stakeholders responsible for healthcare quality and costs.[11] New concepts were responsibility, accountability, quality management and efficiency for all stakeholders.[12] This changing policy towards healthcare providers, patients and health insurers presented an opportunity to determine new mutual agreements on several topics such as costs, quality of care, applicability, accessibility and bringing in the voice of the patient.

For the topic 'quality of care' several conferences were organised, bringing the stakeholders together. During these so-called 'Leidschendam conferences', named after the village where the meetings took place in 1989, 1990, 1995 and 2000, the assembled stakeholders agreed on how to implement quality management in Dutch healthcare.[13] During the first conference a letter of intent was signed by all stakeholders to work together towards a coherent system for quality. The second conference, only one year later,

focused on working out the letter of intent in practical terms regarding responsibility, relevant criteria and the development of quality systems. During the third conference in 1995 more attention was given to creating external assessments and audits, developing information about care for patients and building good stimuli and conditions for quality management. The last conference evaluated the development of quality management in the Netherlands during the previous decade. The new focus on quality matched the natural interest of professionals in the quality of their profession. Instruments such as peer reviews and guideline development had already been introduced in the medical profession.[12, 13] With the internal interest and the external stimuli for accountability and efficiency, 'quality' became a new policy field with its own jargon.[12]

During this first 'quality decade' and as a result of the first three conferences, a law was introduced in 1996, obliging every healthcare organisation to have a quality system.[14] The focus on quality was mainly system-oriented and the main activities consisted of writing procedures and handbooks with quality guidelines.[15] This system-thinking phase made the healthcare sector more and more aware that a good system does not automatically lead to better quality outcomes.

The introduction of competition and transparency: towards quality outcomes

At the same time, the discussion continued about the sustainability and affordability of healthcare started by the Dekker commission. Finally, 2006 saw the introduction of the above-mentioned market-oriented healthcare system in the Netherlands. Health insurers, health providers and patients were given more responsibility for quality improvement and cost reduction. The Healthcare Inspectorate's task was to monitor quality and safety.[16] Patients had to be able to choose the provider offering the best quality and health insurers should be able to purchase healthcare services with good quality and the best price. This financial incentive was aimed at stimulating providers to deliver good healthcare services with a high quality standard. Therefore, in order to show this quality standard, the focus shifted from system thinking to outcome measurements and quality performance.

For that reason, the Ministry of Health, Welfare and Sports initiated in 2005 a programme aimed at creating transparency of quality performance: *'Zichtbare Zorg'* (Visible Care). The programme was organised in cooperation with health insurers, branch organisations of providers, the Healthcare Inspectorate as well as patient organisations.[17] The programme's goals were various:[18]

1. information to choose: to inform patients about the quality of healthcare delivered by providers in order to be able to make well-informed choices;
2. information to purchase: to inform health insurers about the quality of healthcare delivered by providers in order to make well-informed choices in terms of contracting providers;
3. information to supervise: to create transparency and accountability about quality performance for the Ministry, the Healthcare Inspectorate and other stakeholders and
4. information to improve: to inform providers of care about their quality performance in order to be able to improve quality of care.

In this programme, the quality of care for all healthcare sectors was defined, including a roadmap for implementing guidelines, for measuring quality outcomes and systems and for monitoring the quality of care and a website with quality performance of healthcare providers for transparency (*www.kiesbeter.nl*).

DUTCH LONG-TERM CARE

The organisations and their challenges

In the Netherlands, institutional care for older people has been divided into care for elderly with physical disabilities (somatic care) and care for elderly with mental disabilities (psycho-geriatric care).

There are nursing homes (N = 479 in 2009) for elderly with medical and psycho-geriatric problems and homes for the elderly living in a protected environment and the opportunity of asking for direct care (N = 1,131 in 2009). There are also homes combining these intramural social care and healthcare services (N = 290 in 2009), sometimes in an extramural setting. In addition, there are home care organisations (N = 248 in 2009) delivering healthcare services by professionals at home. This type of care is characterised as less intensive than intramural care and can only be given with a lot of help from family or informal caregivers.

There are many different organisational structures for the provision of Dutch long-term care services, varying from a very small single organisation operating solely with one type of healthcare service to very large corporate structures delivering a complete range of care, such as nursing homes for clients with mental disabilities as well as physical disabilities and home care. Most of these organisations are members of a branch organisation, called Actiz. Actiz negotiates about the policy, sustainability and quality of care in the long-care setting with national organisations such as the Ministry of Health, Welfare and Sports, the Healthcare Inspectorate and health insurers.

The introduction of a market-oriented healthcare system with changes in financing [9, 19] and the emphasis on quality improvement created an urge for being transparent and to monitor quality of care.[20-30] Health insurers, operating regionally for organisations in long-term care, encouraged competition between healthcare organisations and transparency about quality performance. As a result of this new healthcare system, organisations merged in order to survive these market forces and to meet the rising demands for quality performance and transparency. This new system with its changes challenged long-term care in two different ways:

1. the challenge to measure quality with uniform, standardised and relevant outcomes that are valid and reliable and create the right context to stimulate improvements;
2. the challenge to implement the measurements in its quality management system and to organise quality improvement activities in organisations in order to improve.

The challenge to measure

With the programme *'Zichtbare Zorg'* the sector for long-term care organisations started developing a quality framework, which defined the minimum care to be expected by clients. The necessity of measuring the outcome of care was an important basis of the quality framework, rather than structure or process aspects of quality.[18] The quality framework was based on two types of quality outcomes: client-related outcomes and professional outcomes.[18] Instruments and procedures to measure these were also developed.

Client-related indicators

The CQ-Index (Consumer Quality Index) has been developed as an outcome measure for the perspective of clients. The CQ-Index consists of a series of questionnaires measuring the experience of patients. They are based on the American CAHPS (Consumer Assessment of Healthcare Providers and Systems) questionnaires [31, 32] and the Dutch QUOTE (QUality Of care Through the patient's Eyes) instruments.[33] The CQ-Index for long-term care was developed in 2006.[34] Three CQ-Index questionnaires were developed for these three types of long-term care services organisations: home care, psycho-geriatric care and somatic care. All organisations in Dutch long-term care are obliged to measure their quality with the CQ-Index questionnaires every two years by an independent survey vendor. The CQ-Index questionnaires consist of fifteen to nineteen outcomes (varying per CQ-Index). The quality outcomes measured with the CQ-Index questionnaires are presented in Box 1.

Box 1 *Client-related quality indicators for long-term care as measured by the CQ-Index questionnaires*

Indicators	Brief description
Care plan and evaluation	The presence of a care plan and its evaluation with the resident of this plan
Shared decision-making	Make decisions in consultation with the clients/representatives
Attitude	The attitude of the care-givers
Information	The information given by the organisation
Telephone access	The accessibility by telephone of the organisation or care givers
Body care	The care for the body of the resident given by care-givers
Meals	The taste of meals the organisation prepares and serves
Competency and safety	The competence of care-givers and the safety of the care they give
Physical restraints	The respect concerning the rights of restraining
Comfort	The cleaning of the home of the resident
Atmosphere	The atmosphere in the organisation
Housing and privacy	Enough living space and respect for privacy
Activities	The possibilities for daytime activities
Autonomy	Determining the daily schedule by the resident
Mental well-being	The experience of mental support
Safety living environment	The safety of the environment of the resident
Reliability of providers	The reliability of care givers and workers of the organisation
Availability of personnel	The presence and availability of workers in the organisation
Integrated care	The level of consistency of care

Professional outcomes

A standardised set of quality outcomes has also been developed for professional care, based on the Resident Assessment Instruments.[35] All providers are obliged to measure the professional indicators by self-recording every year.[18] For intramural care, which includes somatic care and psycho-geriatric care, a set of fourteen quality outcomes has been formulated and for home care a set of seven quality outcomes, presented in Box 2.

Box 2 *Professional outcomes*

	Intramural care	Home care
% of clients with a pressure ulcer	■	■
% of unintentional weight loss scored by a nurse	■	
% of unintentional weight loss (*i.e.* malnutrition) reported by the client	■	■
% of clients with an incident of falling	■	■
% of clients who had an incident with medicines	■	
% of clients who use psycho-pharmacy	■	
% of clients who use antidepressants	■	
% of clients who have been vaccinated	■	
% of clients who are incontinent	■	■
% of clients whereby a doctor or a specialised nurse was involved diagnosing incontinence	■	■
% of clients who have a catheter	■	■
% of clients with problem behaviour	■	
% of clients with physical restraints	■	
% of clients suffering from depression	■	■

The challenge to improve

While this framework was implemented in the total Dutch long-term care sector as of 2007, the waves of data about quality of long-term care gave organisations the opportunity to get an insight into their quality outcomes and to monitor quality improvements over time in comparison with the national level. Their results were presented on a national website to enhance transparency. In feedback reports providers were informed about their own level of quality performance on the above-mentioned outcomes. The literature showed that publication of quality reports for nursing homes of long term care services organisations was positively associated with quality improvement.[36] In theory, this market-oriented approach presumed to influence and stimulate quality improvement. However, how exactly this may contribute to quality improvement at an organisational level was unknown. Moreover, the way in which organisations had to use this information for quality improvement was also unclear. In the next paragraph we investigate the theoretical background of these assumptions.

THEORY ABOUT QUALITY IMPROVEMENT

Structure, process and outcome

In scientific theories about quality improvement the principles of Donabedian play a crucial role.[37] Quality improvement comprises structure, process and outcome elements, the trinity of quality improvement. The implicit assumption is that a good structured and organisation-wide approach leads to better work processes. Improving the work processes will lead to better outcomes. The question is how a well-structured organisation can improve both the daily process of care and the quality performance. This has been investigated for hospitals in the MARQUIS and DUQUE programme.[38-41] This study found that a well-implemented quality system in hospitals (structure) contributed to performing quality activities (process). However, an inverse relation was found with patient experience outcomes. The link between process and outcome is also contradictory. Another study found some evidence that improving process will lead to better outcomes.[42] However, there are also studies where no better outcomes were found when improving the process.[43, 44]

It would appear that the relations between process, structure and outcome are rather complex. The availability of outcomes gives the opportunity to stimulate quality improvement.[36] However, outcomes are not directly linked to structure and process and they may be difficult to change.[45] Furthermore, outcomes may be perceived as being somewhat beyond the control of the provider and whether they are representative for the quality of care in terms of structure and process is unknown. For outcome measures to be effective tools for quality improvement, providers should know what processes affect patient outcomes and how they can influence outcomes.[45] Several studies have investigated the association between quality outcomes and characteristics of healthcare providers and quality outcomes and payment systems.[46-48] The results of these studies were not always congruent.[48] Some studies showed that organisational characteristics such as bed size, type of services and corporate structure influence quality improvement.[49, 50] However, most of these studies were preformed addressing hospital care.

A conclusion could be that the way *in which* structure and process aspects impact outcome mainly remains a black box, in particular in long-term care. There is hardly any research about the degree in which elements of structure, process and outcomes influence improvement in quality in long-term care. Therefore, the relationship between the three elementary parts of the principles of Donabedian should be further explored in healthcare in general, and in particular with respect to quality improvement in long-term care for the elderly.

The context of an organisation and quality improvement

In theory a market-oriented system emphasises the importance of outcomes of quality of care. The assumption is that knowledge about bad or moderate quality performance of healthcare providers will lead to quality improvement activities.[36, 51] This will be especially the case when these data are transparent and they can be used by clients for selecting organisations with high quality of care and by health insurers to contract organisations with a more than average quality.[52] Health insurers, operating regionally for long-term

care sector, encourage competition between healthcare organisations at a regional level and transparency on a national level. This pressure from health insurers can be an external motivation for improvement.[51, 53-55]

What type of evidence exists of transparency stimulating quality improvements? Some research shows that hospitals are interested in patient surveys, though not for improvement issues. The results remained underused and were mainly used by managers for accountability purposes.[22, 56, 57] Also, specific results for the hospital's own wards were less well-known than the overall hospital results, although care providers were more interested in the specific results.[58] In a study of Zinn and colleagues it was found that in more than 75% of the nursing homes quality improvement activities were influenced by institutional and market factors. Another study showed that publication of quality reports for nursing homes was indeed associated with quality improvement.[7, 36] In Dutch long-term care some improvements were found in outcomes after the introduction of market forces.[59] However, quality improvements have been modest, the effects of quality improvement on improving resident outcomes are uncertain, and the mechanisms through which nursing homes successfully improved their performance is unknown.[45, 60] This raises the question as to what exactly triggered this quality improvement. Were autonomous factors dominant, were the outcomes influenced by contextual factors? Did it matter which quality improvement activities were organised? Were some activities more successful than others in improving outcomes?

THIS THESIS

The presence of structure elements, process activities and outcomes in long-term care settings makes it possible to investigate the process of quality improvement in their mutual relationships.[37] This thesis aims at exploring some of the relationships between structure and process elements, such as quality improvement activities and their influence on quality improvement in order to help long-term care organisations to 'improve their improvement'. The central purpose of this thesis is

'to give insight into the influences of structure, process and outcome on quality improvement in long-term care'.

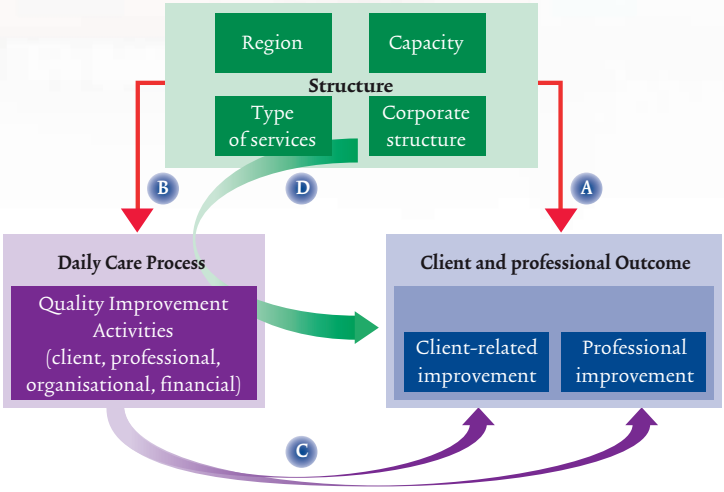
We refined a model by Kunkel to investigate the process of quality improvement in Dutch long-term care and the influences on this process. Kunkel investigated the relation between structure, process and outcome by adapting the model of Donabedian into a reciprocal model.[61] We adapted it yet again to make it more compatible with the Dutch situation.

1. *Structure* was described in four components:
   a. the region in which a healthcare provider is located;
   b. the type of healthcare services;
   c. the capacity of the healthcare provider expressed in number of clients
   d. the size of the corporate structure.
2. *Process* was described as quality improvement activities, classified in four groups:
   a. client-related;
   b. professional-related;
   c. organisational-related and
   d. financial-related activities.

3 *Outcome* was described as follows:
   a client-related outcome measures such as the outcomes of the CQ-Index;
   b the professional outcome measures and
   c quality improvement made on the outcomes between the consecutive years in which the indicators were measured.

These elements and their mutual relationships are presented in Figure 1.

Figure 1 *Research model*



Before exploring the associations and mutual influences of the different elements in this model, we would like to explore the reliability and validity of the outcome measures, especially the CQ-Index as a major outcome measure. This will be done in the first part of this thesis.

In the second part we investigate which triggers can be identified for quality improvement, which quality improvement activities can be identified in long-term care and which activity leads to better performance on the outcomes. Furthermore, the extent of quality improvement at a national level was investigated for the client-related and professional outcomes. For this study we used quantitative and qualitative research methods.

The research questions of this thesis are as follows:
1 How reliable and valid are the client-related outcome measures?
2 What is the influence of structure on client-related and professional outcomes (Arrow A)?
3 What is the influence of structure on quality improvement activities (arrow B)?
4 Which quality improvement activities contribute to the improvement on the client-related and professional outcomes (Arrow C)?
5 Does the corporate structure have an effect on improving outcomes by stimulating and performing QI activities to improve the daily process of care (Arrow D)?
6 Which factors determine the difference in outcome improvement between best and worst practice facilities on client-related outcomes (Arrow D)?

With this thesis we hope to create more evidence-based knowledge on how quality improvement works out in long-term care and which factors and determinants of an organisation and its context influences quality improvement. Long-term care is characterised by clients who are actually living in these organisations, as well as being old and vulnerable. The mean level of education of the professionals is lower than for example in hospitals or primary care. This means that knowledge from other sectors could be useful but is not automatically transferable.
The contribution to the existing research is how to measure, improve and influence the Dutch long-term care system for improving quality for their clients. Research on this theme in long-term care is rare. The contribution to daily practice is to detect relevant determinants for quality improvement and on a national level to describe elements of policies through which quality improvement will be most successful.

The structure of this thesis

This thesis starts with the development, reliability and validity of measuring quality by using the CQ-Index in *Chapter 2 and 3*. The second Chapter addresses the development and its psychometric characteristics. Because an important part of the CQ-Index has been conducted by interviewers, Chapter 3 describes the effects of interviewer characteristics on outcomes and therefore the robustness of the CQ-Index.

In *Chapter 4*, we focus on the results of those CQ-outcomes and explore the influence of some structure elements. We describe the national performance on client-related and professional outcomes, including the influence of regional influences on client-related and professional outcomes (*Arrow* A).

In *Chapter 5*, we focus on quality improvement activities and also explore the influence of structure elements. We provide an overview of the quality improvement activities that were taken up by organisations in long-term care, including the influence of the structure on the chosen quality improvement activities (*Arrow* B).

Chapter 6 focuses on the quality improvement realised and again explores the influence of structure elements. We explain which quality improvement activities have contributed to the quality improvements between 2007 and 2009 (*Arrow* C) and to what extent structure contributes to this improvement on client-related and professional outcomes (*Arrow* D).

Chapter 7 focuses on the lessons to be learned from best practices about the key determinants of an organisation that contributed to quality improvement. Because for the major part organisations providing somatic healthcare services were improved this study focussed on organisations with somatic healthcare services only.

Finally, in *Chapter 8* the main findings of this thesis have been summarised and discussed. We can provide answers to the research questions by combining the findings of *Chapter 2-7*. We conclude this thesis with reflections on methodological shortcomings, practical implications and ideas for further research.

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Chapter 2

MEASURING CLIENT EXPERIENCES IN LONG-TERM CARE IN THE NETHERLANDS: A PILOT STUDY WITH THE CONSUMER QUALITY INDEX LONG-TERM CARE

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ABSTRACT

Background

This study aims to describe the development, testing and optimization of a new standard instrument, the Consumer Quality Index (CQ-Index®) Long-term Care, for measuring client experiences with long-term care in the Netherlands.

Methods

Three versions of the CQ-Index questionnaires and protocols for study sampling and data collection were developed, designed for interviews with residents of nursing or residential care homes and postal surveys among representatives of psycho-geriatric residents and homecare clients. From July to November 2006 a pilot study was conducted among 2,697 clients of 68 nursing or residential care homes, 2,164 representatives of clients in 57 psycho-geriatric care institutions, and 1,462 clients of 19 homecare organisations. We performed psychometric analyses and descriptive analyses, and evaluated the pilot study.

Results

The pilot study showed the feasibility and usability of the instruments, supported the multidimensionality of the questionnaires and showed first findings on client experiences and possibilities for quality improvement. Nine scales applied to all care settings: shared decision-making, attitude and courtesy, information, body care, competence and safety of care, activities, autonomy, mental well-being, and availability of personnel. The pilot resulted in three optimized questionnaires and recommendations for nationwide implementation.

Conclusions

The CQ-Index® Long-term Care provides a good basis to investigate the quality of nursing homes, residential care homes and homecare from the clients' perspective. This standardised instrument enables a nationwide comparison of the quality of long-term care for the purpose of transparency and quality assurance.

BACKGROUND

The opinions and experiences of consumers in healthcare are generally considered to be relevant indicators of quality of care in addition to indicators used to evaluate the effectiveness, efficiency and safety of care. With a growing demand for patient-centredness and for the transparency and accountability of healthcare performance, client surveys are increasingly mandatory for the purpose of public reporting, quality assurance and governance. But the aim, scope, topics and way of questioning of these surveys may vary

widely, thus hampering a systematic comparison of healthcare sectors and providers, nationwide benchmarking and monitoring of the quality of care over time.

Therefore, in 2006 the Dutch Ministry of Health, Welfare and Sport mandated the development of a national standard for the measurement and comparison of consumer experiences in healthcare, called the Consumer Quality-Index or CQ-Index®. This standard is based on the American CAHPS® questionnaires[1] and Dutch QUOTE (QUality Of care Through the patient's Eyes) instruments.[2-4] As a registered trademark the CQ-Index® is owned by the Dutch Centre for Consumer Experience in Healthcare [5] that coordinates the development of CQ-Index questionnaires and the conduct of client surveys by certified organisations according to specific guidelines.[4]

The new instruments should provide valid, reliable and comparable information about client experiences and their preferences to evaluate the quality of care from the consumers' perspective. Care providers can use this information for quality improvement and for external accountability and public reporting. Results can also be used by:

a consumers to select a health insurer or a care provider;
b client organisations for advocacy services;
c insurers to purchase good care;
d the Healthcare Inspectorate and the Dutch Care Authority to supervise and regulate care;
e the Ministry of Health, Welfare and Sport to monitor healthcare.

So far, more than twenty CQ-Index® instruments have been developed or are under construction; for health plans[6], for specific sectors or services (primary care, mental healthcare, hospital care and specific surgery)[7-9] and for specific patient groups.[10,11]

This article describes the development, testing and optimization of a new sector-specific instrument, the CQ-Index® Long-term Care.[12] In the Netherlands, long-term care is generally provided in nursing homes or residential homes (either in somatic or psycho-geriatric wards or care units) and in a homecare setting. First findings and experiences with the toolkit (*i.e.* questionnaires and protocols for sampling and data collection) are presented and evaluated, aimed to assure the usability and feasibility of the instruments for national implementation as standard client surveys in the nursing and care sector. Research questions are:

1 What are the psychometric properties of the draft versions of the questionnaires?
2 What are the experiences with the care provided and what are possibilities for quality improvement?
3 What are the first experiences with the application of the CQ-Index and how could the questionnaires and corresponding protocols be optimized?

METHODS

Development of the CQ-Index® Long-term Care

A national Quality Framework Responsible Care for the sector Nursing, Care and Homecare[13] provided a conceptual basis for the CQ-Index® Long-term Care (*see Additional file 1*). This framework represents a nationwide consensus of all parties or stakeholders involved in the sector (*i.e.* organisations of clients, professionals and care entrepreneurs, the Healthcare

Inspectorate, care insurers and the ministry of health) on indicators for ten quality domains: Care/life plan, Communication and information, Physical well-being, Safety of care, Domestic and living conditions, Participation and autonomy, Mental well-being, Safety of living environment, Sufficient and competent personnel, and Coherence in care. Each domain includes a set of indicators reflecting the structure, process and outcomes of care.[14] The performance of care providers could be measured either by institutions themselves (*i.e.* indicators registered at the organisational and client level, for example with the established Resident Assessment Instruments), or by client surveys. For the latter purpose, first a CQ-Index had to be developed.

Given the various client populations and domestic settings, three versions of the CQ-Index questionnaire and tailored survey methods were designed:

a a questionnaire for face-to-face interviews with residents of somatic wards of nursing or residential homes who were unlikely to fill out lengthy questionnaires because of illness or disability;

b a mail questionnaire for representatives (spouses or family members) of residents of psycho-geriatric wards who are unable to participate because of cognitive impairments; and

c a mail questionnaire for clients in homecare who were most likely to be able to complete a self-administered questionnaire.

For each survey setting detailed protocols were developed to ensure standardization of the data collection, *i.e.* instructions for the selection and sampling of study populations and procedures for conducting the interviews and postal surveys.

To construct draft versions of the questionnaires, relevant questions on the indicators of the national quality framework[13] were selected from existing validated questionnaires on the quality of care and quality of life of residents or homecare clients[15–18] and the CAHPS® Nursing Home Survey.[19,20] Initially, the input from focus groups with clients was used to develop these instruments. Furthermore, results were used from a study on developing quality report cards for long-term care by means of focus groups and concept mapping.[21]

Consensus on the selection of items was reached with members of the Steering Committee Responsible Care (*i.e.* stakeholders, including client representatives). Questions on opinions or satisfaction were reformulated to assess actual experiences, in line with the standard CQ-Index format and because experience measures are known to be less subjective and to yield more detailed information for quality improvement.[22] Questions on psycho-geriatric care were only formulated for situations that family or other representatives could actually have observed or experienced themselves (*i.e.* no proxy-ratings). Examples of Experience questions are: '*Do caregivers treat you/the client with courtesy and respect?*' (Never/Sometimes/Usually/Always) and '*Do you have a contact person in the care institution?*' (Yes/No). To measure respondents' overall assessment of the healthcare organisation and the staff, two global ratings were included. An example of an overall assessment is: '*How would you rate the caregivers?*' (0 'Worst caregivers possible' – 10 'Best caregivers possible'). Finally, questions on background characteristics of respondents (*e.g.* age, sex, type and duration of care, self-reported health) were added. This resulted in three draft versions of so called Experience questionnaires. These lists consisted of 83, 76 and 117 questions respectively to measure the experiences of residents, representatives and homecare clients.

For each Experience question a corresponding Importance question was formulated to assess the importance clients attach to different aspects of care (1 'Not important at all' to 4 'Extremely important'). For example: 'How important is it for you that caregivers treat you/the client with courtesy and respect?'. This resulted in corresponding Importance questionnaires for the three study populations.

Pilot study

The draft questionnaires and the protocols for sampling and data collection were tested in a pilot study conducted between July and November 2006 in the Netherlands. Four independent research organisations were responsible for data collection. An instruction meeting was organised to ensure consistency of research methods. The registration of consecutive steps of the study sampling together with the experiences of the organisations and their interviewers and the responses of clients enabled an extensive evaluation of the pilot and guided the revision of the instruments. Revisions were made after consultation of the stakeholders.

A total of 144 institutions were recruited through the Dutch organisation for care providers (ActiZ) all of which voluntarily participated, yielding 186 locations or wards as units for analysis (*Table 1*). The participating institutions were randomly divided among the research organisations. Every location or unit was asked to assign a coordinator for the survey and to provide an update client list for the study sampling.

Exclusion criteria were defined beforehand to increase the homogeneity of study samples within the specific care settings and across units of analyses, and to prevent extra burden of the survey being imposed on the severely ill. A selection was made in cooperation with the nursing staff because they knew about the health and residential status of their clients. Exclusion criteria for the three research settings were:

a *Residential care on somatic wards*: residents who were recently admitted (less than one month ago), clients for rehabilitation or reactivation, residents with severe cognitive or psychiatric problems, or residents who were very ill or in a terminal phase.
b *Psycho-geriatric residential care*: clients with a short stay (less than one month) and residents with a very bad health status or those who received terminal care.
c *Homecare*: clients aged under 18 years and those who had received homecare for less than six months.

To enable non-response analyses and to check whether the samples were representative, the total number of clients, the numbers excluded and the reasons for exclusion were registered and client characteristics (gender and age) were gathered for all potential participants.

Because of the length of the questionnaires it was decided to keep the Experience questionnaire and the Importance questionnaire separate and present them to different study samples. The sample sizes (*see Table 1*) were based on previously applied survey methods in The Netherlands[15–18,23], the CAHPS Nursing Homes field study[20] and expected response rates to the postal surveys (at least 50%). Also practical considerations such as mean number of residents or clients per unit and costs of face-to-face interviews played a role.

Relatively large samples of homecare clients were drawn, with equal numbers of clients being selected for domestic care and nursing care, in order to enable the comparison of two types of homecare. Sample sizes for the assessment of importance ratings were much smaller because the variation in answers is known to be small.

Table 1 *Number of participating institutions and locations, and sample sizes for each study setting*

	Nursing or residential care homes		Homecare
	Somatic care	*Psycho-geriatric care*	
Participating institutions			
Organisations	68	57	19
Locations/wards/units	92	75	19
Sample sizes per location			
Experience questionnaire (n)	30	60	200
Importance questionnaire (n)	5	10	20
Total sample required (n)	**35**	**70**	**220**

Ethical approval of the study was not necessary as research by means of interviews or surveys that are not taxing and or hazardous for patients (*i.e.* the once-only completion of a questionnaire containing questions that do not constitute a serious encroachment on the person completing it) is not subject to the Dutch Medical Research Involving Human Subjects Act (WMO). Subjects were free to respond to an interview or questionnaire, they were informed about the aim of the survey and they were entitled to stop participating at any time during an interview.

Interviews

The research organisations were responsible for training their interviewers, facilitated by an interview protocol on how to prepare, introduce, conduct and finish the interview. For every interview a special form had to be filled out by the interviewer to register the unique codes of the interviewer and the respondent, the number of efforts to make contact, the date of the interview, details about the progress of the interview such as the duration and reasons for breaking it off, comments on difficult questions or problematic answering categories and additional observations.

Mail surveys

The mail surveys included two reminders: a thank-you card after one week (in week 2) and a reminder letter with another questionnaire in week 5. A unique identification number enabled the identification of non-responders and non-response analyses. Questionnaires could be sent back to the research organisations in a prepaid envelope. A help-desk was available for phone calls and e-mails about the survey.

ANALYSES

First, psychometric analyses were conducted to assess the appropriateness and validity of items and the dimensional structure of the questionnaires. These analyses, also described in the Manual for developing CQ-Index instruments[4], included item analyses (percentage of missing responses, skewness, inter-item correlations and importance ratings), explorative factor analyses (Principal Component Analysis with oblimin rotation; Eigenvalue > 1; KMO > 0.60 and Bartlett's test of sphericity: $p < 0.05$) and reliability analyses (Chronbach's alpha for internal consistency of scales). In classical test theory an alpha of 0.7 or higher is recommended for a set of items to be considered a reliable scale[24], but 0.6 is generally accepted as a minimum value in exploratory analyses[25] and we provisionally accepted scales with an alpha between 0.6 and 0.7.

Secondly, Experience, Importance and Improvement scores were assessed to get a first impression of clients' experiences and preferences and to determine priorities for quality improvement. Experience scores were calculated for the scales of the Experience questionnaire, with a possible range of 1 (Never/No) to 4 (Always/Yes). Importance ratings were based on the average scores on the Importance questionnaire (1 'Not important' to 4 'Extremely important'). Improvement scores were computed by combining the reported experiences and importance ratings with the formula: proportion negative experiences (Never/Sometimes or No) *x* Importance score. These improvement scores could vary between 0 and 4, with higher scores indicating a stronger need for quality improvement.

Finally, additional item-analyses were done to optimize the CQ-Index® Long-term Care. The aim was to select only relevant, valid and reliable questions. Items candidate for modification or exclusion were selected according to the following criteria:

1. item non-response: > 25% answers are missing or item is not applicable (then the number of cases per unit would be too small to compute reliable scores);
2. item skewness: > 80% of answers in an extreme 'positive' response category (indicating low variation between cases and settings);
3. item overlap: Pearson correlation between items > 0.70 (indicating more than 50% overlap in answering patterns and suggesting that one of these items is redundant);
4. item not fitting in a scale or not attributing to scale reliability: factor loading < 0.40 or alpha increases if item is deleted (*i.e.* item does not contribute to a homogeneous set of items for which a reliable composite score can be computed); and
5. low importance rating for the quality aspect: > 25% answered 'not important' (*i.e.* item does not add much to the content or face validity of the questionnaire). Items meeting one or more criteria were discussed and modified or deleted after a final discussion with stakeholders (*i.e.* members of the Steering Committee).

Furthermore, the experiences and comments of respondents and interviewers were used to optimize the order of sections, the wording or clarification of items and the response scales.

RESULTS

Survey data

Response and client characteristics

Table 2 summarises the response and client characteristics for each survey setting and each type of questionnaire.

Table 2 *Response and client characteristics per setting and type of questionnaire*

	Somatic care (Residents)		Psycho-geriatric care (Representatives)		Homecare (Clients)	
	Experience	*Importance*	*Experience*	*Importance*	*Experience*	*Importance*
Number clients selected (N)	2,450	315	2,575	233	2,599	204
Number of participants (N)	2,386	311	2,000	164	1,363	99
Response (%)	97.4	98.7	77.7	70.4	52.4	48.5
Sex: female (%)	73.4	73.6	77.6	74.7	79.3	81.4
Age: mean (years)	82.8	82.3	90.2	83.5	76.7	76.9
Educational level (%)						
• none or primary education	49.3	54.8	46.5	43.8	33.7	40.2
• secondary/higher education	49.3	44.2	51.0	53.1	63.5	56.5
• other/unknown	1.4	1.0	2.5	3.1	2.8	3.3
Duration of stay/ care (%)						
• less than one year	26.8	27.2	26.3	33.1	23.5	30.9
• 1 to 5 years	52.9	52.8	60.3	56.5	51.2	33.0
• more than 5 years	20.3	20.0	13.4	10.4	25.3	36.1

Interviews with residents (somatic care)

Of the approximately 6,700 residents of the 92 somatic wards, 29% were not eligible to participate in the pilot because of various reasons: cognitive impairments (35% of the excluded residents had severe problems with memory or concentration), too short a stay or rehabilitation (19%), severe illness or terminal care (13%), severe psychiatric problems (12%) or other reasons (21%) such as sensory impairments or other disabilities.

A total of 2,765 residents were selected and invited for an interview and 2,697 (98%) responded positively. Interviewees' were representative of the total eligible population with respect to age and sex (83 years, 74% female).

Eight percent of the interviews stopped prematurely (5% soon after the first questions and 3% halfway), mainly due to cognitive or physical impairments such as memory or concentration problems and fatigue. The mean interview duration was 44 minutes (range 13-100 minutes).

Questionnaires for representatives (psycho-geriatric care)

The participating psycho-geriatric institutions counted on average 60 residents of whom 6% was excluded for various reasons: too short a stay or temporary care (52% of the excluded residents), terminal or palliative care (12%) or other reasons (36%) such as having no relative to fill out the questionnaire.

A total of 2,808 questionnaires were sent to representatives of psycho-geriatric clients, and 2,164 responded (77%). The characteristics of the residents to whom the questionnaires referred were fairly similar to the total psycho-geriatric population (84 years, 75% female).

Questionnaires for homecare clients

The 19 homecare institutions counted on average 1,752 clients and 18% of their clients was excluded, mainly because their care period was too short (96% of the excluded cases had received less than six months homecare, 2% was aged under 18 and 2% was excluded for other reasons such as hospital admission).

Of the 2,803 questionnaires sent 1,613 completed lists returned, and after excluding 151 questionnaires that were not answered by the client (as someone else gave the answers) the response was 52%. Respondents' mean age (77 years) equalled the total client population, but women were overrepresented in the response group (79% versus 70% of all clients).

Scales of the questionnaires

Table 3 shows the results of the factor and reliability analyses for the three Experience questionnaires. Explorative factor analyses of the interview questionnaire for residents of somatic wards yielded 18 factors (explaining 58% of the variance), but two factors concerned only single items and some factors showed a similar content (with same items loading on them). Reliability analyses showed that the interview questionnaire comprised seven reliable scales (Cronbach's alpha 0.70-0.83), five scales with a questionable reliability that were provisionally accepted (alpha 0.64-0.69), and three factors that formed no reliable scale (alpha < 0.60). A similar factor structure was found for the questionnaire on psycho-geriatric care, and reliability analyses showed 12 consistent scales and one scale that was provisionally accepted (Mental well-being: alpha = 0.60). Finally, the homecare questionnaire comprised 14 reliable scales and also a scale on Mental well-being that was provisionally accepted (alpha = 0.64).

The three questionnaires had nine scales in common: shared decision-making, attitude and courtesy, information, body care, competence and safety of care, activities, autonomy, mental well-being, and availability of personnel. Six of these scales were sufficiently reliable (alpha 0.72-0.89) and three scales had a lower reliability (0.64-0.69) in at least one setting.

Both the interview questionnaire for residents and the postal questionnaire for representatives contained six items that didn't fit into a scale and that also met at least one of the other criteria for item deletion or adaptation (and three of these items concerned the same quality aspects). The questionnaire for homecare clients counted 11 separate items of which seven were candidate for exclusion or adaptation.

Table 3 *Scales of the three questionnaires: topics, number of items and reliability (Cronbach's alpha) of the scales*

	Somatic care (Residents)		Psycho-geriatric care (Representatives)		Homecare (Clients)	
Scales/themes	*Items*	α	*Items*	α	*Items*	α
Care plan and evaluation	3	0.40 *	4	0.44 *	5	0.55 *
Shared decision-making	5	0.76	5	0.80	7	0.80
Communication and information						
• Attitude and courtesy of careproviders	5	0.83	3	0.75	5	0.78
• Information	7	0.83	6	0.84	6	0.83
• Telephone access/communication	–	–	3	0.70	5	0.83
Physical well-being						
• Body care	4	0.68 #	5	0.88	2	0.71
• Meal	5	0.64 #	4	0.70	–	–
Competency and safety of care	8	0.82	9	0.89	10	0.86
• Safety of care§					5	0.89
• Restraint measures	–	–	2	0.59 *	–	–
• Reliability of homecare providers	–	–	–	–	6	0.74
Living environment						
• Comfort	2	0.53 *	2	0.53 *	–	–
• Atmosphere	4	0.66 #	4	0.73	–	–
• Housing and privacy	5	0.69 ##	4	0.80	–	–
Participation and autonomy						
• Activities	5	0.65 #	3	0.80	4	0.74
• Autonomy	4	0.72	2	0.72	8	0.74
Mental well-being	6	0.70	2	0.60 #	5	0.64 #
Safety of living environment	4	0.29 *	2	0.54 *	8	0.87
Availability and continuity of care						
• Availability of personnel	5	0.74	5	0.86	6	0.72
• Waiting time for homecare	–	–	–	–	3	0.76
• Flexibility of homecare	–	–	–	–	3	0.88

* *No reliable scale (α < 0,60), thus item scores should be presented separately (no composite scores).*

\# *Scales with an alpha between 0.6 and 0.7 were provisionally accepted, but need to be evaluated in future studies.*

§ *Extra items on taking care of the clients' health resulted in a separate scale 'safety of care' for the Homecare questionnaire.*

Client experiences and opportunities for quality improvement

Homecare clients evaluated their care most positively, with relatively high overall ratings and scale scores (*see Table 4*). The overall ratings were: 8.36 for the professional caregivers and 8.10 for the institutions. Residential care was evaluated somewhat less positively, with overall ratings between 7.39 (for psycho-geriatric care institutions) and 7.97 (for the staff of somatic wards).

Most positive experiences in somatic wards were reported with respect to housing and privacy, autonomy of residents and meals. In psycho-geriatric care the attitude and courtesy of caregivers, meals and telephone access and communication scored relatively high. In homecare the reliability, flexibility and competency of the care providers scored best.

Table 4 *Experiences of residents, representatives and clients: number of valid responses and composite scores* of scales*

	Somatic care (Residents)		Psycho-geriatric care (Representatives)		Homecare (Clients)	
Scales (1 'never/no' - 4 'always/yes')	N	*Mean (s.d.)*	N	*Mean (s.d.)*	N	*Mean (s.d.)*
Shared decision-making	2,134	2.57 (0.84)	1,959	2.74 (0.70)	1,267	2.99 (0.68)
Communication and information						
• Attitude and courtesy of care providers	2,288	3.38 (0.62)	1,930	3.44 (0.55)	1,230	3.53 (0.57)
• Information	2,108	2.70 (0.63)	1,979	3.08 (0.51)	1,234	3.12 (0.55)
• Telephone access/communication	–	–	1,922	3.34 (0.57)	904	3.33 (0.69)
Physical well-being						
• Body care	1,087	3.33 (0.71)	1,558	3.03 (0.64)	241	3.40 (0.66)
• Meals	2,221	3.43 (0.52)	1,643	3.39 (0.52)	–	–
Competency and safety of care	2,107	3.35 (0.56)	1,781	3.17 (0.51)	1,213	3.56 (0.46)
• Safety of care#					87	3.48 (0.70)
• Reliability of homecare providers	–	–	–	–	1,262	3.72 (0.40)
Living environment						
• Atmosphere	2,272	3.23 (0.61)	1,912	3.08 (0.56)	–	–
• Housing and privacy	2,298	3.59 (0.57)	1,955	3.12 (0.86)	–	–
Participation and autonomy						
• Activities	2,207	3.25 (0.60)	1,690	2.87 (0.71)	932	3.08 (0.75)
• Autonomy	2,298	3.44 (0.70)	1,087	2.75 (0.95)	1,271	3.53 (0.41)
Mental well-being	2,174	3.11 (0.63)	1,285	3.30 (0.61)	1,254	3.44 (0.44)
Safety of living environment	–§	–§	–§	–§	441	3.45 (0.83)
Availability and continuity of care						
• Availability of personnel	2,145	2.86 (0.68)	1,612	2.93 (0.61)	1,130	3.41 (0.55)
• Waiting time for homecare	–	–	–	–	1,153	3.45 (0.67)
• Flexibility of homecare	–	–	–	–	537	3.65 (0.86)
Overall ratings (0 'worst' - 10 'best')						
Care institution	2,255	7.70 (1.32)	1,952	7.39 (1.35)	1,248	8.10 (1.35)
Caregivers (personal care staff)	2,229	7.94 (1.24)	1,943	7.67 (1.22)	1,235	8.36 (1.31)

* *Mean scores were only calculated if at least one out of every two items of a scale was completed* (< 50% missings per scale).

\# *Items on Competency and Safety of care form two separate scales care in the Homecare-questionnaire.*

§ *Results are not shown because of unreliable scales.*

Table 5 shows the priorities for quality improvement from the perspective of residents, representatives and clients. While working with a care plan and involving clients turned out to be major targets for quality improvement in somatic wards and homecare, representatives rather emphasized the need to improve the safety of the living environment and the availability of client-centred activities. In residential care, the availability of personnel formed a general concern. In addition, residents highlighted the need for better information, care for their mental well-being and appropriate activities. Relatives also expressed a need to be more involved in decisions about care and restraint measures, as well as more autonomy and better housing circumstances in the psycho-geriatric wards. According to the homecare clients, improvements should additionally focus on help to participate in activities, better information, telephone access and communication, and safety of their living environment.

Table 5 *Priorities for quality improvement, based on quality improvement scores* per theme*

Somatic care	Psycho-geriatric care	Homecare
1 Care plan and evaluation# (1.53)	1 Safety of living environment# (1.24)	1 Care plan and evaluation# (0.89)
2 Shared decision-making (1.36)	2 Activities (1.03)	2 Shared decision-making (0.85)
3 Availability of personnel (1.17)	3 Availability of personnel (0.97)	3 Activities (0.67)
4 Information (1.10)	4 Shared decision-making (0.95)	4 Telephone access (0.49)
5 Mental well-being (0.76)	5 Autonomy (0.91)	5 Information (0.49)
6 Safety of living environment#	6 Housing and privacy (0.72) (0.71)	6 Safety of living environment (0.48)
7 Activities (0.64)	7 Restraint measures# (0.63)	7 Safety of care (0.47)
8 Comfort# (0.61)	8 Care plan and evaluation# (0.59)	8 Availability of personnel (0.38)
9 Competency and safety of care (0.49)	9 Atmosphere (0.58)	9 Waiting time (0.37)
10 Information (0.51)	10 Autonomy (0.48)	10 Attitude and courtesy (0.32)
11 Attitude and courtesy (0.47)	11 Comfort# (0.47)	11 Flexibility of care (0.30)
12 Meals (0.46)	12 Competency and safety of care (0.44)	12 Autonomy (0.28)
13 Body care (0.43)	13 Mental well-being (0.42)	13 Mental well-being (0.27)
14 Atmosphere (0.42)	14 Telephone access (0.42)	14 Body care (0.24)
15 Housing and privacy (0.35)	15 Meals (0.35)	15 Competency of caregivers (0.22)
	16 Attitude and courtesy (0.32)	16 Reliability of care providers (0.13)
	17 Body care (0.22)	

* *Improvement scores (0-4) are reported in brackets. These scores are the product of the proportion respondents (0-1) reporting negative experiences ('never/sometimes' or 'no') and the average importance ratings (1-4) on all items underlying the topic.*

\# *As these themes formed no reliable scales, the reported improvement scores should be interpreted carefully.*

EVALUATION OF THE PILOT

Sampling

Difficulties encountered in sampling concerned:
- **a** the availability of a digital file with client information in the requested format;
- **b** the risk of bias in the selection of clients; and
- **c** the required sample size if this exceeded the actual number of clients.

Thus it was recommended that the study preparations and communication with the participating institutions start early to enable a timely start of the survey, that institutions select their clients in close cooperation with the research organisations, and that more clarity is needed about the sample sizes and the minimal numbers of eligible clients.

The interviews

An evaluation of the interviews showed that:
a institutions were hardly prepared for the interviews and often failed to inform their clients, reception and personnel in time;
b there had been insufficient time to train new interviewers; and
c the length of the questionnaire and difficult formulations of items were sometimes problematic.

Recommendations were to use a more realistic time schedule, a timely recruitment and training of interviewers, and to use the experiences of interviewers in adapting the questionnaire. Furthermore, a careful selection and training of interviewers and the use of answering cards (showing response options) was recommended to reduce the risk of bias due to interviewer-effects.

The mail surveys

Problems and possible reasons for non-response were:
a the length of the questionnaires;
b questionnaires not always tailored to the client's situation;
c the language and wording of questions were not always clear, and
d doubts about the anonymity of the survey.

It was recommended to shorten and adapt the questionnaires, and to be open about the privacy protocols used. The problem concerning the 'fit' of the questionnaire was expected because, especially in homecare, the care provided is diverse and often very specific, so that clients do not necessarily recognize all topics of the questionnaire.

Revision of the questionnaires

The questionnaires were revised based on the results of the item-analyses and the recommendations of respondents, interviewers and stakeholders. For the Experience questionnaires this resulted in a reduction in the number of questions and the adaptation of many items. The questionnaire for interviews on somatic wards in nursing or residential homes was reduced from 83 to 81 items, and 44 questions were somewhat adapted by rephrasing, adding examples or changing answering categories (*e.g.* by adding 'I do not know'). The questionnaire for representatives of psycho-geriatric clients was reduced from 76 to 72 items and 14 questions were reformulated. The revised homecare questionnaire consisted of 96 instead of 117 questions, including 17 adapted items.
The revised instruments and instructions (in Dutch) can be found on www.centrumklantervaringzorg.nl/vragenlijsten/verpleging-verzorging-en-thuiszorg.html.

DISCUSSION

The development of the CQ-Index® Long-term Care resulted in three feasible Experience questionnaires with corresponding Importance questionnaires and usable protocols for sampling and data collection in three study populations (*i.e.* residents of somatic wards, representatives of psycho-geriatric clients, and homecare clients). The field test was conducted in 2006 among a total of 6,323 clients (or representatives) of 144 care organisations. The measurement instruments represented the various domains of the quality framework for long-term care in the Netherlands. First measurements gave insight into the quality of care and the opportunities for improvements from the clients' perspective. The pilot study also resulted in recommendations for a nationwide implementation of the instruments for comparative studies among nursing homes, residential homes and homecare institutions.

Response and general use

In general, clients or their representatives were cooperative and willing to report their experiences. Thereby, it was useful and efficient to have exclusion criteria for the target populations. Particularly in the interview setting the pre-selected sample and the face-to-face situation resulted in a high response rate (98%). The postal surveys among representatives of psycho-geriatric clients and among homecare clients resulted in lower response rates (77% and 52% respectively), but also lower percentages of clients were excluded beforehand. For general use, the surveys may well reflect the experiences with long-term care because of the high percentages of eligible cases in each setting (71%, 94% and 82% respectively), the satisfying response rates and the finding that respondents' demographics equalled the populations of interest. Nevertheless, results for the homecare setting must be interpreted carefully while this setting yielded the lowest response rate, with men being underrepresented in the response group, so these results might be biased due to non-response. As a considerable part of non-response in homecare clients might be due to physical impairments, frailty and/or length of the questionnaire, the shortening of the questionnaires might have a positive effect on the future response.

Comparative and future research

The revised instruments include topics that both stakeholders and clients or their representatives have identified as being important and critical in quality of care. The scales with homogeneous item sets can be used to compute composite scores to compare care providers, and corresponding questions and scales for the different survey settings enable comparisons across the settings. However, to compare the performances of care providers a case-mix correction is needed, because client populations may differ on characteristics beyond the control of care providers. Education, age, gender and health status are generally regarded as case-mix adjusters.[26,27] In-depth analyses of our pilot data (not presented) showed consistent findings with the literature, with older, lower educated, healthier and male clients reporting on average more positive experiences with care. We also found significant relations with the duration and type of care, and the type of representative or person who assisted in filling out the questionnaires (son/daughter or

other relative): with a shorter duration, less intense or complex care, and spouses showing more positive evaluations. However, the results presented were not yet case-mix corrected and further research is needed into case-mix correction and differences in the quality of care across providers and settings.

Future research should also focus on changes in performances over time, to evaluate whether feedback reports and transparency leads to quality improvements.[6] Furthermore, if the set of instruments is translated and validated for application in other countries, the surveys can also be used for international comparisons. Other self-report instruments on quality of long-term care[19,28-32] are less comprehensive than the CQ-Index® Long-term Care and only few instruments focus primarily on client experiences reports rather than satisfaction or opinion ratings. Nonetheless, as the existing instruments often comprise common domains they could also be synchronized - taking into account local differences in client preferences - in order to enable comparative research between countries.

Finally, as the pilot resulted in recommendations for further standardization of the research method (*i.e.* sampling and conducting the interviews) and adaptation of the questionnaires, researchers will have to keep on evaluating and optimizing the quality measures and instruments. Apart from studying the psychometric properties with classical test theory, cognitive testing and the use of item response theory (*i.e.* differential item functioning) would be appropriate to test the validity of items in future research. In addition, external validation testing and more research into interviewer-effects (*e.g.* inter-rater reliability) are needed.

Implementation

The Dutch Ministry of Health, Welfare and Sport, the Inspectorate of Healthcare and the Dutch organisation for care entrepreneurs (ActiZ) have embraced the CQ-Index® Long-term Care as the standard instrument for measuring quality from the clients' perspective. The CQ-Index has been put in the public domain and implemented nationally as part of the Dutch Healthcare Transparency Programme.[33] Current legislation requires all healthcare providers to report certain information about the quality of their services. Long-term care facilities in the Netherlands are now obliged to conduct client surveys with the CQ-Index every two years. They have to contract a certified research organisation to collect data that will be submitted to a central database for nationwide comparisons, benchmarking and public reporting on internet (www.kiesbeter.nl). In 2007 and 2008 another 855 care units and about 35,000 clients were involved. Although a boost in quality improvements is expected, research still has to show what organisations actually do with the feedback information. A basis for comparative research and quality improvement has now been provided and systematic evaluations should monitor the implementation and its effects.

CONCLUSIONS

The CQ-Index® Long-term Care provides a good basis to investigate quality of nursing homes, residential care and homecare from the clients' perspective. The questionnaires covered all domains of a national quality framework and aspects that are important to clients and stakeholders. At present, the instruments are widely adopted and implemented in two-yearly evaluations of the nursing and care sector in The Netherlands for the purpose of external transparency and internal quality assurance.

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Chapter 3

DETERMINING THE INTERVIEWER EFFECT ON CQ-INDEX OUTCOMES: A MULTILEVEL APPROACH

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Determining the interviewer effect on CQ-Index outcomes: a multilevel approach

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ABSTRACT

Background

The CQ-INDEX for the elderly, a quality-of-care questionnaire administered by conducting interviews, is used to assess clients' experiences in Dutch nursing homes and homes for the elderly. This article describes whether inter-interviewer differences influence the perceived quality of healthcare services reported by residents, the size of this interviewer effect and the influence of the interviewer characteristics on CQ-INDEX dimensions for public reporting.

Methods

Data from 4345 questionnaires was used. Correlations were calculated, reliability analyses were performed, and a multilevel analysis was used to calculate the degree of correlation between two interviewers within one healthcare institution. Five models were constructed and the Intra Class Correlation (ICC) was calculated. Healthcare institutions were given 1-5 stars on every quality dimensions (1 = worst and 5 = best), adjusted for resident and interviewer characteristics. The effect of these characteristics on the assignment of the stars was investigated.

Results

In a multilevel approach, the ICC showed a significant amount of variance on five quality dimensions. Of the interviewer characteristics, only previous interviewing experience, the reason of interviewing and general knowledge of healthcare had a significant effect on the quality dimensions. Adjusting for interviewer characteristics did not affect the overall star assignment to the institutions regarding 7 of 12 quality dimensions. For the other five dimensions (Shared decision-making, Meals, Professional competency, Autonomy, and Availability of personnel) a minor effect was found.

Conclusions

We have shown that training, the use of experienced interviewers, written instructions, supervision and educational meetings do not automatically prevent interviewer effects. While the results of this study can be used to improve the quality of services provided by these institutions, several CQ-INDEX dimensions should be interpreted with caution for external purposes (accountability and transparency).

BACKGROUND

Monitoring the experiences of residents of nursing homes and homes for the elderly is crucial to improve the quality of care and to evaluate the effect of interventions to improve care.[1–14] In an attempt to standardise the method of measuring the experiences of residents in nursing homes and homes for the elderly, in 2006 the Dutch Ministry of Health developed instruments for measuring the experiences of patients in different types of healthcare facilities.[12,15–18] These questionnaires are based on the CAHPS questionnaires.[16] Also for residents in nursing homes and homes for the elderly, a so called CQ-INDEX, has been developed and pilot-tested.[12] In the Netherlands the nursing homes and homes for the elderly differ: the care given in nursing homes is more intensive than care given in homes for the elderly. Dutch nursing homes and homes for the elderly are obliged to have this survey of residents' opinions conducted every two years. The survey must be administered by an accredited, independent organisation. The institutions are ranked for the level of quality and this information is available to the public. The results of the CQ-INDEX serve two purposes. Firstly, it can be used by healthcare institutions to improve the quality of the services they provide. Secondly, it enlarges the accountability and transparency towards insurers, the Inspectorate for Healthcare and future clients.

A commonly used method to assess the healthcare experiences of elderly is a face-to-face interview, in which a standardised questionnaire is administered. Research has shown that face-to-face interviews improve the quality and quantity of the data, and that they are less a burden for respondents when compared to telephone interviews.[19,20] Respondents are more likely to comply with a face-to-face interview than with a telephone interview[21] or a written questionnaire[22]. However, face-to-face interviews do have the possible disadvantage of an interviewer effect, which has been found to be greater than in telephone interviews.[23] There are ways in which interviewers can influence the answers given by respondents to pre-formulated questions.[24] Firstly, interviewers can subconsciously express their own attitudes, opinions, or expectations by means of intonation, verbal and non-verbal communications and non-standard explanation of words as formulated in the interviewer guide.[25] Secondly, elderly respondents are likely to have difficulty choosing one of the pre-defined answer categories. Also, a face-to-face interview is an opportunity for social contact. Therefore, respondents often tend to go into a conversation. As a result, the interviewer has to interpret and translate this into one of the answering possibilities. This interpretation is subjective and may differ between interviewers. This could lead to interviewer bias and false conclusions.[22]

While several suggestions have been made to overcome these problems,[24,26,27] little is known about how to prevent interviewer effects in face-to-face interviews with elderly.[28] It is known that the quality of data obtained from older individuals may also be affected by the respondent's physical, cognitive, and sensory impairments,[29] and it is recognized that face-to-face interviews provide older people with an opportunity for social contact.[30] These studies suggest a special training programme for interviewers before interviewing elderly. Although we do know interviewer effects are likely to influence the results of the survey and several suggestions have been made to diminish this, little is known about which interviewer characteristics cause this effect and how large the effect actually is. In this study, we used the CQ-Index to investigate

1 whether experienced interviewers (knowledge of nursing homes and homes for the elderly and more than 70 interviews conducted) influence the perceived quality of healthcare services reported by residents of nursing homes and homes for the elderly in the Netherlands (interviewer effects),
2 the size of the interviewer effect when using interviewers with who conducted a major number of interviews in this study (experienced interviewers) and
3 the influence of the interviewer characteristics on results of the CQ-Index dimensions for public reporting. We tried to establish whether structural differences in the scores on the CQ-Index between experienced interviewers can be explained by interviewer characteristics, and whether these differences influence how these institutions are ranked for overall quality.

METHODS

Between January 2007 and April 2008 trained interviewers from the accredited research organisation, Prismant, administered the CQ-Index to residents in 24 nursing homes and 109 homes for the elderly. For this research we asked written permission from all participated these healthcare institutions to use their CQ-Index data for scientific purposes, and all institutions cooperate. This data collection is part of a regular research which is conducted every year in the Netherlands. This method of the research is constructed in a collaboration of relevant stakeholders (Ministry of Health, the branch organisation and Inspectorate for Healthcare).[12]

Subjects

The research population consisted of residents of nursing homes and homes for the elderly. Residents who had stayed in the facility for less than 1 month, residents who were very ill, residents with psychiatric conditions, or residents who were convalescing were excluded. In total, 29% of the population met the exclusion criteria. The residents were selected by making a random sample, and tested on representativeness by age and gender.

Questionnaire: CQ-Index

In the first part of the questionnaire, the age, sex, educational level, length of stay and health status of the resident and type of care (nursing home or home for the elderly) was recorded. The central part of the questionnaire consists of 72 questions. Together, these questions represent 15 quality-of-care dimensions (*Table 1*). All answers were assigned a 1-4 point score, with the higher the score, the less positive the resident experienced the question. The compilation of the scores on the questions to scores on the quality dimensions also resulted in a score ranging from 1 to 4. Means and standard deviations of the scores were calculated. Reliability was measured using Cronbach's alpha (*Table 1*). The reliability of the dimensions 5, 11, and 13 was low (Cronbach's alpha <0.6) so these were excluded from further analysis.

Table 1 *Dimensions of the CQ-Index*

Dimensions	Number of items	Mean score	sd	Cronbach's α
1 Care plan and evaluation	1	1.71	.939	–
2 Shared decision-making	5	2.14	.819	0.81
3 Treatment	4	1.61	.663	0.81
4 Information	6	1.96	.781	0.75
5 Body care	3	1.49	.494	0.55*
6 Meals	1	1.93	.860	–
7 Professional competency	8	1.43	.469	0.82
8 Living comfort	1	1.57	.823	–
9 Atmosphere	4	1.53	.484	0.63
10 Living environment and privacy	4	1.18	.354	0.62
11 Activities	5	1.52	.438	0.54*
12 Autonomy	4	1.52	.647	0.69
13 Mental wellbeing	3	2.19	.531	0.32*
14 Security	1	1.21	.542	–
15 Availability personnel	5	2.16	.581	0.67

* *Excluded from further analyses.*

Interviewers

All interviewers were trained before and during the study – they learned about the content of the questionnaire items and were instructed in interviewing techniques, including the verbal and non-verbal aspects of interviewing. All interviewers received an written interviewer guide, covering the following aspects:

- Preparing for the interview (knowledge of the questionnaire, paying attention to the environment, etc.);
- Introducing and starting the interview (informing the respondent about the duration and the anonymity of their comments);
- The interview itself (how to ask questions, what to do when a respondent does not understand the question or becomes emotional);
- Finishing the interview (informing the respondent about what will be done with the answers).

To minimize interviewer variation, all new interviewers were supervised by experienced interviewers. Meetings were held regularly to allow discussion about the function of interviewing and the robustness of the data collected. At the end of the study, interviewers, Prismant, and institutions discussed about how the interviews had been conducted. In a healthcare institution 30 interviews were conducted. A resident was interviewed once by one interviewer. In a healthcare institution a pair of interviewers interviewed all 30 residents. Pairs of interviewers were randomly assigned to the healthcare institutions all over the country with every healthcare institution a different combination of interviewers. The interviewers who participated in this research have been conducted interviews in at least five healthcare institutions.

Interviewer characteristics

Since the research question was whether experienced interviewers influence the perceived quality of healthcare services reported by residents, only interviewers were included who conducted at least 70 interviews during this research. The interviewers were asked to complete a questionnaire about a number of characteristics suggested to play a role in interviewer bias[22,23], namely, age, sex, level of education, socioeconomic status, work and previous interviewing experience before this research, general knowledge of healthcare and specific knowledge of care for the elderly in particular (*Table 2*). Other factors that can possibly influence the outcome of the interview, as determined by an expert panel, were also added to the questionnaire. These were health status, work motivation (intrinsic or economic reasons; an interviewer received € 30,– per completed interview), frequency of interviewing (number of days per month), and whether the interviewers felt uncomfortable with the content of CQ-Index. At the time of data analysis, 4 of the 18 interviewers were no longer traceable and one interviewer had died. The remaining 13 interviewers received the questionnaire, of which 10 were completed and returned (76.9%).

ANALYSIS

Inter-interviewer differences in respondents' scores for the quality-of-care dimensions of the CQ-Index were assessed using variance analysis. The data we used was cross-classified. The cross-classification was at level 2 (interviewer) with level 1 (residents) and the level 1 units (residents) were also nested in healthcare institutions (level 2) because the interviewers worked in different healthcare institutions.

In a multilevel model we investigated the degree of correlation of observations made by interviewers within a healthcare institution. We also investigated whether the differences in the scores on the dimensions of the CQ-Index could be explained by resident characteristics, interviewer characteristics, or by a resident - interviewer interaction. We started with lower level characteristics (resident) before entering higher-level characteristics (interviewer) and the interviewer x resident interaction. Only characteristics that were significantly correlated with the quality dimensions ($p \leq .05$) were included in the model. We built a multilevel model in five steps:

- Model 0: model with no random effects of healthcare institutions or interviewer
- Model 1: random intercept model (interviewer and institution).
- Model 2: random intercept model, adjusting for resident characteristics.
- Model 3: random intercept model, adjusting for interviewer characteristics.
- Model 4: random intercept model, adjusting for resident characteristics as well as interviewer characteristics.
- Model 5: random intercept model, adjusting for resident and interviewer characteristics and interactions between resident and interviewer.

In all models, all variables were entered as fixed effects.

In Model 5, no interaction effects were found that could be explained by the interaction. Therefore, the interaction effects were excluded from further analysis. The intra class correlation (ICC)[12,31] was measured as a size of the correlation between observations (interviews with residents) made by interviewers within a institution. The analysis was carried out using SPSS, version 15. Residual analysis was performed and all independent variables were standardised, which enabled comparison of the effects. Deviance tests or likelihood ratio tests were used to compare the relative fit of the different models. The difference in deviance of two nested models has a 2 distribution with degrees of freedom equal to the number of additional parameters in the larger model. Results were considered statistically significant at a two-sided $p \leq .05$ level. The percentage of explained variance was computed.

We gave healthcare institutions a star on every quality dimension (1 = worst and 5 = best). To assign the stars, we calculated a predicted quality score for each dimension, adjusted for resident characteristics (age, duration of stay, level of education, and health status).[12] In the next step of the analysis, we corrected the raw scores on all dimensions of the CQ-Index for each institution, for the characteristics of the residents (age, duration of stay, educational level, health status) and interviewers (age, educational level, sex and previous interview experience[22]) that were found to be significant. Subsequently, using these scores, all individual institutions were labelled with stars, based on the relative score of an institution in relation to the mean score of all institutions using 95% confidence intervals (CI). For each institution the number of stars assigned before and after adjusting for interviewer and resident characteristics were compared and calculated the percentage of institutions that was assigned a different number of stars.

RESULTS

Resident and interviewer characteristics

Eighteen interviewers were included. Together they had performed 4,345 interviews. On average, an interview lasted 43.2 minutes (sd ± 11.8), and an interviewer carried out 127 interviews; the maximum number of interviews carried out by one person was 512 and the minimum was 70 interviews. The mean age was 83.1 years (sd 11.4), 74.7% was women and 96.4% of the residents was born in the Netherlands. Of the residents 44.9% considered their health to be good, 9.6% as poor, and 45.5% as good neither poor. Other characteristics of the residents are shown in Table 2.

Table 2 *Characteristics of the residents (N = 4,345)*

Length of stay in a nursing home or home for the elderly		%
< ½ year		9,5%
6 months-1 year		14,0%
1-2 years		18,7%
2-5 years		32,2%
>5 years		25,5%
Health status	• Good	44,9%
	• Moderate	45,5%
	• Poor	9,6%
Type of care	• Homes for the elderly	83,6%
	• Nursing homes	16,4%
Age	• <65 years	4,3%
	• 65-74 years	7,5%
	• 75-84 years	34,6%
	• >85 years	53,6%
Sex	• Man	25,3%
	• Woman	74,7%
Level of education	• No education	3,0%
	• Lower education	74,6%
	• Medium education	16,2%
	• Higher education	6,0%

Of the interviewers, two were men. Ninety percent of the interviewers were highly educated, and all were born in the Netherlands. All interviewers had more than 6 years of working experience; 80% more than 10 years. Of 70% of the interviewers, their previous jobs were not related to interviewing (teacher, researcher, engineer, healthcare worker, etc.) (*Table 3*). In the non-response analysis, there were more men and younger individuals among the non-responders. The mean interview duration was similar between responders and non-responders.

Table 3 *Characteristics of the experienced interviewers (N = 10)*

		%
Sex	Men	20%
	Women	80%
Age	30-39	10%
	40-49	30%
	50-59	40%
	60-69	20%
Reason for interviewing	Nice work	30%
	Flexible work schedule	20%
	Earn money	10%
	Useful spending of time	30%
	Missing	10%
How many days interviewing per month	2-4 days in a month	40%
	5-7 days in a month	20%
	8-10 days in a month	20%
	‣ 10 days in a month	10%
	Missing	10%
How long interviewing with CQ-Index	Between 4 and 6 months	30%
	Between 7 and 9 months	20%
	More than 9 months	50%
Interview experience before	Yes	50%
	No	50%
Knowledge of healthcare	Strongly agree	10%
	Agree	60%
	Disagree	30%
Knowledge of elderly care	Strongly agree	10%
	Agree	70%
	Disagree	20%

Differences is scores between quality dimensions caused by interviewers or resident characteristics

Analysis showed that the scores on the various quality dimensions varied significantly between interviewers (all $p < 0.001$). All resident characteristics were significantly correlated to at least three dimensions of the CQ-Index, whereas previous interviewer experience, sex, reason for interviewing and content of the questionnaire were correlated to two or more dimensions (*Table 4*).

Table 4 *Correlations between respondents' and interviewers' characteristics on the dimensions of the CQ-Index*

Dimensions	1	2	3	4	6	7	8	9	10	12	14	15
Resident characteristics												
Length of stay	.01	−.01	.05*	−.14*	.06*	.05	.11*	.00	−.14*	−.03	−.01	.07*
Sex	−.06*	.01	−.02	−.04	−.09*	.01	−.13*	−.03	.01	−.06*	−.07*	−.04
Age	.02	−.01	.02	.03	.03	−.00	.01	−.05*	−.05*	−.06*	−.02	−.07
Education	−.05	.03	.04	−.03	.05*	.06*	.04	.07*	.05*	.02	−.06*	.09*
Health status	−.08*	.11*	.15*	.01	.13*	.18*	.15*	.14*	.08*	.18*	.10*	.21*
Type of care	.07*	.04	.09*	.10*	.08*	.04	−.03	.18*	.33*	.37*	.07*	.11*
Interviewer characteristics												
Sex	−.33	−.50	−.06	−.29	.61*	−.08	.52	.33	−.03	.56*	.12	.17
Age	.15	.16	−.14	−.39	−.29	−.24	−.53	−.18	.09	.02	−.81*	−.29
Education	−.41	.30	.51	.64*	.40	.29	.19	.36	.06	.07	.17	.22
Reason	−.20	.59*	.55	−.05	.10	−.26	−.19	.27	.20	.39*	−.59*	.23
SES	−.09	−.10	.20	.10	.52	−.01	.03	.05	−.22	.48	.12	−.03
Work experience	.14	−.29	−.27	.01	−.13	−.37	−.36	−.35	−.52	−.39	−.04	−.52
Previous interv.experience	.08	−.18	−.61*	−.53	−.85*	−.54	−.65*	−.68*	.04	−.65*	−.49	−.58*
How long interviewing	.14	.21	.06	.24	.02	−.10	−.45	−.08	−.29	.20	−.57*	−.23
Frequency interviewing	.68*	−.14	−.37	−.36	−.17	−.08	−.08	−.31	−.20	.07	−.00	−.11
Other jobs	−.23	.11	.26	.13	−.17	.13	−.01	−.09	−.36	−.12	.50	.07
Content questionnaire	−.66*	.14	.58*	.04	.51	.10	.07	.47	−.14	.35	−.22	.08
Knowledge healthcare	−.06	.33	.14	.26	−.40	.10	−.16	.04	.21	−.76*	−.03	−.09
Knowledge elderly care	−.30	.03	.07	.16	−.28	−.03	.05	.05	.25	−.62*	.13	−.08
Health status	−.40	−.06	.23	.42	.62*	.10	.38	.43	−.18	.18	−.01	.10

1 = Care plan and evaluation
2 = Shared decision-making
3 = Treatment
4 = Information
6 = Meals
7 = Professional competency
8 = Living comfort
9 = Atmosphere
10 = Living environment and privacy
12 = Autonomy
14 = Security
15 = Availability personnel

Note: Reference category for type of care is homes for the elderly (1).

* *Is significant at the $p \leq .05$ level.*

Table 5 ICC on the dimensions of the CQ-Index, per model

Dimensions	Model 0 no random intercept	2 Levels	Model 1 random intercept		Model 2 random intercept and level 1 independent variables		Model 3 random intercept and level 2 explanatory variables		Model 4 random intercept with level 1 and 2 variables	
			ICC	Explained variance	ICC	Explained variance	ICC	Explained variance	ICC	Explained variance
1 Care plan and evaluation	0.881	Interv level	0.064	7.39%	0.063	7.30%	0.017	1.97%	0.019	2.18%
		Facility level	0.083	9.54%	0.082	9.48%	0.078	8.94%	0.073	8.42%
2 Shared decision-making	0.671	Interv level	0.119	15.87%	0.113	15.48%	0.120	16.59%	0.120	16.64%
		Facility level	0.060	8.04%	0.060	8.17%	0.036	4.95%	0.036	4.95%
3 Treatment	0.439	Interv level	0.029	8.98%	0.029	8.40%	0.033	10.00%	0.034	10.60%
		Facility level	0.018	5.00%	0.013	3.84%	0.016	4.73%	0.013	3.92%
4 Information	0.61	Interv level	0.073	9.08%	0.072	9.31%	0.027	3.73%	0.029	4.11%
		Facility level	0.059	7.35%	0.052	6.67%	0.095	13.11%	0.089	12.72%
6 Meals	0.74	Interv level	0.026	3.81%	0.026	3.95%	0.006	0.92%	0.004	0.74%
		Facility level	0.055	7.99%	0.054	8.23%	0.055	9.05%	0.059	10.06%
7 Professional competency	0.22	Interv level	0.022	9.09%	0.020	8.62%				
		Facility level	0.015	6.29%	0.014	6.18%				
8 Living comfort	0.677	Interv level	0.028	4.12%	0.024	3.68%	0.023	3.69%	0.019	3.19%
		Facility level	0.068	9.96%	0.066	10.07%	0.073	11.92%	0.073	12.42%
9 Atmosphere	0.234	Interv level	0.024	9.62%	0.023	9.85%	0.024	10.66%	0.022	10.42%
		Facility level	0.025	10.24%	0.018	7.57%	0.024	10.99%	0.020	9.23%
10 Living environment/privacy	0.125	Interv level	0.002	19.51%	0.002	23.61%				
		Facility level	0.028	32.24%	0.014	19.51%				
12 Autonomy	0.418	Interv level	0.036	8.12%	0.034	9.64%	0.000	0.00%	0.002	0.54%
		Facility level	0.116	26.39%	0.049	13.82%	0.092	23.52%	0.051	15.32%
14 Security	0.294	Interv level	0.008	26.23%	0.009	3.20%	0.000	0.07%	0.001	0.49%
		Facility level	0.004	14.50%	0.002	5.89%	0.001	0.40%	0.000	0.10%
15 Availability personnel	0.338	Interv level	0.028	6.58%	0.029	7.29%	0.020	5.41%	0.025	6.73%
		Facility level	0.046	10.98%	0.035	8.89%	0.018	11.70%	0.038	10.45%

ICC = *Intra Class Correlation, recorded as % of explained variance by variables included in the model.*

In additional file 1, Table S1, the –2 log likelihood and χ^2 of every quality dimension are shown, and decreased from model 1 to model 4. Only characteristics that were significantly correlated to the quality dimensions ($p \leq .05$) were included in the model. We determined the –2 log likelihood compared with the previous model.

Table S1 shows the level of homogeneity between interviewer observations (measured in the same healthcare institution), explained by interviewer characteristics and resident characteristics on the dimensions. In multilevel analysis, resident characteristics, especially sex, health status and type of care significantly influenced the scores given to the dimensions. Women were more positive than men. Residents with a higher educational level were less positive about several dimensions, as were residents with a better health

status. Residents of nursing homes were more negative about healthcare than residents of homes for the elderly. Residents with a higher length of stay were more positive about the information services and the living environment, but were more negative about meals, comfort, and the availability of personnel.

Of the interviewers characteristics, previous interviewing experience was found to significantly affect how residents scored the meals and availability of personnel. The more previous experience the interviewer had, the more negative residents were. On the quality dimension 'autonomy' two interviewer characteristics were found significantly. The more the interviewer did this job for other reasons than economical reasons, the more negative residents were. The more knowledge of healthcare the interviewers have, the more positive residents were.

Table 5 shows the ICC's of the models. We compared the raw ICC (model 1) with the ICC adjusted for resident and interviewer characteristics (models 2 and 3). The ICC's in model 2 (only resident characteristics) were lower than the raw ICC's for 10 of the twelve quality indicators. Adjustment for resident characteristics is relevant, but the effect on the ICC is minor for the most quality dimensions (max 1.8%). Only for 'living environment/privacy', the effect is substantial (7.5%).

The ICC's of model 3 (interviewer characteristics) were lower than the ICC's of model 1 for five of the ten quality dimensions. Adjusting for interviewer characteristics also shows limited decrease of the ICC's (with max 4.7%). On five of the ten quality dimensions the ICC's were increasing, but not substantial (max 1.3%).

The ICC's of model 4 were lower than the raw ICC's in model 1 in five of the ten quality dimensions (max 4.9).

Differences in star assignment to institutions

We calculated to what extent interviewer characteristics (as part of the interviewer effect) affected the overall star assignment to the healthcare institutions (*Table 6*). Interviewer and resident characteristics did not affect the star assignment for any institutions for seven of the CQ-Index dimensions, changed the star assignment to 1 of the 133 institutions (0.8%) of the three CQ-Index dimensions 'meals', 'autonomy', and 'availability personnel' and altered the star assignment to 3 of the 133 institutions (2.3%) of the CQ-Index dimension 'shared decision-making', and altered the star assignment to 13,5% of the institutions of the CQ-Index dimension 'professional competency'.

Table 6 *Changes in star assignments to institutions for the care of the elderly*

Dimensions	Changes in ranking scores	Total % of discrepancy	Total nursing homes	Total homes for the elderly
1 Care plan and evaluation	0	0.00%	0	0
2 Shared decision-making	3 of 133 institutes	2.26%	0	3
3 Treatment	0	0.00%	0	0
4 Information	0	0.00%	0	0
6 Meals	1 of 133 institutes	0.75%	1	0
7 Professional competency	10 of 74 institutes	13.51%	0	10
8 Living comfort	0	0.00%	0	0
9 Atmosphere	0	0.00%	0	0
10 Living environment/privacy	0	0.00%	0	0
12 Autonomy	1 of 133 institutes	0.75%	0	1
14 Security	0	0.00%	0	0
15 Availability personnel	1 of 133 institutes	0.75%	0	1

DISCUSSION

We investigated whether characteristics of interviewers who conducted a major number of interviews influenced the way the residents of nursing homes and homes for the elderly scored the dimensions of the CQ-Index, which measures residents' experience of the healthcare services provided. Despite their experience, the use of a standard questionnaire, training, supervision and educational meetings, we still detected significant interviewer effects. We investigated whether this effect could be explained by the characteristics of the interviewers, characteristics of the residents, or by an interaction between residents and interviewers. However, interviewer sex, age, education, socioeconomic status, work experience, how long and the frequency of interviewing, other jobs, health status and knowledge of elderly care did not explain this variation, and thus these characteristics are not a major source of interviewer bias. Only previous interviewing experience, the reason of interviewing and general knowledge of healthcare had a limited influence on the scores given to the different CQ-Index dimensions. Possibly, certain dimensions are open to more interpretation than others. The differences we found, despite the fact they are experienced interviewers, may possibly be related to other characteristics, such as skills, presentation, and intonation during the interview.[22] Future research should evaluate these variables, for example by using observational techniques.

We also investigated the impact of the interviewer characteristics (as part of the interviewer effect) on public reporting. Interviewer characteristics did not substantially influence public reporting through star assignment based on the CQ-Index dimensions, with exception of the quality dimensions 'professional competency' and 'shared-decision-making'. Further research should more extensively determine the impact of the interviewer effect on star assignment to the healthcare institutions.

The interviewer effect can be reduced in several ways. Firstly, the questions in the questionnaire regarding the CQ-Index dimensions that had high ICC's should be

reformulated to prevent interpretation differences. Secondly, special attention should be paid to instructing interviewers by the research organisations that conduct the CQ-Index surveys, especially on the dimensions with high ICC's and the dimensions that we found to influence the star assignment. To diminish the risk of interviewer effects on the quality dimension 'professional competency', the 30 interviews could be conducted by three, interviewers. This, however, requires more organisational efforts and will lead to higher costs.

A limitation of this research was the poor reliability of several quality dimensions and the lack of variability in other quality dimensions. The pattern of findings could be a result of the multiple comparisons we made. Another limitation was the small number of interviewers (N = 10) who reported the characteristics themselves. Furthermore, they all worked for the same organisation (Prismant). A small number of interviewers could lead to large error effects.[32] The experience of the interviewers filtered beginners' mistakes, which also can lead to interviewer effects. Further research should duplicate our study including more interviewers and more residents, including interviewers from different research organisations (introducing another level of possible interviewer effects) and interviewers with less experience. Ranking institutions with a multilevel approach with several levels: resident, interviewer, research organisation and healthcare institution (cross level classified design) can determine the impact of the interviewer effects on the CQ-Index dimensions for public reporting and can give suggestions for a minimum of conducted interviews.

CONCLUSIONS

We have shown that training, the use of experienced interviewers, interview guides, supervision and educational meetings do not automatically prevent interviewer effects. Data control during and after the investigation is still necessary. Our findings suggest that the results for some CQ-Index dimensions ('professional competency' and 'shared-decision-making') published on a public website should be interpreted with caution, especially when used for accountability and transparency. This can be done by combining the CQ-Index results with additional information from other sources (for example healthcare indicators) to provide a more complete and balanced view of the quality of healthcare organisations. Other quality dimensions are reliable enough for accountability and transparency despite the influence of the interviewer.

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Additional file 1 *Table S1 Study results of the interviewer effect on the dimensions of the CQ-index, per model*

Dimension 1	**Model 1**		**Model 2**		**Model 3**		**Model 4**	
Care plan and evaluation	Random intercept		Random intercept and level 1 independent variables		Random intercept and level 2 explanatory variables		Random intercept with level 1 and 2 variables	
Fixed effects	*Coeff*	SE	*Coeff*	SE	*Coeff*	SE	*Coeff*	SE
Level 1 (resident)								
• Intercept	1.654*	0.055	1.801*	0.072	1.527*	0.214	1.709*	0.231
• Sex			−0.120*	0.037			−0.134*	0.051
• Health status			−0.042*	0.016			−0.081*	0.023
• Type of care			0.062*	0.028			0.095*	0.033
Level 2 (interviewer)								
• Content questionnaire					−0.159	0.074	−0.170	0.078
• Frequency interviewing					0.102	0.053	0.099	0.055
−2 log likelihood/χ^2(df)	7858.276		7578.990*	93.095 (3)	4367.169*	3211.822 (1)	4221.785*	48.461 (3)
Dimension 2	**Model 1**		**Model 2**		**Model 3**		**Model 4**	
Shared decision-making	Random intercept		Random intercept and level 1 independent variables		Random intercept and level 2 explanatory variables		Random intercept with level 1 and 2 variables	
Fixed effects	*Coeff*	SE	*Coeff*	SE	*Coeff*	SE	*Coeff*	SE
Level 1 (resident)								
• Intercept	2.186*	0.067	2.168*	0.066	1.623*	0.365	1.630*	0.365
• Health status			0.116*	0.014			0.080*	0.021
Level 2 (interviewer)								
• Reason					0.485	0.239	0.476	0.238
−2 log likelihood/χ^2(df)	7245.821		7150.241*	95.580 (1)	3381.454*	3768.786 (1)	3349.911*	31.544 (1)

Note: *Reference category for type of care is homes for the elderly*[1].

* *Is significant at the* $p \leq .05$ *level*

Dimension 3	Model 1		Model 2		Model 3		Model 4	
Treatment	Random intercept		Random intercept and level 1 independent variables		Random intercept and level 2 explanatory variables		Random intercept with level 1 and 2 variables	
Fixed effects	*Coeff*	SE	*Coeff*	SE	*Coeff*	SE	*Coeff*	SE
Level 1 (resident)								
• IIntercept	1.576*	0.034	1.568*	0.034	1.501*	0.108	1.504*	0.110
• Duration of stay			0.041*	0.009			0.038	0.012
• Health status			0.091*	0.009			0.074	0.012
• Type of care			0.072*	0.013			0.051	0.016
Level 2 (interviewer)								
• Content questionnaire					0.105	0.070	0.098	0.070
• Former interview experience						0.085	0.090	0.079 0.092
−2 log likelihood/χ^2(df)	7079.455		6647.509*	143.982 (3)	3784.538*	2862.971 (1)	3610.602*	57.979 (3)
Dimension 4	**Model 1**		**Model 2**		**Model 3**		**Model 4**	
Information	Random intercept		Random intercept and level 1 independent variables		Random intercept and level 2 explanatory variables		Random intercept with level 1 and 2 variables	
Fixed effects	*Coeff*	SE	*Coeff*	SE	*Coeff*	SE	*Coeff*	SE
Level 1 (resident)								
• Intercept	2.142*	0.056	2.135*	0.056	2.056*	0.065	2.055*	0.066
• Duration of stay			−0.078*	0.016			−0.089*	0.020
• Type of care			0.071*	0.024			0.063	0.034
Level 2 (interviewer)								
• Level of education					0.138	0.063	0.132	0.065
−2 log likelihood/χ^2(df)	7628.700		7321.162*	153.769 (2)	4128.469*	3192.693 (1)	3982.392*	73.038 (2)

Dimension 6	**Model 1**		**Model 2**		**Model 3**		**Model 4**	
Meals	Random intercept		Random intercept and level 1 independent variables		Random intercept and level 2 explanatory variables		Random intercept with level 1 and 2 variables	
Fixed effects	*Coeff*	SE	*Coeff*	SE	*Coeff*	SE	*Coeff*	SE
Level 1 (resident)								
• Intercept	1.962*	0.038	2.127*	0.054	1.879*	0.126	2.117*	0.130
• Duration of stay			0.080*	0.013			0.054*	0.017
• Sex			−0.133*	0.031			−0.161*	0.039
• Education			0.027*	0.014			0.031	0.018
• Health status			0.114*	0.013			0.092*	0.017
• Type of care			0.034	0.023			0.040	0.027
Level 2 (interviewer)								
• Sex					0.025	0.049	0.035	0.046
• Former interview experience						0.147*	0.042	0.151* 0.040
• Health status					0.006	0.083	−0.022	0.079
−2 log likelihood/χ^2(df)	10332.070		9555.378*	155.338 (5)	5689.529*	1932.925 (2)	5313.526*	75.201 (5)
Dimension 7	**Model 1**		**Model 2**		**Model 3**		**Model 4**	
Professional competency	Random intercept		Random intercept and level 1 independent variables		Random intercept and level 2 explanatory variables		Random intercept with level 1 and 2 variables	
Fixed effects	*Coeff*	SE	*Coeff*	SE	*Coeff*	SE	*Coeff*	SE
Level 1 (resident)								
• Intercept	1.489*	0.031	1.471*	0.029				
• Education			0.020*	0.010				
• Health status			0.098*	0.009				
Level 2 (interviewer)								
−2 log likelihood/χ^2(df)	3367.186		3161.547*	102.819 (2)				

Dimension 8	**Model 1**		**Model 2**		**Model 3**		**Model 4**	
Living comfort	Random intercept		Random intercept and level 1 independent variables		Random intercept and level 2 explanatory variables		Random intercept with level 1 and 2 variables	
Fixed effects	*Coeff*	SE	*Coeff*	SE	*Coeff*	SE	*Coeff*	SE
Level 1 (resident)								
• Intercept	1.616*	0.040	1.877*	0.051	1.550	0.056	1.817*	0.068
• Duration of stay			0.070*	0.012			0.071*	0.015
• Sex			−0.215*	0.028			−0.209*	0.034
• Health status			0.118*	0.012			0.118*	0.015
Level 2 (interviewer)								
• Former interview experience					0.095	0.052	0.096	0.048
−2 log likelihood/χ^2(df)	10013.042		9693.556*	106.495 (3)	5419.472*	2137.042 (2)	5222.062*	65.803 (3)
Dimension 9	**Model 1**		**Model 2**		**Model 3**		**Model 4**	
Atmosphere	Random intercept		Random intercept and level 1 independent variables		Random intercept and level 2 explanatory variables		Random intercept with level 1 and 2 variables	
Fixed effects	*Coeff*	SE	*Coeff*	SE	*Coeff*	SE	*Coeff*	SE
Level 1 (resident)								
• Intercept	1.560*	0.032	1.559*	0.031	1.533*	0.052	1.529*	0.050
• Age			−0.005	0.008			−0.004	0.010
• Education			0.010	0.008			0.015*	0.011
• Health status			0.070*	0.008			0.053*	0.010
• Type of care			0.078*	0.013			0.066*	0.016
Level 2 (interviewer)								
• Former interview experience					0.119	0.051	0.114	0.049
−2 log likelihood/χ^2(df)	4617.334		4282.336*	83.749 (4)	2370.275*	637.354 (3)	2223.267*	36.752 (4)

Dimension 10	**Model 1**		**Model 2**		**Model 3**		**Model 4**	
Living environment/privacy	Random intercept		Random intercept and level 1 independent variables		Random intercept and level 2 explanatory variables		Random intercept with level 1 and 2 variables	
Fixed effects	*Coeff*	SE	*Coeff*	SE	*Coeff*	SE	*Coeff*	SE
Level 1 (resident)								
• Intercept	1.127*	0.016	1.123*	0.013				
• Duration of stay			−0.017*	0.004				
• Age			0.008	0.004				
• Education			0.002	0.004				
• Health status			0.019*	0.004				
• Type of care			0.108*	0.010				
−2 log likelihood/χ^2(df)	395.023		241.624*	38.350 (4)				
Dimension 12	**Model 1**		**Model 2**		**Model 3**		**Model 4**	
Autonomy	Random intercept		Random intercept and level 1 independent variables		Random intercept and level 2 explanatory variables		Random intercept with level 1 and 2 variables	
Fixed effects	*Coeff*	SE	*Coeff*	SE	*Coeff*	SE	*Coeff*	SE
Level 1 (resident)								
• Intercept	1.512*	0.045	1.664*	0.046	1.402*	0.111	1.714*	0.135
• Sex			−0.134*	0.020			−0.134*	0.029
• Age			0.025*	0.009			0.027*	0.013
• Health status			0.105*	0.009			0.106*	0.013
• Type of care			0.256*	0.020			0.207*	0.025
Level 2 (interviewer)								
• Sex					−0.085	0.048	−0.111	0.056
• Reason					0.178*	0.052	0.108	0.063
• Former interview experience						0.072	0.042	0.038 0.047
• Knowledge of healthcare					−0.373*	0.084	−0.358	0.100
• Knowledge of elderly					0.095	0.055	0.024*	0.067
−2 log likelihood/χ^2(df)	7064.407		6494.537*	142.468 (4)	3321.278*	3173.258 (1)	3071.494*	49.957 (5)

Dimension 14	**Model 1**		**Model 2**		**Model 3**		**Model 4**	
Security	Random intercept		Random intercept and level 1 independent variables		Random intercept and level 2 explanatory variables		Random intercept with level 1 and 2 variables	
Fixed effects	*Coeff*	SE	*Coeff*	SE	*Coeff*	SE	*Coeff*	SE
Level 1 (resident)								
• Intercept	1.229*	0.020	1.358*	0.031	1.183*	0.069	1.248*	0.094
• Sex			−0.105*	0.019			−0.068*	0.027
• Education			−0.010	0.009			−0.034*	0.012
• Health status			0.044*	0.008			0.040*	0.011
• Type of care			0.062*	0.009			0.043*	0.012
Level 2 (interviewer)								
• Age					−0.037	0.023	−0.041	0.030
• Reason					−0.001	0.041	0.006	0.052
• How long interviewing					−0.005	0.016	−0.004	0.019
−2 log likelihood/χ^2(df)	6842.411		6245.011*	149.350 (4)	2863.587*	3381.424 (1)	2577.569*	71.504 (4)
Dimension 15	**Model 1**		**Model 2**		**Model 3**		**Model 4**	
Availability personnel	Random intercept		Random intercept and level 1 independent variables		Random intercept and level 2 explanatory variables		Random intercept with level 1 and 2 variables	
Fixed effects	*Coeff*	SE	*Coeff*	SE	*Coeff*	SE	*Coeff*	SE
Level 1 (resident)								
• Intercept	1.966*	0.037	1.951*	0.036	1.922*	0.051	1.911*	0.055
• Duration of stay			0.063*	0.010			0.060*	0.013
• Education			0.024*	0.010			0.027*	0.014
• Health status			0.124*	0.010			0.107*	0.013
• Type of care			0.094*	0.018			0.064*	0.021
Level 2 (interviewer)								
• Work experience					0.121	0.049	0.115	0.053
• Former interview experience					−0.102*	0.047	−0.095	0.051
−2 log likelihood/χ^2(df)	6973.528		6390.533*	145.749 (4)	3757.638*	1316.448 (2)	3485.782*	67.964 (4)

Chapter 4

ARE THE DUTCH LONG-TERM CARE ORGANISATIONS GETTING BETTER?

A trend study of quality indicators between 2007 and 2009 and the patterns of regional influences on performance

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ABSTRACT

Background

Dutch long-term care organisations, providing somatic care, psycho-geriatric care and home care, have to measure the quality of care through client-related and professional indicators since 2007. At the same time, competition was introduced with regional stimuli from healthcare insurers.

Aim

The first aim of this study is to determine the trends of the national performance on client-related and professional quality indicators for the period 2007-2009 in long-term care organisations in the Netherlands. The second aim is to determine the region influence on the quality performance in 2009.

Methods

We performed trend analyses on the indicators of clients of 2,115 long-term care organisations. We used multivariate analyses to determine the difference in national performance between 2007 and 2009 and to calculate the influence of the region on the performance of 2009.

Results

The national performance on client-related indicators for somatic care and home care increased and for psycho-geriatric care the quality performance became worse. The professional indicators for intramural care improved between 2007 and 2009. Region influences the performance. In general, organisations in the West of the Netherlands performed worse than other regions (with exception of home care).

Conclusions

The study suggest that working with quality indicators in long-term care organisations for older people may lead to a better performance on several indicators. The influence of the region on quality is significant, which could be caused by Dutch healthcare insurers.

BACKGROUND

In 2006, the Dutch government introduced a regulated market in healthcare with system changes in financing.[1, 2] Health insurers, operating regionally for the long-term care sector, encouraged competition between healthcare organisations at a regional level. As a result of this policy, healthcare organisations merged in order to survive these market forces and to meet the rising demands for quality performance and transparency.

In 2007, the Netherlands introduced a quality performance framework for high quality long-term care. This framework included client-related indicators, professional indicators and instruments and procedures for measurement were subsequently developed.[3] All home care organisations, nursing homes and homes for older people report on these quality indicators through a public website and receive benchmark information about quality. The results of these quality indicators can be used by healthcare organisations to monitor the quality of care and to initiate quality improvement activities or for accountability and contracting healthcare organisations by health insurers.[4] This quality performance was published for three consecutive years: in 2007, 2008 and 2009. A few studies have shown a significant trend to increasing quality of care in hospitals from the perspective of the patient[5-9] but such evidence is limited in the long-term care sector.[10, 11]

In this paper we assessed the performance on the client-related and professional quality indicators for 2007 and 2009 and assessing whether there were any significant changes during that time period. Because of the regional insurance approach, we hypothesized that there might be regional differences in quality improvement. We sought to determined the pattern of the influence of region (as a proxy for the health insurer) on the quality performance in 2009.

Box 1 *The Dutch healthcare system for older people*

In the Netherlands, care for older people has been divided into care for elderly with physical disabilities (somatic care) and mental disabilities (psycho-geriatric care) and home care. This care can be provided in several healthcare settings: in an intramural setting in the nursing homes , homes for the elderly and homes combining these healthcare services. Care in nursing homes is more intensive than care in homes for the elderly. Healthcare services in-between (day care/day treatment) are usually organised by nursing homes or homes for the elderly. The level of gathering quality indicators is: somatic care, psycho-geriatric care and home care per healthcare organisation. When a healthcare organisations delivers these three healthcare services, three quality indicator sets per type of services are reported.

In the Dutch situation these organisations work in different organisational structures, from a very small single organisation which operates solely with one type of healthcare service to very large corporate structures which include healthcare organisations with a complete range of care (nursing homes for clients with mental disabilities and physical disabilities and home care).

METHODS

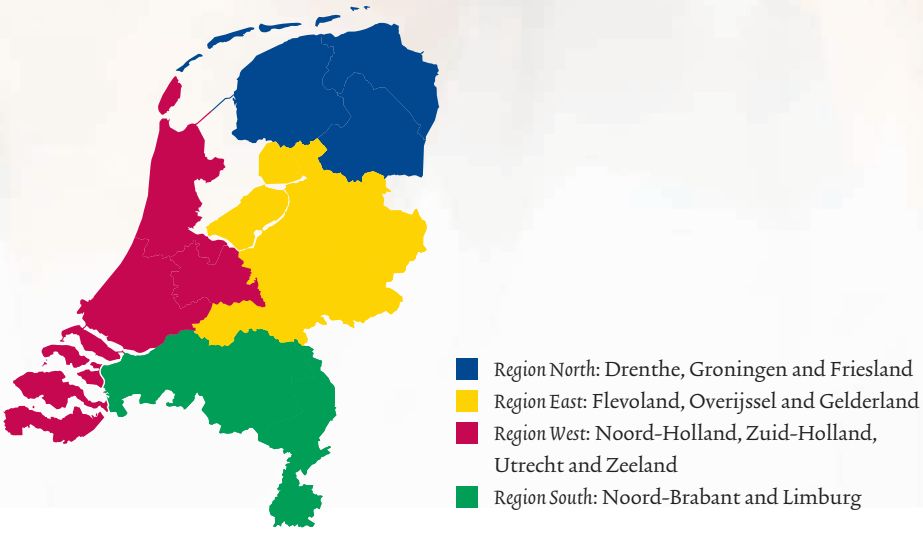
Study design and population

This study is a descriptive evaluation. We used data from 2,303 long-term care locations in 2009.[12] The number of healthcare organisations varied over the years. From 2,115 locations permission was received to analyse their data from 2007 until 2009. We received these data from the branch organisation. Data were gathered at the level of the client or representative of the client. The data were clustered to client-related indicators per healthcare organisation (*see* Box 1). Some organisations deliver two or three types of care (*e.g.* somatic care and psycho-geriatric care). In that case, these types of care were investigated separately using different questionnaires.

Defining the organisational characteristics

We categorised the regions of the Netherlands into North-East-South-West according to the official European NUTS-1 classification (*Figure 1*). Most health insurers develop their principal activities in one of these regions.

Figure 1 *The categorisation of regions in the Netherlands*



Measurement instruments

Client-related indicators

All organisations are obliged to measure their quality with the CQ-Index questionnaires every two years by an independent survey vendor. There are three different instruments for three types of care (*see Box 1*). The CQ-Index questionnaires consist of fifteen to nineteen indicators (varies per CQ-Index). The experiences are measured after drawing a sample out of all clients. For each questionnaire there are instructions on how to perform a CQ-Index research, for example how to draw a sample of the clients and how to check the sample on representativeness of age and gender. More details about the quality indicators measured with the CQ-Index questionnaires are presented in Box 2 in the appendix. The psychometric analyses were described elsewhere.[13] The results on the items of the CQ-Index measurements were scored on a scale that ranged from 1 to 4. A higher score means a better result. We used data from 2007 and 2009.

Professional indicators

For professional care, a standardised set of quality indicators has been developed by the branch organisation in cooperation with professional organisations and experts from the field. All organisations are obliged to measure these indicators by self-recording every year.[3, 13] For intramural care, which includes somatic care and psycho-geriatric care, a set of fourteen quality indicators were gathered by the homes for older people and nursing

homes. For home care a set of seven quality indicators was gathered. The professional indicators are presented in Box 3 in the appendix. A lower level means a better score, with the exception of the level of vaccination and diagnosed incontinence, where the relationship is inverse.

TREND ANALYSIS OF QUALITY INDICATORS

We were interested in the change in quality performance at a national level. We calculated the performance of quality indicators based on data which were gathered at the level of the client and representative of the client. In a multilevel approach we calculated a national mean score based on the total number of clients, per year for every client-related quality indicator. The score was adjusted for age, gender, education level and health status. The score on the client level was served as the first level and the healthcare organisation as the second level. For the professional indicators no case-mix adjustment was applied due to the absence of case-mix adjusters. All organisations are obliged to measure the quality every two years. Therefore, the difference between the quality indicators of 2007 and 2009 at the national level was calculated.

Analysis of the patterns of the region

In a multivariate regression analysis, we calculated adjusted means of the client-related quality indicators. The region was included as independent variable in the model. Because the results of the professional indicators were not distributed normally, a Mann-Whitney U test was used. We determined the influence of the region on the performance of 2009 ($p<0.05$). The analyses were performed in SPSS 18.0.

RESULTS

Characteristics of the healthcare organisations

In 2007 we used the client-related indicators from 1,206 healthcare organisations and in 2009 from 2,717 organisations. For the professional indicators we used data in 2007 from 2,121 organisations and in 2009 from 2,337. Table 1 shows the characteristics of long-term care organisations in 2009 that were included in our analysis. The homes for older people represented the majority with 65%. While the Western part of the Netherlands is the most crowed part of the country, we found a concentration in the West of the Netherlands (38.3%), followed by the South (25.3%). Just over 16% of the organisations had a corporate structure of over 20 healthcare organisations.

Table 1 *Basic characteristics of the organisations (N = 2,115) in 2009*

	N	%
Type of services		
Nursing homes	401	19.0
Homes for the elderly	1,373	64.9
Care at home	284	13.4
Missing	57	2.7
Total	2,115	100.0
Geographical location		
North	256	12.1
East	441	20.9
South	535	25.3
West	811	38.3
Missing	72	3.4
Total	2,115	100.0
Capacity		
1-50	308	14.6
51-100	695	32.9
>100	561	26.5
Missing	551	26.1
Total	2,115	100.0
Corporate structure		
1-5	573	27.1
6-10	488	23.1
11-20	642	30.4
>20	352	16.6
Missing	60	2.8
Total	2,115	100.0

Trends in performance on quality indicators

Table 2a shows the performance on client-related indicators for all three types of care. The national performance for somatic care increased significantly for nine of the fifteen indicators. One indicator decreased significantly. For home care, on eight indicators the performance increased and on three it decreased. For psycho-geriatric care, in 2009 the organisations performed significantly worse on eight indicators and on two indicators their performance increased compared with 2007. The indicator 'shared decision-making' showed a significant positive trend between 2007 and 2009 across all types of care, while 'comfort' significantly worsened for all types of care.

Table 2b shows the performance on professional indicators for the two types of organisations that measured those indicators. For intramural care (somatic care and psycho-geriatric care), four indicators improved significantly: 'the percentage of pressure ulcer', 'the percentage of clients who have an accident with medicines', 'the percentage of clients whereby a doctor or a specialised nurse was involved in diagnosing incontinence'

and 'the percentage of clients suffering from a depression'. No decrease in quality performance of professional care was found. For home care no significant results were found.

Patterns of region influences

For the three types of care the influence of the region on the client-related performance in 2009 is presented in Table 3a. For somatic care the organisations in the Western part of the Netherlands performed significantly worse on fourteen out of fifteen quality indicators from the perspective of the client, while the organisations in the South performed significantly better on twelve indicators. The organisations in the West also performed worse for the other two types of care, although not on all quality indicators. In Table 3b we presented the regression coefficients.

The results are comparable for the influence of the region on professional care in the intramural setting. Organisations in the West performed worse compared with those in other regions, see Table 4a. For home care the Northern part of the Netherlands performed significantly better on three out of seven quality indicators. In Table 4b we presented the U statistics and the effect size.

DISCUSSION

Trends in performance on quality indicators

The national performance from the perspective of the client for somatic care and home care increased for most indicators, whereas those for psycho-geriatric care decreased for six out of fifteen indicators. The results of this study provide therefore some indication that working with quality indicators in healthcare organisations for older people may lead to a better performance on indicators from the perspective of the client in somatic care and home care, but not automatically in psycho-geriatric care. Another indication came from a study of Zuidgeest. They compared organisations over time through pair-wise testing. They found that organisations with substandard performance showed more improvement than organisations whose performance was already relatively good.[11]

The performance on professional indicators showed less change: for intramural care some indicators were improved while for home care no indicators were improved. One possible explanation is that for this type of care there is no direct feedback on quality improvement.

The representatives of clients were the ones who filled in the questionnaire.[13] These representatives are not involved in the day-to-day work in elderly care. As a consequence, they see only a part of the daily work. Perhaps they are also more critical than the clients because they depend less on the efforts of the professionals.

The improvements could be caused by the public reporting of the results. However, a recent systematic review of Fung et al. showed that public reporting does not inevitably lead to quality improvement.[14] They concluded that the effect of public reporting on outcomes provides mixed signals and the usefulness of public reporting in improving

Table 2a *Adjusted score and trend for client-related indicators*

CQ-Index ▼	Somatic care			Psycho-geriatric care			Home care		
	Score 2007 (N = 8,923)	Score 2009 (N = 12,995)	Δ 2007-2009 (%)	Score 2007 (N = 9,990)	Score 2009 (N = 8,534)	Δ 2007-2009 (%)	Score 2007 (N = 8,126)	Score 2009 (N = 6,364)	Δ 2007-2009 (%)
Care plan and evaluation	2.99	3.21	7.4%*	3.30	3.49	5.8%*	3.56	3.45	−3.2%*
Shared decision-making	2.66	2.89	8.7%*	2.80	3.02	7.7%*	2.93	3.17	8.2%*
Attitude	3.44	3.51	2.3%*	3.47	3.45	−0.6%*	3.59	3.62	0.9%*
Information	2.88	3.00	4.5%*	3.28	3.31	1.0%*	3.18	3.20	0.7%
Telephone access				3.35	3.37	0.5%	3.23	3.28	1.7%*
Body care	3.47	3.48	0.3%	3.16	3.15	−0.6%	3.48	3.54	1.7%*
Meals	3.04	3.04	−0.1%	3.49	3.47	−0.5%			
Competency and safety	3.48	3.56	2.2%*	3.27	3.25	−0.6%*	3.53	3.57	1.0%*
Physical restraints				3.22	3.25	0.9%			
Comfort	3.40	3.36	−1.3%*	3.14	3.06	−2.4%*			
Atmosphere	3.44	3.44	0.2%	3.22	3.13	−2.7%*			
Housing and privacy	3.73	3.77	1.2%*	3.59	3.61	0.7%	3.07	3.59	17.0%*
Activities	3.46	3.49	0.7%	2.98	2.92	−1.9%*	3.01	2.97	−1.3%*
Autonomy	3.43	3.47	1.4%*	3.16	3.19	0.9%	3.43	3.45	0.4%
Mental well-being	3.24	3.26	0.4%	3.24	3.13	−3.3%*	3.39	3.41	0.6%*
Safety living environment	3.73	3.78	1.3%*	2.85	2.80	−1.8%*	3.50	3.48	−0.4%
Reliability of providers				3.22	3.22	0.0%	3.68	3.69	0.3%
Availability of personnel	3.01	3.07	1.9%*	3.01	2.89	−4.0%*	3.22	3.09	−4.0%*
Integrated care							3.15	3.20	1.6%*

* *Significant at the $p < 0.05$ level (two-sided).*

Yellow correspond to significant better performance, blue with significant worse performance.

Table 2b *Score and trend (both in %) for professional indicators in intramural care and home care*

Professional care ▼	Intramural care			Home care		
	Score 2007 (N=45,795)	*Score 2009 (N=100,046)*	*Δ 2007-2009 (%)*	*Score 2007 (N=14,466)*	*Score 2009 (N=39,905)*	*Δ 2007-2009 (%)*
Pressure ulcer	3.05	2.34	−23.3 *	1.14	0.87	−24.2
Malnutrition	5.16	3.56	−31.0			
Malnutrition according to the clients	2.18	3.03	39.1	4.71	4.02	−14.5
Falling incidents	10.03	10.17	1.4	11.71	10.29	−12.1
Medicine incidents	7.79	6.76	−13.2 *			
Psycho pharmacy	41.02	39.29	−4.2			
Use of anti depressants	21.06	21.13	0.3			
Level of vaccination – clients	93.47	98.00	4.9			
Prevalence of incontinence	62.07	59.62	−4.0	36.49	31.22	−14.4
Incontinence-diagnosed	46.01	67.09	45.8 *	51.33	60.98	18.8
Clients with catheter	4.85	4.32	−11.0	4.79	3.10	−35.4
Problem behaviour	31.59	28.52	−9.7			
Physical restraints	x	5.58	x			
Depression	24.80	22.37	−9.8 *	14.98	13.60	−9.2

* *Significant at the p < 0.05 level (two-sided).*

Yellow correspond to significant better performance.

Table 3a *The influence of the region on the client-related indicators on three types of care in 2009*

Indicators ▼	Somatic care				Psycho-geriatric care				Home care			
	North adj (N=530)	East adj (N=4,364)	South adj (N=3,683)	West adj (N=4,357)	North adj (N=219)	East adj (N=2,126)	South adj (N=2,654)	West adj (N=3,440)	North adj (N=309)	East adj (1,477)	South adj (2,115)	West adj (1,736)
Care plan and evaluation	3.599*	3.344*	3.340*	2.938*	3.310	3.463	3.600*	3.437*	3.382	3.496	3.474	3.407
Shared decision-making	2.744*	2.882	2.969*	2.810*	2.989	3.034*	3.073*	2.963*	3.168	3.207	3.192	3.152
Attitude	3.526	3.530*	3.549*	3.455*	3.470	3.494*	3.449	3.418*	3.660	3.638	3.621	3.598
Information	3.128*	3.017	3.037	2.963*	3.319	3.327	3.387*	3.254*	3.208	3.266*	3.207	3.175*
Telephone access					3.417*	3.425*	3.391*	3.319*	3.222	3.304	3.270	3.271
Body care	3.495	3.476	3.526*	3.435*	3.215	3.178*	3.138	3.114*	3.612*	3.561	3.525	3.511*
Meals	3.016	3.060*	3.083*	2.965*	3.532	3.479	3.459	3.460				
Competency and safety	3.608*	3.582*	3.608*	3.478*	3.248	3.287*	3.266	3.228*	3.666*	3.592*	3.567	3.541*
Physical restraints					3.155	3.307*	3.379*	3.143*				
Comfort	3.454*	3.419*	3.380*	3.244*	3.132*	3.080*	3.019	3.038*				
Atmosphere	3.442	3.473*	3.480*	3.376*	3.269	3.200	3.153	3.081				
Housing and privacy	3.846	3.775	3.771	3.760	3.550	3.616	3.555	3.630	3.574*	3.406	3.406	3.435*
Activities	3.454	3.503*	3.518*	3.446*	3.013	2.903	2.887	2.918	3.047*	3.022*	2.980	2.926*
Autonomy	3.439	3.457	3.571*	3.409*	3.105	3.211	3.183	3.161	3.455	3.446	3.450	3.442
Mental well being	3.254	3.281*	3.286*	3.206*	3.199	3.177*	3.093*	3.120*	3.459	3.443*	3.393*	3.395*
Safety living environment	3.836*	3.788	3.789	3.769*	2.877*	2.752*	2.737*	2.847*	3.582*	3.551	3.470*	3.471*
Reliability of providers					3.271*	3.238*	3.249*	3.147*	3.761*	3.710*	3.692	3.672*
Availability of personnel	3.190	3.092	3.146	2.952	2.951	2.920*	2.841*	2.879	3.126	3.105	3.066	3.081
Integrated care									3.418*	3.277*	3.232*	3.098*

* *Significant at the $p < 0.05$ level (two-sided).*

Yellow correspond to significant better performance, blue with significant worse performance.

Table 3b *The regression coefficients per region of the client-related indicators on three types of care in 2009*

Indicators ▼	Somatic care			Psycho-geriatric care			Home care		
Region[1]	N	E	S	N	E	S	N	E	S
Care plan and evaluation	.635	.391	.390	-.117	.025	.161	-.048	.074	.051
Shared decision-making	-.098	.056	.146	.022	.073	.110	-.011	.037	.026
Attitude	.050	.066	.083	.049	.077	.031	.053	.034	.025
Information	.151	.047	.070	.054	.074	.132	.020	.081	.031
Telephone access				.091	.108	.070	-.053	.033	.005
Body care	.040	.031	.082	.090	.068	.024	.088	.043	.014
Meals	.010	.076	.097	.076	.021	.000			
Competency and safety	.107	.093	.119	.018	.060	.039	.110	.044	.026
Physical restraints				.007	.165	.238			
Comfort	.176	.162	.116	.189	.119	.076			
Atmosphere	.048	.087	.095	.085	.043	-.018			
Housing and privacy	.079	.012	.006	-.092	-.018	-.083	.141	-.031	-.013
Activities	-.001	.050	.069	.076	-.012	-.036	.084	.082	.053
Autonomy	-.007	.027	.145	-.062	.051	.023	-.007	-.011	.006
Mental well being	.023	.064	.070	.076	.059	-.022	.063	.041	.004
Safety living environment	.055	.015	.015	.024	-.090	-.104	.097	.074	-.001
Reliability of providers				.112	.092	.098	.078	.034	.021
Availability of personnel	.206	.127	.177	.067	.043	-.035	.022	.010	-.021
Integrated care							.282	.171	.139

1 *West is the point of reference*

Table 4a *The influence of the region on the professional indicators on two types of care in 2009*

Indicators ▼	Intramural care (somatic and psycho-geriatric care)				Home care			
	North (N = 12,389)	East (N = 26,109)	South (N = 28,459)	West (N = 35,839)	North (N = 5,596)	East (N = 9,576)	South (N = 12,982)	West (N = 11,778)
Pressure ulcer	2.17	2.44	2.55	2.14	0.87	0.90	0.94	0.77
Malnutrition	3.56	3.47	3.25	3.86				
Malnutrition according to the client	2.46	2.36*	3.30	3.42*	4.02	4.35	4.15	4.02
Falling incidents	9.42	10.38	9.71*	10.58*	10.29*	9.82	9.55	11.26
Medicine incidents	6.91	7.41	0.71	5.96				
Psycho-pharmacy	38.61	40.81	40.28	37.52				
Use of anti-depressants	21.42	21.69	22.77	19.24				
Level of vaccination-clients	97.82	98.40	98.29*	97.54*				
Prevalence of incontinence	58.73	59.10	60.45	59.53	31.22*	31.80	32.44	29.36
Incontinence-diagnosed	70.03	39.23	58.74	71.35*	60.98	59.67	60.14	61.19
Clients with catheter	5.44*	5.21*	3.55*	3.97	3.10	3.12	2.57	3.42
Problem behaviour	26.03*	28.47	26.31*	30.90*				
Physical restraints	4.62	5.72	6.05	5.29*				
Depression	19.24*	22.92	20.27*	24.43*	13.60*	12.62	12.99	15.13

* *Significant at the $p < 0.05$ level (two-sided).*

Yellow correspond to significant better performance, blue with significant worse performance.

Table 4b *The U-statistics and effect size per region of the professional indicators on intramural care and home care in 2009*

Intramural care (somatic psycho-geriatric care) ▼	Region ▶							
	North (N = 12,389)		East (N = 26,109)		South (N = 28,459)		West (N = 35,839)	
	U	r	U	r	U	r	U	r
Pressure ulcer	57,727.50	−0.14	134,923.00	−0.01	140,800.50	−0.05	152,468.00	−0.01
Malnutrition	40,744.00	−0.05	94,599.00	−0.03	96,571.00	−0.09	101,728.00	−0.09
Malnutrition according to the client	42,555.50	−0.16	90,750.50	−0.21	113,149.00	−0.01	96,428.00	−0.24
Falling incidents	56,402.00	−0.17	133,453.00	−0.02	128,442.00	−0.17	128,515.00	−0.23
Medicine incidents	62,710.00	0.00	128,295.00	−0.07	142,852.50	−0.02	148,889.50	−0.04
Psycho–pharmacy	59,665.00	−0.06	132,251.50	0.00	143,004.50	−0.01	149,226.00	−0.03
Use of anti-depressants	60,678.00	−0.03	131,231.00	−0.04	137,818.50	−0.11	148,735.50	−0.14
Level of vaccination-clients	58,318.50	−0.03	130,294.50	−0.04	132,002.00	−0.11	136,572.00	−0.14
Prevalence of incontinence	58,792.00	−0.11	127,733.50	−0.08	141,582.50	−0.04	138,326.00	−0.14
Incontinence-diagnosed	60,451.50	−0.05	131,135.00	−0.04	124,821.00	−0.19	133,139.50	−0.17
Clients with catheter	53,010.50	−0.26	120,455.50	−0.17	119,578.50	−0.26	153,214.50	−0.01
Problem behaviour	52,435.00	−0.27	126,391.50	−0.10	133,377.00	−0.12	122,892.50	−0.28
Physical restraints	59,184.50	−0.10	127,815.50	−0.09	138,080.50	−0.07	149,537.50	−0.04
Depression	51,042.50	−0.31	132,797.50	−0.03	129,093.00	−0.16	123,151.00	−0.28

Home care ▼	Region ▶							
	North (N = 12,389)		East (N = 26,109)		South (N = 28,459)		West (N = 35,839)	
Pressure ulcer	12,190,00	−0.23	21,465,00	−0.05	24,738,00	−0.02	24,002,00	−0.06
Malnutrition according to the client	12,538,50	−0.15	21,036,50	−0.07	23,500,00	−0.08	23,777,00	−0.05
Falling incidents	11,211,50	−0.30	21,758,00	−0.02	23,844,50	−0.06	22,976,00	−0.10
Prevalence of incontinence	11,651,00	−0.24	21,362,00	−0.04	22,521,50	−0.12	24,000,50	−0.04
Incontinence-diagnosed	11,727,00	−0.08	19,843,00	−0.02	20,810,00	−0.10	21,529,00	−0.08
Clients with catheter	13,542,50	−0.03	20,575,00	−0.10	23,571,00	−0.07	24,687,50	0.00
Depression	11,438,00	−0.27	21,731,50	−0.02	23,899,00	−0.04	23,284,50	−0.08

patient safety and patient-centredness remains unknown. Werner found that most quality measures improve in response to public reporting but the clinical significance of these improvements was limited.[10]

Patterns of region influence

Our second research question was whether region (as a proxy for the health insurer) had any influence on the quality performance in 2009. We showed a significant influence of region. Organisations in the West on the Netherlands performed worse than those in other regions with the exception of home care. An explanation for the influence of the region could be that Dutch healthcare insurers work regionally and that they all stimulate quality performance differently. This could result in varying efforts and varying results to improve quality of care. Health insurers in the West might learn something from the other insurers, especially those in the South. Furthermore, we presume that there are differences in the corporate cultures and the characteristics of healthcare providers between the regions. The influence of the region can also be a result of local culture: there could be a more positive or negative tendency in answering the questions or people in the West are perhaps more critical.

Strengths and limitations

The main strength of the study is the number of participating organisations: this is the first time a trend study was performed in Dutch elderly care, which included almost every healthcare institution in this sector. Another strength is the use of the same instruments and indicators in the different organisations, healthcare sectors and years. A further strength of the study is that the gathering of data used for the indicators from the clients' perspective was performed by independent survey vendors, rather than through self-recording by the care organisations.

There are some limitations of the current study as well. We calculated a national average on quality indicators but we did not compare on the level of organisations. Comparing at organisational level could give more insight into the quality improvement and promoters and barriers in quality improvement. Furthermore, we did not investigate whether organisational characteristics influenced the quality improvement made by healthcare organisations.

Another weakness is the self-reported data by organisations of the professional indicators and the lack of case-mix adjusters. Since 2009 these data have been used for financial incentives by health insurers. Gaming by healthcare organisations looking for financial gain is therefore a possible risk. From 2009 onward extreme care should be taken when using these professional these quality data.

CONCLUSIONS

The results of this study suggest that working with quality indicators in long-term care organisations for older people may lead to a better performance on several indicators. The influence of the region on quality is significant, which could be caused by Dutch healthcare insurers. Further, we presume differences in the corporate cultures, the characteristics of healthcare providers and the local culture between the regions. More research is necessary to explore these relationships.

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APPENDIX

Box 2 *Scales of the three questionnaires: description and number of items of the scales*

Indicators		Number of items		
	Brief description	*Somatic care*	*Psycho geriatric care*	*Home care*
Care plan and evaluation	The presence of a care plan and the evaluation with the client of this plan	1	1	1
Shared decision-making	Make decisions in consultation with the clients/ representatives	4	4	6
Attitude	The attitude of the care-givers	4	3	4
Information	The information given by the organisation	5	6	6
Telephone access	The accessibility by telephone of the organisation or care givers	–	3	4
Body care	The care for the body of the client given by care-givers	3	4	2
Meals	The taste of meals the organisation prepares and serves	1	4	–
Competency and safety	The competence of care-givers and the safety of the care they give	6	6	7
Physical restraints	The respect concerning the rights of restraining	–	2	–
Comfort	The cleaning of the home of the client	1	1	–
Atmosphere	The atmosphere in the organisation	4	3	–
Housing and privacy	Enough living space and respect for privacy	5	3	–
Activities	The possibilities for daytime activities	5	4	3
Autonomy	Determine the daily schedule by the client	4	–	5
Mental well-being	The experience of mental support	5	1	4
Safety living environment	The safety of the environment of the client	1	1	4
Reliability of providers	The reliability of care givers and workers of the organisation	–	1	4
Availability of personnel	The presence and availability of workers in the organisation	4	4	6
Integrated care	The level of consistency of care	–	–	1

Box 3 *Professional indicators*

	Intramural care	Home care
% of clients with a pressure ulcer	■	■
% of unintentional weight loss scored by a nurse	■	
% of unintentional weight loss (*i.e.* malnutrition) reported by the client	■	■
% of clients with an incident of falling	■	■
% of clients who had an incident with medicines	■	
% of clients who use psycho-pharmacy	■	
% of clients who use antidepressants	■	
% of clients who have been vaccinated	■	
% of clients who are incontinent	■	■
% of clients whereby a doctor or a specialised nurse was involved diagnosing incontinence	■	■
% of clients who have a catheter	■	■
% of clients with problem behaviour	■	
% of clients with physical restraints	■	
% of clients suffering from depression	■	■

Chapter 5

HOW DO DUTCH RESIDENTIAL CARE HOMES AND HOME CARE ORGANISATIONS IMPROVE THEIR QUALITY?

A description of quality improvement activities and the influence of organisation characteristics on quality improvement

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A description of quality improvement activities and the influence of organisation characteristics on quality improvement

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ABSTRACT

Background

This study describes the quality improvement (QI) activities, triggers and strategies between 2007 and 2009 of Dutch residential care homes and home care organisations. It investigates how geographical location (North, East, South and West), type of services (residential homes, nursing homes and home care) capacity (expressed in number of residents) and the size of the corporate structure influence the process of QI.

Methods

A descriptive survey, conducted in 193 residential care homes and home care organisations. A web-based questionnaire was developed based on a literature search and an expert panel. The questionnaire was pilot tested.

Results

Organisations reported on average 15 (sd 5.9) QI activities. Significant differences in the nature of QI activities and the triggers for implementation were found between the types of services, the geographical location, capacity and the size of the corporate structure.

Discussion

Most organisations implemented generic QI activities involving many employees rather than fitted actions for an existing problem. These activities are mainly organisation oriented instead of oriented on the perspective of the resident. The trigger for QI is more internally focussed rather than externally oriented. The most frequently reported triggers were the quality system issues and internal insights. The implementation strategy used is mostly very traditional.

BACKGROUND

As in many other Western countries, the Dutch residential care homes and home care organisations will be faced with major challenges in the future. Nowadays, 2.5 million people, 16% of the total Dutch population, are aged 65 years or older. Of these, 1.5 million people have co-morbidity problems and 250,000 have some form of frailty. By 2040 these numbers will have more than doubled.[1] Meanwhile, the pressure on quality performance and quality improvement (QI) is a dominant theme. For several years, the monitoring of quality has been organised nationally by measuring a standard set of quality indicators. These quality indicators are quantitative measures describing the performance of care on several topics. In the Netherlands the quality indicators consist of professional indicators through annual self-recording and indicators from the perspective of the resident

measured by a survey vendor every two years, using the Consumer Quality Index questionnaire.[2] Examples of professional indicators are the percentage of residents with a pressure ulcer, the percentage of unintended weight loss and the percentage of residents with an incident of falling. Examples of client-related indicators are 'shared decision-making', 'attitude', 'information' and 'living comfort'. The results of these quality indicators are important for accountability towards the Healthcare Inspectorate and residents and can also be used by health insurers when purchasing care.

The Dutch residential care homes are organised in many different ways (*see* Box 1). The capacity of the organisations providing care varies. Organisations with a small number of residents exist next to large organisations and organisations operating independently exist next to large corporate structures with clustered organisations with 'all-types-of- health-care-services-under-one-roof'.[3] In previous studies organisational characteristics such as region, the number of residents and corporate structure influenced quality improvement.[4–24] Because the health insurers work regionally and stimulate QI through financial stimuli, the geographical location could influence the QI activities performed, the trigger for QI or the chosen implementation strategy for QI.[25]

Moreover, the size of the corporate structure and the number of residents are related to the quality improvement on quality indicators.[26, 27] Scott investigated the influence of the structure of an organisation and the capacity of organisations (in bed size) in the residential care homes. He found that organisations with more beds and a larger structure are significantly associated with early adopters of innovations.[28] This suggests that these characteristics also influence the QI process in organisations, although how these characteristics intervene in the practice of QI remains unclear.

The growing number of older people and the increasing attention given to quality performance and improvement emphasise the importance of being transparent about how this sector works on QI and how organisational characteristics influence this process. This study is aimed at describing the QI activities by residential care homes and home care organisations between 2007 and 2009. We identified the QI activities that were undertaken, the triggers for these QI activities and the used implementation strategies. In addition, we investigated whether geographical location, type of services, capacity and the size of the corporate structure influence the process of QI.

Box 1 *The Dutch health and social care system for older people*

In the Netherlands care for older people has been divided into care for people with physical disabilities (somatic care) and mental disabilities (psycho-geriatric care), both residential and home care (extramural). This care can be provided in several settings. In a residential setting care is provided in the nursing homes, which includes all residential care (N = 479 in 2009), residential homes (N = 1,131 in 2009) and homes where a combination of these health and social care services (N = 290 in 2009) is provided. Care provided in nursing homes is more intensive than care in residential homes. In 2009, 248 organisations provided home care.[29] Health and social care services in between (day care/day treatment) are usually organised by nursing homes or residential homes. The level of gathering quality performance indicators is: somatic care, psycho- geriatric care and home care per organisation. When an organisation delivers these three health and social care services, three quality indicator sets per type of services are reported.

Monitoring the performance is crucial for improving the quality of care.[30-40] In 2006, in cooperation with professional organisations and experts from the field, the Dutch branch organisation for long-term care developed and piloted instruments, a so-called CQ-Index, in an attempt to standardise the method of measuring the experiences of residents in home care, nursing homes and residential homes.[2] All organisations are obliged to measure, using the CQ-Index, the quality from the perspective of the resident every two years. For professional care, a standardised set of quality indicators has been developed which healthcare professionals are obliged to measure by self-recording every year.

METHODS

Study design

This study was a descriptive survey. A questionnaire was developed to create an overview of QI activities in Dutch residential care homes. We identified, defined and classified QI activities using an expert panel. The triggers, the implementation strategies as well as the organisation characteristics were selected from the literature search and the expert panel. The questionnaire was first pilot tested. Our assumption was that, in order to get an overview of QI activities, the triggers and their strategies, at least 100 organisations should be included, in order to reach saturation of information.

Elements for QI

In order to clarify what is meant by QI, a systematic literature search was performed of the database of the Cochrane Effective Practice and Organisation of Care Group (EPOC) as well as PubMed. Search terms included actions, activities, quality improvement, quality system, total quality management, quality assessment, effectiveness, elderly, and included all healthcare settings. The literature described the following elements relevant for QI:

1. the QI activity itself;[4, 5, 9, 14]
2. the trigger for implementing the QI activity,[41] including a subdivision of internal versus external motivators;[42]
3. the implementation strategy,[4, 14, 17] including its duration, number of teams, implementation phase,[17, 22, 43] dissemination methods, target group(s), the implementation team, support from higher management, the characteristics of the participants, such as their occupation, educational level and their length of time working in the organisation;
4. the characteristics of the organisation, including the type of services, capacity, size of the corporate structure, and geographical location.[4, 5, 9, 14, 17, 20, 22-24, 41, 43, 44]

Defining and classifying the QI activities

Initially, 550 QI activities were selected from the literature. All activities that were not relevant to residential care homes and home care were deleted. This reduced the number to 294. Next, we categorised the activities according to the EPOC data collection checklist.[14, 45] Two experts in QI activities in residential care homes and home care further

reduced the total number of activities to 250. They concluded that the EPOC checklist was not a suitable method for classification in this sector, thereby emphasising the need for the development of a tailor-made classification. To do so, an expert meeting was organised. Ten experts were selected, who were very experienced with measuring the quality of care, on implementing QI activities in residential care homes and home care and also on the geographical location, capacity and size of the corporate structure in which they worked. They removed 33 items and combined the remaining 217 sub-activities into 27 main QI activities (*Figure 1*). These they clustered into four categories:

1. five resident activities;
2. five professional activities;
3. sixteen organisational activities;
4. one finance activity.

The classification of the main QI activities, subactivities and categories is shown in Table 1.

Figure 1 *Steps in defining QI activities*

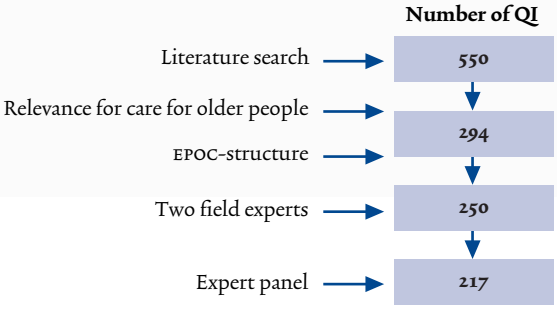

Table 1 *Classification of QI activities and sub activities*

Client activities	
Health plan of resident	Organising informed consent, regular evaluation health plan, discussing and writing down agreements with resident, developing procedure for health plan, placing health plan in residents' room, electronic resident file
Multidisciplinary team meetings	Writing down agreements, adjusting composition, health plan is key element of meetings, presence of resident(s), adjusting structure and/or frequency
Getting into conversation with resident	Visiting resident at home before intake, determining own daily routine, head of team present at conversations with resident, cook present at coffee time for evaluating meals, discussing use of alarm bell
Residents' council	Urging residents to take part, head of team present at meetings, adjusting working method, investigating functionality, celebrating 'residents' council day', adjusting composition
Informing residents	Getting to know First Responsible Representative (FRR), general information about organisation, presenting results of evaluations, informing about professionals, introducing new professionals, general developments, resident's council, policy issues, legal rights, contact person of resident concerning health condition resident, safety, organising open house

Professional activities	
Training/education	Refreshing guidelines, preventing and handling disturbed behaviour, external care, nausea and vomiting, constipation, shortness of breath, restlessness, fatigue, care in the last days of life, support with loss, legal and ethical issues, medication use, residents' experience-centred care, palliative care, in-house emergency and first-aid service, malnutrition/dehydration, quality improvement, management development training, professional attitude, giving feedback, teambuilding, personal guidance, multidisciplinary teamwork, coping with loss, coping with and consequences of stress/health/lifestyle, attitude towards residents, communication
Disseminating educational material	(no subactivities)
Case meetings/ clinical lessons	(no subactivities)
Direct instructions during work	Not saying 'I'm too busy' to residents, taking enough time for nursing, instructions by an expert at occupational level, employee-of-the month election
Procedures/protocols/ instructions aimed at the professionals	Mental care, malnutrition, infection prevention, prescribing medication, reserved acts, medical devices, treatments, pressure ulcers, reanimation, euthanasia, specific focus groups, attitude towards residents including code of good conduct

Organisational activities	
Primary delivery of care to resident	Two nurses per resident to maintain continuity, surveillance in living room, surveillance for confused residents, assisting in going to lavatory, resident participates in chores, integrating activity accompaniment in care process, integrating chores in care process, more/new activities, adjustments in times of/for activities, activities outside the building, place bowling track, setting-up associations, evaluating which activities residents attend to, introducing BAXTER-system, alarm bells, respectfully taking leave of a deceased resident, afterwards discussing the death of resident with the family
General quality management	Head of team actively leads quality care, developing quality policy, developing quality manual, analysing results of research, formulating action plan, risk management, reminders, internal audit, external audit, internal visitation
Activities with regard to evaluation of progress of QI activities	Quality report, discussing points of improvement in teams, frequently discussing action plans, frequent discussions between leader of team and residents' council about progress made, executive reports to management, management monitors progress
Activities with regard to directions on performance	Using overviews of delivered care and outcomes for improvement, evaluating and reporting performance of professionals, evaluating performance of organisation, evaluating satisfaction of residents, evaluating satisfaction of professionals, complaints, appointing critical moments in care process
Activities concerning document management	Digitising archive, making computer registrations more easily obtainable, setting up of email address file of contact persons
Protocols and guidelines aimed at the organisation	Theft/loss/damage, introduction programme, reporting incidents of residents, laundry process, indication process, path from intake until termination, informal care, smoking

Organisational activities	
Human resource management	Rotating housekeepers, retraining housekeepers into nurses, evaluating duty-roster, repositioning of duties, add new duties to existing jobs, instructing temporary employees, competence management, change number of employees of existing jobs, repositioning (new) jobs, education policy, retention of employees
Activities concerning technical/general services	Making reception more accessible, formal integration services, expansion fault repair service
Activities with regard to the residents' own room and spaces for general use	Improving climate control, louder doorbell, information sign at entrance, installing sink in own room, more possibilities to personalise own room, adequate separation of beds in room, deliver room in good condition, more single rooms, measures for prevention of falling, adjusting internal signposting, smoking area, pictures/paintings in hallways, colouring the walls, placing windows, more spaces for general use, giving unique character to every space, developing garden, dealing with noise pollution, free entrance to garden, installing sun screens, limiting the number of residents that share bathroom, making garden safer
Activities with regard to the meals	From closed platter to dinner tray, introducing bread car, more choices, displaying menu in living room, possibility of preparing meals in living room, pre-heated plates, changing time for dinner, presenting copy of dinner list to resident, improving temperature of meals, improving ambiance during dinner, changing table plan, favourite dinner on birthday, residents cook their own meal under guidance, short line complaints, more assistance with eating, introducing consulting-hour, introducing meal committee
Activities for cleaning	Cleaning more often, developing checklists, from internal to external organisation or vice versa, adjusting housekeeping to resident's wishes, cleaning done by same employee
Additional facilities	Cash dispenser/post/bank facilities, lockers, inductance loop, internet, possibility of staying overnight, relaxing room, portfolio with magazines, library, remembrance corner, adjusting supply of shops, opening of new shop, moving shops within the building, opening hours of shops
Development/maintenance	(no subactivities)
Registration and handling of residents' complaints	Reporting complaints, investigating late response to alarm bell calls from residents, developing complaints procedure, introducing mailbox for complaints, introducing mailbox for ideas, resident survey
Activities with regard to the external environment	Making results of surveys publicly accessible, co-operation with other organisations, reputation management
Obtaining external advice	Co-operation with police, ombudsman, translating recommendations from other organisations into policy, consulting assurance consultant, consulting advice agency, obtaining advice from LOC (organisation that promotes interests of residents), participation in 'Care for Better' (national programme)

Financial activities	
Financial activities	Better salary, more benefits, bonus, separate budget for QL, budget for education is integral part of employee budget

Defining the triggers

On the basis of the literature search and the expert panel, twenty-one triggers for implementing QI activities have been detected. Some examples are pressure from the Healthcare Inspectorate, results of quality indicators, increasing the knowledge of professionals, incidents and financial motives. The triggers provide an insight into the motivation for change. Motivation is often specified as being intrinsic or extrinsic.[42] The type of motivation was defined by two researchers separately (SW and MC) as being intrinsic when the QI activity was initiated voluntarily by the organisation itself or extrinsic when the drive for change came from outside the organisation. Afterwards, both researchers checked the results and discussed the differences. They agreed on all triggers. A complete overview of triggers and motivations is presented in Table 2.

Table 2 *Overview of triggers for quality improvement*

Overview of triggers for quality improvement	Motivation: external or internal drive
1 Branch policy	External drive
2 Policy change of the organisation	Internal drive
3 Policy of alliances of professionals	External drive
4 Results on CQ-Index indicators	Internal drive
5 Results on professional indicators	Internal drive
6 Performances	Internal drive
7 External insights	External drive
8 Financial motives	Internal drive
9 Attitude of professionals	Internal drive
10 Incidents	Internal drive
11 Pressure from the Healthcare Inspectorate	External drive
12 Interest of professionals	Internal drive
13 Internal insights	Internal drive
14 Knowledge of professionals	Internal drive
15 Complaints of residents	External drive
16 Complaints of professionals	Internal drive
17 Analyses of bottlenecks	Internal drive
18 Information from the Quality system	Internal drive
19 Discussions with the Resident board	External drive
20 Prevention of problems	Internal drive
21 Pressure from Health Insurances	External drive

Defining the implementation strategies

The implementation strategies comprised

The implementation phase, using the 'plan-do-check-act' cycle:[43]

1 writing the implementation plan;
2 writing and executing the implementation plan;
3 writing, executing and evaluating the implementation plan;
4 writing, executing, evaluating and improving the implementation plan.

The methods used for implementation such as disseminating guidelines, holding meetings, intranet, training, educational meetings, brochures and magazines for residents.[41]

Duration of the implementation process (14) was categorised into:
1 one-time;
2 1–6 months;
3 6–12 months;
4 >12 months;
5 currently in progress.

The number of teams in which the QI activity was implemented[41] was categorised into:
1 1 team;
2 <50% of all teams;
3 >50% of all teams;
4 all teams.

The target groups of the QI activity comprising policy makers, residents, professionals, staff and management of the organisation.[14] The members of the implementation team including members of the management and/or executives.[41] Whether or not the implementation team felt supported by the higher management:
1 always insufficient;
2 only insufficient in the beginning;
3 only sufficient in the beginning;
4 always sufficient.

All these elements described a part of the intensity with which a QI activity has been performed. The longer the duration of the implementation took and the more the implementation covered the whole organisation, the more intensive the implementation.[41]

Defining the organisational characteristics

The organisational characteristics were identified as the type of services, its geographical location, the capacity and the size of the corporate structure. The type of services was defined according to how the organisation had been registered officially, that is as a nursing home, a residential home or care at home. The geographical location was categorised into North-East-South-West according to the official European NUTS-1 classification.[45] This classification is similar to the regions in which health insurers work. The capacity was expressed in number of residents and was categorised into three equal groups:
1 1–68;
2 69–112;
3 113 or more residents.

The categories for the corporate structure were:
1 1–3 organisations;
2 4–11 organisations;
3 12–18 organisations;
4 over 18 organisations.

Developing and testing a tailor-made web-based questionnaire

A web-based questionnaire was developed based on the literature search and the expert panel. The first part consisted of organisational characteristics. The overview of QI activities formed the heart of the questionnaire. For each QI activity the organisation reported the underlying subactivities, the triggers for implementation and the implementation strategy. All questions had closed answering categories and an open option 'other'. The draft questionnaire was presented to the expert panel and was pilot tested in eight organisations to test its feasibility, validity and applicability. Within the organisation the web-based questionnaire was filled in including an evaluation questionnaire. The comments resulted in an obvious way to navigate through the questionnaire.

Recruitment procedure

Through the monthly newsletter of the branch organisation we recruited organisations to participate in this study. We also sent a letter to all organisations in the sector that measured their quality indicators in 2007 (N = 1,723) and they were invited to complete the web-based questionnaire. The invitation was sent to the person within the organisation who was responsible for the quality of care. A reminder was sent after two weeks.

ANALYSIS

Respondents were included when at least 50% of the questionnaire was completed, in accordance with the guidelines for measuring the CQ-Index indicators.[46]

Performed QI activities

QI activities performed and subsequently reported by organisations were analysed on various levels. The level of the main categories comprised the resident, professional, organisational and financial QI activities. For every category we counted the number of QI activities performed as well as the number of organisations that performed at least one QI activity in the category. We performed descriptive statistics on the level of the 27 main QI activities and the 217 sub items. Finally, we counted the number of QI activities performed by each organisation per category and in total.

Triggers for QI activities

Frequencies and percentages were calculated for the 21 triggers for QI which were reported. This was done separately for every QI activity. Next, an average motivation score for the trigger was calculated per QI activity to see whether a QI activity was implemented mostly due to intrinsic or extrinsic motivations. Intrinsic motivations were scored 1 and extrinsic motivations were scored 0, so the average motivation score ranged from 0 to 1.

Finally, for every organisation an average motivation score was calculated combining all QI activities. We calculated whether differences in the activities performed existed between organisations that in general had a more intrinsic or extrinsic motivation score. To do so, we compared the 10th and 90th percentile groups on motivation score using a t-test.

Implementation strategies

Descriptive statistics were performed for all characteristics of the implementation strategy. We calculated one parameter as a measure for the intensity with which the QI activity was implemented. The characteristics used for this parameter (1-4 scale) were the number of teams in which the QI activity was implemented, the phase of the implementation, the duration of the QI activity, the number of target groups involved and the number of methods used. The other characteristics were recorded to a 1-4 scale based on their frequencies. A mean intensity score per QI activity and a total intensity score combining all QI activities were calculated. The intensity score per QI activity was used in the analysis.

Organisational characteristics

We used chi-square tests to determine whether the organisational characteristics, geographical location, type of services, capacity and the size of the corporate structure, had any impact on: the QI activities which were implemented; the triggers for implementation, including the motivation score and finally the implementation strategy by using the intensity score. Post-hoc chi-square tests were performed on every significant overall effect of the organisational characteristics in order to determine the effects between the separate categories.

RESULTS

Characteristics of the study population

The open recruitment of participants resulted in 226 questionnaires, of which 193 questionnaires were completed. Table 3 describes the basic characteristics of the respondents. These organisations formed a good representation of all Dutch organisations, with the exception of a slight over-representation of residential homes in the response group. Of the respondents, 64.8% were representative of residential homes, 22.8% of a nursing home and 12.4% of a home care organisation.

Table 3 *Basic characteristics of the respondents* (N = 193)

	N (%)
Profession	
• Member of management	18 (9.3)
• Location manager	40 (20.7)
• Head of Team/ Care manager	26 (13.5)
• Team leader	5 (2.6)
• Care coordinator	0
• Quality employee	93 (48.3)
Total	**182 (94.3)**
Educational level	
• Secondary school graduate or less	7 (3.6)
• Higher education	120 (62.2)
• University degree	53 (27.5)
Total	**180 (93.3)**
Working duration	
• <6 months	0
• 6 months-1 year	12 (6.2)
• 1-3 years	29 (15.0)
• 3-5 years	15 (7.8)
• 5-10 years	40 (20.7)
• >10 years	86 (44.6)
Total	**182 (94.3)**
Type of services	**P = 0.016***
• Nursing homes	44 (22.8)
• Homes for the elderly	125 (64.8)
• Care at home	24 (12.4)
Total	**193(100.0)**
Geographical location	**P = 0.412**
• North	15 (7.8)
• East	46 (23.8)
• South	57 (29.5)
• West	75 (38.9)
Total	**193(100.0)**
Capacity[1]	**P = 0.076**
• 1-68	52 (34.2)
• 69-112	51 (33.6)
• >112	49 (32.2)
Total	**152(100.0)**
Corporate structure	**P = 0.186**
• 1-3	48 (24.9)
• 4-11	61 (31.6)
• 12-18	46 (23.8)
• >18	38 (19.7)
Total	**193(100.0)**

* *Significant at the p < 0.05 level*

1 *Excluded: care at home organisations*

Performed QI activities

Most activities were labelled by the experts as organisational activities. On average, each organisation reported that 15.1 (sd 5.9) QI activities were performed. However, we noticed large differences between organisations: the number varied from 2 to 27. In the resident category an average of 3.6 (sd 1.2) QI activities were reported. In the professional category 3.1 (sd 1.4) QI activities were reported and for QI activities related to organisation the average was 8.3 (sd 4.2) QI activities. There were hardly any activities reported related to finance, 0.1 (sd 0.3). (*Not shown in Table.*)

Table 4 shows an overview of the percentages of the main QI activities performed and the three most frequently performed sub activities. In total, 99.0% of all organisations reported to have performed one or more resident activities, 96.9% reported one or more professional activities, 99.0% reported one or more organisational activities and 14.0% reported financial activities.

Table 4 *Performed main and subactivities*

Client activities	N (%)
Health plan	184 (95.3)
1 Regular evaluation	125 (64.8)
2 Develop procedure	117 (60.6)
3 Discuss/formalise agreements resident	116 (60.1)
Multidisciplinary meeting	120 (62.2)
1 Health plan key element	85 (44.0)
2 Formalise agreements	69 (35.8)
3 Adjust structure/frequency	61 (31.6)
Getting into conversation with resident	128 (66.3)
1 Determining own daily routine	89 (46.1)
2 Head of team present at conversations	41 (21.2)
3 Cook present at coffee time	21 (10.9)
Resident council	109 (56.5)
1 Urge residents to take part	67 (34.7)
2 Adjusting composition	46 (23.8)
3 Head of team present at meetings	37 (19.2)
Informing residents	157 (81.3)
1 General developments	91 (47.2)
2 Resident's council	89 (46.1)
3 Getting to know FRR	86 (44.6)

Professional activities	N (%)
Training/education	175 (90.7)
1 In-house emergency, first-aid	135 (69.9)
2 Refreshing guidelines	109 (56.5)
3 Attitude towards residents	113 (58.5)
Disseminating educational material	75 (39.3)
Case meeting/clinical lessons	93 (48.7)
Direct instructions during work	111 (57.5)
1 Not saying 'I'm busy'	60 (31.1)
2 Time for nursing	51 (26.4)
3 Instructions expert	44 (22.8)
Professional protocols	137 (71.0)
1 Reserved acts	95 (49.2)
2 Infection prevention	82 (42.5)
3 Pressure ulcers	78 (40.4)

Financial activities	
Financial activities	27 (14.0)
1 Separate budget for QI	16 (9.1)
2 Education part of empl. budget	16 (9.1)
3 Better benefits	6 (3.4)

Triggers for QI activities

The trigger for QI activities was mostly internal. The most frequently mentioned triggers for performing a QI activity were the following: the activity was part of the quality system and internal insight coming from the organisation itself stimulated the QI activity (*Table 5*).

The overall motivation score varied from 0.22–1.00 (mean 0.85, sd 0.10). We investigated whether the nature of the motivation would lead to different activities and a different intensity with which the QI activities were performed, but we found no significant differences on this point (not presented in a Table). QI activities regarding the health plan of the resident, training and the evaluation of the progress of QI activities were mostly intrinsically motivated activities. QI activities regarding finances, facility services and the external context were mostly extrinsically motivated QI activities.

Table 4 *Performed main and subactivities, continued*

Organisational activities	N (%)
Primary delivery of care to resident	153 (79.3)
1 Integrating activities in care process	69 (35.8)
2 More/new activities	56 (29.0)
3 BAXTER-system	53 (27.6)
General quality management	156 (80.8)
1 Internal audit	126 (65.3)
2 External audit	109 (56.5)
3 Formulating action plan	3 (54.9)
Evaluation of progress of QI activities	165 (85.5)
1 Discussing improvement in teams	116 (60.1)
2 Quality report	105 (54.4)
3 Executive reports to management	96 (49.7)
Directions on performance	135 (69.9)
1 Evaluating satisfaction of residents	113 (59.5)
2 Using overviews of care and outcomes	98 (51.6)
3 Evaluating satisfaction of professionals	88 (46.3)
Document management	94 (48.7)
1 Obtainable computer	49 (26.1)
2 Digitising archive	45 (23.9)
3 Collect email file of contact persons	19 (10.1)
Protocols and guidelines for organisation	130 (67.4)
1 Reporting incidents residents	74 (39.6)
2 Introduction programme	65 (34.8)
3 Path from intake until termination	55 (29.4)
Human resource management	104 (53.9)
1 Retention of employees	66 (35.3)
2 Evaluating duty-roster	52 (27.8)
3 Repositioning jobs/ education policy	45 (24.1)
Development/maintenance	72 (37.3)

Organisational activities	N (%)
Residents' own room spaces general use	97 (50.3)
1 Measures for prevention of falling	44 (24.2)
2 Improving climate control	41 (22.5)
3 More single rooms	37 (20.3)
Meals	112 (58.0)
1 Improving ambiance during dinner	62 (34.4)
2 Changing time for dinner	37 (20.6)
3 More choices	35 (19.4)
Cleaning	64 (33.2)
1 Housekeeping to resident's wishes	42 (23.5)
2 Cleaning more often	22 (12.3)
3 Developing checklists	19 (10.6)
Additional facilities	45 (23.3)
1 Adjusting supply of shops	16 (8.9)
2 Internet	15 (8.4)
3 Opening hours of shops	15 (8.4)
Registration residents' complaints	94 (48.7)
1 Developing complaints procedure	64 (36.2)
2 Reporting complaints	59 (33.3)
3 Resident survey	24 (13.6)
External environment	74 (38.3)
1 Co-operation with other organisations	43 (24.3)
2 Making results publicly accessible	18 (10.2)
3 Reputation management	6 (3.4)
Obtaining external advice	79 (40.9)
1 Participation in 'Care for Better'	45 (25.4)
2 Consulting advice agency	33 (18.6)
3 Co-operation with police	21 (11.9)
Technical and general services	49 (25.4)
1 Making reception better reachable	21 (11.3)
2 Expansion fault repair service	16 (8.6)
3 Formal integration services	15 (8.1)

Table 5 *Characteristics of main QI activities*

Client activities	Health plan		Multidisciplinary meeting		Getting into conversation with resident		Resident council		Informing residents	
Trigger for implementing n (%)										
1st	Quality system 117 (63.6)		Quality system 66 (55.0)		CQI results 84 (65.6)		CQI results 39 (35.8)		CQI results 109 (69.4)	
2nd	CQI results 86 (46.7)		Internal insight 60 (50.0)		Quality system 49 (38.8)		Quality system 34 (36.2)		Quality system 74 (47.1)	
3rd	Internal insight 69 (37.5)		CQI results 44 (36.7)		Internal insights 41 (32.0)		Internal insights 27 (28.7)		Internal insights 67 (42.7)	
Methods Used										
1st	Meeting 163 (88.6)		Meeting 104 (86.7)		Meeting 112 (87.5)		Magaz. residents 41 (37.6)		Meeting 118 (75.2)	
2nd	Dissem. guideline132 (71.7)		Dissem. guideline 91 (75.8)		Dissem. guideline 65 (50.8)		Info session 38 (34.9)		Info. Session 101 (64.3)	
3rd	Training/edu. 131 (71.2)		training/edu. 46 (38.3)		training/ edu. 57 (44.5)		Meeting 29 (26.6)		Magaz. Residents 97 (61.8)	
Target groups involved										
Policy makers	46 (25.0)		20 (16.7)		12 (9.4)		18 (16.5)		24 (15.3)	
Residents	109 (59.2)		75 (62.5)		105 (82.0)		89 (81.7)		144 (91.7)	
Employ primary	177 (96.2)		108 (90.0)		109 (85.2)		17 (15.6)		110 (70.1)	
Employ.support	76 (41.3)		47 (39.2)		59 (46.1)		12 (11.0)		75 (47.8)	
Management	53 (28.8)		26 (21.7)		22 (17.2)		16 (14.7)		44 (28.0)	
Support										
Sufficient begin	15 (8.2)		2 (1.8)		6 (4.9)		5 (4.9)		2 (1.3)	
Insufficient begin	16 (8.7)		3 (2.6)		3 (2.5)		2 (1.9)		6 (4.0)	
Sufficient always	139 (76.0)		96 (84.2)		101 (82.8)		80 (77.7)		122 (81.3)	
Insuffic. always	5 (2.7)		8 (7.0)		5 (4.1)		3 (2.9)		7 (4.7)	
	μ	sd	μ	sd	μ	sd	μ	sd	μ	sd
Motivation score (0–1)	0.80	0.27	0.52	0.45	0.55	0.44	0.37	0.45	0.65	0.40
Intensity (1.0–4.0)	3.0	0.5	2.8	0.5	2.9	0.5	2.4	0.5	2.9	0.5

Professional activities	Training/education	Disseminating educational material	Case meetings/ clinical lessons	Direct instructions during work	Protocols/instructions for professionals
Trigger for implementing n (%)					
1st	Knowledge prof. 123 (70.3)	Knowledge prof. 54 (72.0)	Knowledge prof. 59 (63.4)	Results CQI 62 (55.9)	Quality system 84 (61.3)
2nd	Quality system 104 (59.4)	Quality system 41 (54.7)	Interest prof. 41 (44.1)	Knowledge prof 37 (33.3)	Knowledge prof. 71 (51.8)
3rd	Interest prof/internal insights 64 (36.6)	Interest prof 37 (49.3)	Quality system 34 (36.6)	Internal insights 35 (31.5)	Results care 50 (36.5)
Methods Used					
1st	Training/edu 150 (85.7)	Meeting 53 (70.7)	Meeting 60 (64.5)	Meeting 90 (81.1)	Meeting 111 (81.0)
2nd	Meeting 124 (70.9)	Training/edu 41 (54.7)	Training/edu 45 (48.4)	Training/edu 43 (38.7)	Dissem. guidel. 101 (73.7)
3rd	Dissem. guideline 89 (50.9)	Dissem. guideline38 (50.7)	Dissem.guideline 40 (43.0)	Info session 40 (36.0)	Training/edu 72 (52.6)
Target groups involved					
Policy makers	36 (20.6)	14 (18.7)	7 (7.5)	10 (9.0)	32 (23.4)
Residents	54 (30.9)	34 (45.3)	15 (16.1)	25 (13.0)	58 (42.3)
Employ primary	166 (94.9)	70 (93.3)	85 (91.4)	101 (91.0)	126 (92.0)
Employ.support	99 (56.6)	45 (60.0)	42 (45.2)	55 (49.5)	86 (62.8)
Management	47 (26.9)	23 (30.7)	14 (15.1)	22 (19.8)	50 (36.5)
Support					
Sufficient begin	10 (5.9)	0	1 (1.1)	1 (0.9)	4 (2.1)
Insufficient begin	3 (1.8)	3 (4.10	1 (1.1)	3 (2.8)	4 (2.1)
Sufficient always	137 (81.1)	62 (84.9)	74 (81.3)	92 (86.8)	111 (57.5)
Insufficient always	9 (5.3)	3 (4.1)	6 (6.6)	7 (6.6)	8 (4.1)

	μ	sd	μ	sd	μ	sd	μ	sd	μ	sd
Motivation score (0–1)	0.78	0.34	0.33	0.44	0.42	0.47	0.50	0.46	0.58	0.43
Intensity (1.0–4.0)	2.9	0.5	3.1	0.5	2.7	0.5	2.7	0.6	3.0	0.5

Organisational activities	Primary delivery care to resident		General quality management		Evaluation of progress of QI activities		Directions on performance		Document management	
Trigger for implementing n (%)										
1st	Quality system 79 (51.3)		Quality system 86 (55.5)		Quality system 106 (65.0)		Quality system 79 (58.5)		Quality system 45 (47.9)	
2nd	Results CQI 73 (47.4)		Health insurers 77 (49.7)		Internal insights 50 (30.7)		Results CQI 56 (41.8)		Prev. problems26 (27.7)	
3rd	Internal insights 65 (42.2)		Internal insights 71 (45.8)		CQI results 49 (30.1)		Internal insights 42 (31.3)		Internal insights 23 (24.5)	
Methods Used										
1st	Meeting 133 (86.4)		Meeting 133 (85.8)		Meeting 140 (85.9)		Meeting 108 (80.6)		Meeting 61 (64.9)	
2nd	Dissemi. guideline 93 (60.4)		Dissem. guideline 113 (72.9)		Dissem. guideline 88 (54.0)		Info session 61 (45.5)		Intranet 48 (51.1)	
3rd	Info session 84 (54.5)		Info session 104 (67.1)		Info session 84 (51.5)		Dissem. guideline 52 (38.8)		Dissem. guideline 47 (50.0)	
Target groups involved										
Policy makers	21 (13.6)		80 (51.6)		79 (48.5)		51 (38.1)		37 (39.4)	
Residents	85 (55.2)		83 (53.5)		74 (45.4)		59 (44.0)		14 (14.9)	
Employ primary	132 (85.7)		126 (81.3)		106 (65.0)		86 (64.2)		53 (56.4)	
Employ.support	82 (53.2)		110 (71.0)		85 (52.1)		70 (52.2)		50 (53.2)	
Management	25 (16.2)		92 (59.4)		93 (57.1)		60 (44.8)		50 (53.2)	
Support										
Sufficient begin	0		4 (2.7)		6 (3.8)		5 (4.1)		3 (3.4)	
Insufficient begin	1 (0.7)		4 (2.7)		10 (6.4)		2 (1.6)		4 (4.6)	
Sufficient always	133 (89.9)		133 (89.3)		130 (82.8)		105 (85.4)		69 (79.3)	
Insufficient always	5 (3.4)		5 (3.4)		4 (2.5)		4 (3.3)		6 (6.9)	
	μ	sd	μ	sd	μ	sd	μ	sd	μ	sd
Motivation score(0-1)	0.64	0.40	0.58	0.38	0.69	0.38	0.57	0.44	0.40	0.47
Intensity(1-4.0)	2.9	0.5	3.3	0.5	3.1	0.4	3.1	0.4	3.1	0.5

Organisational activities	Protocols and guidelines aimed at the organisation	Human resource management	Technical and general services	The residents' own room spaces for general use	Meals
Trigger for implementing n (%)					
1st	Quality system 78 (60.0)	Internal insights 53 (51.0)	Internal insights 18 (38.3)	Internal insights 53 (54.6)	Results CQI 70 (63.1)
2nd	Results CQI 46 (35.4)	Quality system 44 (42.3)	Policy changes 18 (38.3)	Results CQI 43 (44.3)	Internal insights56 (50.5)
3rd	Internal insights 45 (34.6)	Policy changes 43 (41.3)	Financial motives 13 (27.7)	Complaints client 31 (32.0)	Complaints client 56 (50.5)
Methods Used					
1st	Meeting 105 (80.8)	Meeting 78 (75.0)	Meeting 30 (63.8)	Meeting 50 (51.5)	Meeting 75 (67.6)
2nd	Dissem. guidelines 98 (75.4)	Dissem. guideline 56 (53.8)	Dissem. guideline 18 (38.3)	Magaz. residents 31 (32.0)	Info session 44 (39.6)
3rd	Intranet 54 (41.5)	Info session 51 (49.0)	Info session 18 (38.3)	Info session 27 (27.8)	Magaz. Residents 42 (37.8)
Target groups involved					
Policy makers	53 (40.8)	34 (32.7)	11 (23.4)	15 (15.5)	6 (5.4)
Residents	65 (50.0)	27 (26.0)	16 (34.0)	75 (77.3)	96 (86.5)
Employ primary	108 (83.1)	90 (86.5)	21 (44.7)	51 (52.6)	74 (66.7)
Employ.support	88 (67.7)	69 (66.3)	32 (68.1)	37 (38.1)	55 (49.5)
Management	60 (46.2)	45 (43.3)	7 (14.9)	19 (19.6)	9 (8.1)
Support					
Sufficient begin	1 (0.8)	1 (1.0)	1 (2.5)	2 (2.3)	1 (1.0)
Insufficient begin	4 (3.3)	6 (6.3)	1 (2.5)	5 (5.7)	2 (1.9)
Sufficient always	103 (85.1)	82 (85.4)	31 (77.5)	75 (86.2)	92 (88.5)
Insufficient always	8 (6.6)	2 (2.1)	6 (15.0)	3 (3.4)	6 (5.8)

	μ	sd	μ	sd	μ	sd	μ	sd	μ	sd
Motivation score (0–1)	0.54	0.44	0.45	0.46	0.19	0.37	0.33	0.42	0.42	0.42
Intensity (1.0–4.0)	3.1	0.5	2.9	0.5	2.7	0.5	2.7	0.6	2.8	0.4

Organisational activities	Cleaning		Additional facilities		Development maintenance		Residents' complaints		External environment	
Trigger for implementing n (%)										
1st	CQI results 37 (57.8)		Complaints clients 21 (47.7)		Policy changes 23 (31.9)		Quality system 64 (67.4)		Policy changes 23 (44.2)	
2nd	Complaints residents 31 (48.4)		Internal insights 18 (40.9)		Internal insights 18 (25.0)		Internal insights 27 (28.4)		External insights 20 (38.5)	
3rd	Internal insights 30 (46.9)		Complaints prof. 12 (27.3)		Financial motives 17 (23.6)		Prev. problems 26 (27.4)		Internal insights 20 (38.5)	
Methods Used										
1st	Meeting 52 (81.3)		Meeting 29 (65.9)		Meeting 39 (54.2)		Meeting 68 (71.6)		Meeting 24 (46.2)	
2nd	Dissem. guideline 24 (37.5)		Magaz. Residents 22 (50.0)		Info session 27 (37.5)		Dissem. guidel. 51 (53.7)		Info session 22 (42.3)	
3rd	Info session 23 (35.9)		Info session 15 (34.1)		Magaz. Residents 27 (37.5)		Info session 28 (29.8)		Dissem. guideline12 (23.1)	
Target groups involved										
Policy makers	5 (7.8)		3 (6.8)		19 (26.4)		40 (42.6)		20 (38.5)	
Residents	46 (71.9)		34 (77.3)		57 (79.2)		73 (77.7)		22 (42.3)	
Employ primary	26 (40.6)		22 (50.0)		32 (44.4)		57 (60.6)		21 (40.4)	
Employ.support	45 (70.3)		20 (45.5)		24 (33.3(		51 (54.3)		16 (30.8)	
Management	5 (7.8)		2 (4.5)		15 (20.8)		50 (53.2)		21 (40.4)	
Support										
Sufficient begin	0		1 (2.5)		1 (1.5)		0		1 (2.2)	
Insufficient begin	1 (1.6)		0		1 (1.5)		1 (1.1)		1 (2.2)	
Sufficient always	53 (86.9)		35 (87.5)		58 (87.9)		77 (87.5)		38 (84.4)	
Insufficient always	5 (8.2)		0		3 (4.5)		4 (4.5)		3 (6.7)	
	μ	sd	μ	sd	μ	sd	μ	sd	μ	sd
Motivation score (0–1)	0.25	0.39	0.13	0.31	0.19	0.37	0.37	0.44	0.16	0.33
Intensity (1–4)	2.5	0.7	2.7	0.6	2.7	0.5	2.9	0.5	2.9	0.6

Organisational activities	External advice		Financial activities	
Trigger for implementing n (%)				
1st	Internal insights 42 (53.8)		Knowledge of professionals 9 (33.3)	
2nd	Complaints clients 24 (30.8)		Interest of professionals 8 (29.6)	
3rd	Preventing problems 23 (29.5)		Internal insights 7 (25.9)	
Methods Used				
1st	Meeting 42 (53.8)		Disseminating guideline 13 (48.1)	
2nd	Information session 30 (38.5)		Meeting 13 (48.1)	
3rd	Training 26 (33.3)		Information session 8 (29.6)	
Target groups involved				
Policy makers	20 (25.6)		10 (37.0)	
Residents	32 (41.0)		3 (11.1)	
Employ primary	44 (56.4)		16 (59.3)	
Employ.support	31 (39.7)		13 (48.1)	
Management	27 (34.6)		12 (44.4)	
Support				
Sufficient begin	3 (4.1)		0	
Insufficient in begin	1 (1.4)		0	
Sufficient always	62 (84.9)		20 (74.1)	
Insufficient always	2 (2.7)		4 (14.8)	
	μ	sd	μ	sd
Motivation score (0–1)	0.30	0.41	0.11	0.31
Intensity (1.0–4.0)	2.7	0.6	2.9	0.5

Implementation strategies

The manner in which residential care homes and home care organisations performed QI activities could be labelled as intensive and habitual. The QI approach was long-lasting, conducted with a high intensity and organisations used common methods for QI. The mean duration of the QI activities ranged from 3.7–4.9, meaning that most activities lasted longer than twelve months. The mean number of teams in which the QI activity was implemented ranged from 2.3–4.5. Between the QI activities, the score on the implementation phase ranged from 2.1–3.9. Implementation most frequently meant meetings, disseminating guidelines, information sessions and training or education. Most QI activities were aimed at more than one target group. Professionals were included in the target group in at least 50% of the organisations.

There were major differences in the number of employees in the implementation teams across the organisational levels. QI activities dealing with the residents' own room and spaces for general use had the highest mean number of team members, but the management of the organisation was less well-represented: 1.1–3.1. Most employees were included in the implementation team at an executive personnel level: 17.3–176.5. For all QI activities, most respondents indicated that they felt supported by higher management. For the individual QI activities, the intensity ranged from 2.4 for informing residents to 3.3 for quality policy. The results have been summarised in Table 4 for each separate category of QI activities.

The impact of organisational characteristics on QI activities

Type of services

Significant differences were found in the activities performed in an intramural setting, meaning nursing homes and residential homes, compared to extramural care received at home. In the residential setting, more QI activities were reported with regard to multidisciplinary team meetings (p=.002), informing residents (p=.003), training professionals (p=.013), direct instructions during work (p=0.01), primary delivery of care to residents (p=.003) and organisational guidelines (p=.006) (not shown in a table). In home care, triggers for implementing QI activities were more often preventing problems, the content of care performance indicators and health insurers. The results of the CQI quality indicators, the interest of the professionals and incidents, were triggers that were more frequently reported. We found no significant differences between the type of services with regard to the motivation score and the implementation strategy.

Geographical location

Significant differences were found in the activities performed in relation to their geographical location (*Table 6*). More resident QI activities were reported in the West of the Netherlands, whereas organisational QI activities were performed less frequently in the East. Geographical location also showed significant results for the triggers for QI activities (*Table 7*). In the South, organisations were more frequently triggered by healthcare insurance and financial motives. The interest of the professionals was mentioned less frequently. In the West, preventing problems was more frequently a trigger, whereas performance indicators were less frequently a trigger for implementing QI activities. In the East, the branch organisation was more frequently mentioned as a trigger for implementing QI activities compared to other regions. We found no significant difference in the motivation score between the regions, but in the East the intensity of activities was higher than in other regions (not shown in a table). We found less significant differences in the North.

Box 6 *Differences in performed activities for each geographical region*

	N	E	S	W
Getting into conversation with resident	■			
Residents' council				■
Informing residents				■
Procedures/protocols aimed at the professionals	■			
Primary delivery of care to resident		–		
Activities with regard to directions on performance		–		■
Activities for residents' room and spaces for general use	■	–		
Activities with regard to the meals		–		
Activities with regard to the cleaning	■	–		
Registration and handling of residents' complaints				■
Obtaining external advice		–		■

Yellow = The activity is performed more often in that geographical region.
Blue = The activity is less often performed in that geographical region.
Only significant at the p < 0.05 level differences were included in the table.

Table 7 *Differences between geographical regions for the trigger for QI activities*

Triggers ▶ Activities ▼	Branch policy	Policy change	Performance indicators	External insights	Financial motives	Incidents	Interests professionals	Internal insights	Knowledge professionals	Complaints professionals	Quality system	Resident board	Prevention	Insurances
Health plan of resident		e		s w									w n	
Getting into conversation with resident			e										w n	
Residents' council			n											
Informing residents			e w		s							s	e	s
Training/education			s		s	e			w				w	s
Disseminating educational material			s w											
Case meetings/clinical lessons	e						s		w s	s				
Direct instructions during work	e	e	n w										w n	
Procedures/protocols for professionals	e					e w s n	s		s					s
Primary delivery of care to resident			w				s						w s	
General quality management	e		e s				s						w n	
Activities to evaluate progress QI activities	e		n s	w	s			s					w s	
Activities reg. directions on performance	e												w s	
Activities reg. document management			e w								e s	n w e	w	
Protocols/guidelines aimed at organisation	e		s		s	n s	n s						w s	
Human resource management	e	n	e s	n w	s e n					w e		n	s	
Activities residents' room/ spaces general use	e		e s	n s n	s				s	e n	s		w	s
Activities with regard to the meals		e	e	s w			e		w		w		w n	
Activities with regard to the cleaning			e					e w n s		e s		w	w n s	
Additional facilities								w						
Development/maintenance			e s	n	n s	e w		s	s		s			s
Registration/handling of residents' complaints	e		e									s	w	
Activities reg. the external environment							e							
Obtaining external advice			s	s n					s	n e w s n	s	n	w n	s

Yellow = The trigger had a positive impact on the activity in that geographical region, blue = the trigger had a negative impact on the activity in that geographical region
Significant at the $p < 0.05$ level.

Table 8 *Differences of capacity of organisations for the trigger for QI activities*

	External insights	Financial motives	Healthcare Inspectorate	Interest of professionals	Internal insights	Knowledge of professionals	Complaints of residents	Analyses of bottlenecks	Quality system	Performance	Health insurance
Health plan of resident							large	small	small		
Multidisciplinary team meetings							middle	small			
Resident council											
Informing residents					small	small				small	
Training/education		small			small				small		
Disseminating educational material			large						small		
Case meetings/clinical lessons			small								
Protocols/instructions for professionals									small		
Primary delivery of care to resident				small		small		middle	small		
General quality management									small		
Activities to evaluation progress QI activities		small			small					small	
Activities to directions on performance		small				small			small	small	
Protocols and guidelines for the organisation									small	small	small
Human resource management							large				
Facility services							large				
Activities residents' room and general spaces	small	small								small	small
Activities with regard to the meals		small							small	small	small
Activities with regard to the cleaning								small			
Development/maintenance			large						small	small	small
External advice	small	small									
Financial activities				large		large					

Yellow = The trigger had a positive impact on the activity, blue = the trigger had a negative impact on the activity.
Significant at the $p < 0.05$ level.

Table 9 *Differences of scale of organisations for the trigger for QI activities 1 = 1-3 locations, 2 = 4-11 locations, 3 = 12-18 locations, 4 = > 18 locations*

Triggers ▶ Activities ▼	Branch policy	Alliance s professionals	CQ-Index	Professional indicators	Performances	External insights	Financial motives	Interest professionals	Internal insights	Knowledge professionals	Complaints residents	Complaints professionals	Analyses bottlenecks	Quality system	Prevention problems	Insurances
Health plan of resident			4		3	3	1/4		4	4						
Multidisciplinary team									1					1/2		
Conversation with resident						2/3				4						1 /3
Informing residents					1 / 4	3	3			4					4	
Training/education		3	3	2	3	2 / 3	3	1/2	3					4	4	3
Educational material	2		3					2 / 4								
Direct instructions during work				2 / 3										2	4	
Protocols aimed at the professionals		4	2 / 3				3 / 4									
Primary delivery of care to resident			4	2	3	3								4	4	3
General quality management			3		3	3 / 4			3	2 / 3				2	4	
Activities to evaluate QI			1/4		3	3	3 /4			3				1 /2	4	
Activities reg. performance			4		3	1/4				3				4	4	3
Document management					2 / 3				2			3	3	1/2	4	
Protocols aimed at the organisation	2		3		3	3	3		2 / 3	3				4	4	3
Activities reg. the residents' room			3 / 4		3	2/3	3		1	3					4	3
Activities reg. the meals			3 / 4		3		3		1	3	4			3	4	3
Activities reg. the cleaning			1				3		1		1				4	
Additional facilities									2				4			
Development/maintenance			3		3	3	3		3	3				3		3
Registration residents' complaints									2		3			3		
Activities reg. external environment	4		4	4							3	3		4		4
Obtaining external advice	2		3		3	3	3		3	3	4	4	4		4	3

Yellow = The trigger had a positive impact on the activity in that geographical region, blue = the trigger had a negative impact on the activity in that geographical region
Significant at the $p < 0.05$ level.

Capacity

The capacity only showed significant differences in the frequency of implementing QI activities concerning the technical and general services (p = .018). Smaller organisations performed fewer activities compared to larger organisations. The capacity did have a significant influence on the triggers for QI activities (*Table 8*). In organisations with relatively few residents, a functioning quality system, performance indicators and financial motives were more frequently triggers for implementing QI activities. We found no significant differences in the motivation score and implementation strategy.

Corporate structure

The results showed that a corporate structure comprising more than 18 organisations performed QI activities significantly less frequently with regard to multidisciplinary team meetings and guidelines for professionals. These organisations performed activities on cleaning and maintenance more frequently. Corporate structure also showed a significant influence on the triggers for QI activities (*Table 9*). For the corporate structures consisting of 12–18 organisations, performances, financial motives, external insights coming from outside the organisation, knowledge of professionals and healthcare insurers were more frequently a trigger for implementing QI activities. For organisations with corporate structures consisting of more than 18 organisations, a more frequently mentioned trigger is the prevention of problems. No significant difference in motivation score was found between the different categories of corporate structure. The overall intensity score of QI activities was significantly higher in the smaller corporate structure (*not shown in a table*).

DISCUSSION

The status quo on QI in Dutch residential care homes and home care

Organisation focus versus patient-centredness

The results show that the organisations participating in this research put QI activities high on their agenda. Organisations performed on average more than 15 QI activities between 2007 and 2009 and almost all organisations have reported one or more QI activities.

Quality improvement is mainly organisation-based and not yet centred on the patient. This study classified QI activities per literature, with added contributions from experts. Most activities were labelled as organisational activities (16 out of 27). The 193 organisations reported the largest amount of organisational activities as well, which confirmed the findings of the literature search and the expert panel. Improvements are found mostly at a higher organisational level, rather than closer to the resident. This could have several reasons, such as the level of education of the professionals, the lack of time of the professionals, a lack of ability and possibility to innovate and the hierarchical structure of organisations. QI requires a good performance by the organisation's system of development, consisting, for example, of a culture of innovation for, and leadership of quality improvement.

Internal focus versus external focus

The focus of QI in this sector is internal. The two most frequently reported triggers for implementing QI activity were the following: it formed part of the quality system and there were internal insights into all four categories of QI activities. This indicates that

regardless of the motivation and the trigger the same kind of QI activities were performed. QI activities with a higher average intrinsic motivation score were more frequently reported compared to QI activities with a lower extrinsic motivation score (*Table 5*). This highlights the fact that intrinsic motivation is a more important driver for QI than extrinsic motivation.

Routine versus innovation

The implementation strategy does not seem to differ between the categories of QI activities. Organising meetings, disseminating guidelines, training or education and information sessions were the methods most reported for almost all QI activities. According to Grol,[40;47] different QI activities need to be disseminated through different methods and strategies that should match the needs of the target groups. Instead, organisations seem to act out of habit and do not question whether that method will help them to improve the quality of care. It would therefore be interesting to investigate whether these standard methods are successful for all QI activities, or whether a more focused combination of triggers, methods and QI activities can be found.

In general, QI activities are implemented with a high intensity. Although an extensive evaluation performed by Grol et al[47] showed that an intensive and systematic approach is necessary for effective implementation, it is questionable whether this high intensity is always necessary. The effectiveness of the implementation of QI activities and the relation with its intensity should therefore be further investigated.

Organisational influences

In this study, the location of an organisation turned out to be important. The influence of health insurers and competition on QI activities is present. Different regions performed different QI activities, even within the same corporate organisation. In the South of the Netherlands, pressure from health insurers was more often an important trigger for implementing QI activities. Since health insurers operate regionally, it is possible that in the South the insurance companies influence the choice of the QI activities more intensively than in other regions. The results of performance indicators are published on a publicly accessible website, which may increase competition between organisations operating in the same region.

Furthermore, this study shows that organisations with a small capacity (<68 residents) and a corporate structure size of 12–18 organisations identify more triggers for improvement. This suggests that differences can be found in the scale of organisations. Further investigation is necessary to find the influence of scaling on QI.

Finally, the type of services, either home care, nursing homes or residential homes and the implementation strategy seem to be less important in choosing QI activities.

Contribution of the study

The study reveals the way in which the 193 organisations developed QI and presents a more or less complete overview of QI activities. Due to the lack of literature on QI activities in this sector, a new classification model of QI activities was necessary and a questionnaire has been developed. Each element in this study reflects significant results, with the exception of the implementation strategy. Although standardised methods for QI are chosen, the literature showed the usefulness of several methods and justified the importance of the implementation strategy.

There is a significant influence of organisational characteristics on QI activities. We can also conclude that the trigger, the internal motivation and the QI itself, show significant results and are essential in evaluating studies of QI. In the Netherlands this overview is unique and never presented before. It could be very useful for managers of residential care homes, nursing homes and home care for inspiration, Furthermore, insight into the way QI is performed nowadays will help to understand why QI is successful or not. This understanding is necessary: quality of care will be a major point of interest in the future.

The results of the study can be seen as a first measurement in determining how residential care homes and home care is improving, as well as the influence of organisational characteristics.

Limitations

There are several limitations. The self-reporting character of the questionnaire may have led to an incorrect reporting of QI activities. Furthermore, the open recruitment of participants probably leads to selection bias. Nevertheless, on the basis of the response analysis, we assume that the results from the 193 organisations represent an overview of QI activities.

The extent of QI activities was an important strength of this study, although this resulted in a lengthy questionnaire. This could have influenced the participation, possibly resulting in response bias. Therefore, replication on a national and international level will be necessary.

This study gives an overview of QI activities performed for these 193 organisations and their relevant characteristics. The next step is now to investigate whether these activities will also lead to a better quality of care and which QI activities are most effective. Further research is necessary to determine the contribution of organisations on QI and performance. This could guide organisations in the future in successfully developing and implementing QI activities.

CONCLUSION

This study found a high degree of attention to QI among the 193 residential care homes and home care organisations. The results showed that QI activities had many facets but indicated that an organisational approach to QI is the most routine. Furthermore, the results suggest a broad approach was preferred, involving a lot of employees. The influence of health and social care services on QI was not detected.

However, the geographical location of the organisation influenced which QI activities had been performed, the trigger for QI and the intensity of the QI strategy. Also, the capacity of the organisation influenced the amount of QI activities and the trigger for QI. Finally, the size of the corporate structure influenced the amount of QI activities, the trigger for QI and the intensity with which QI was performed. Evaluating QI activities and its effectiveness should therefore be done in this context.

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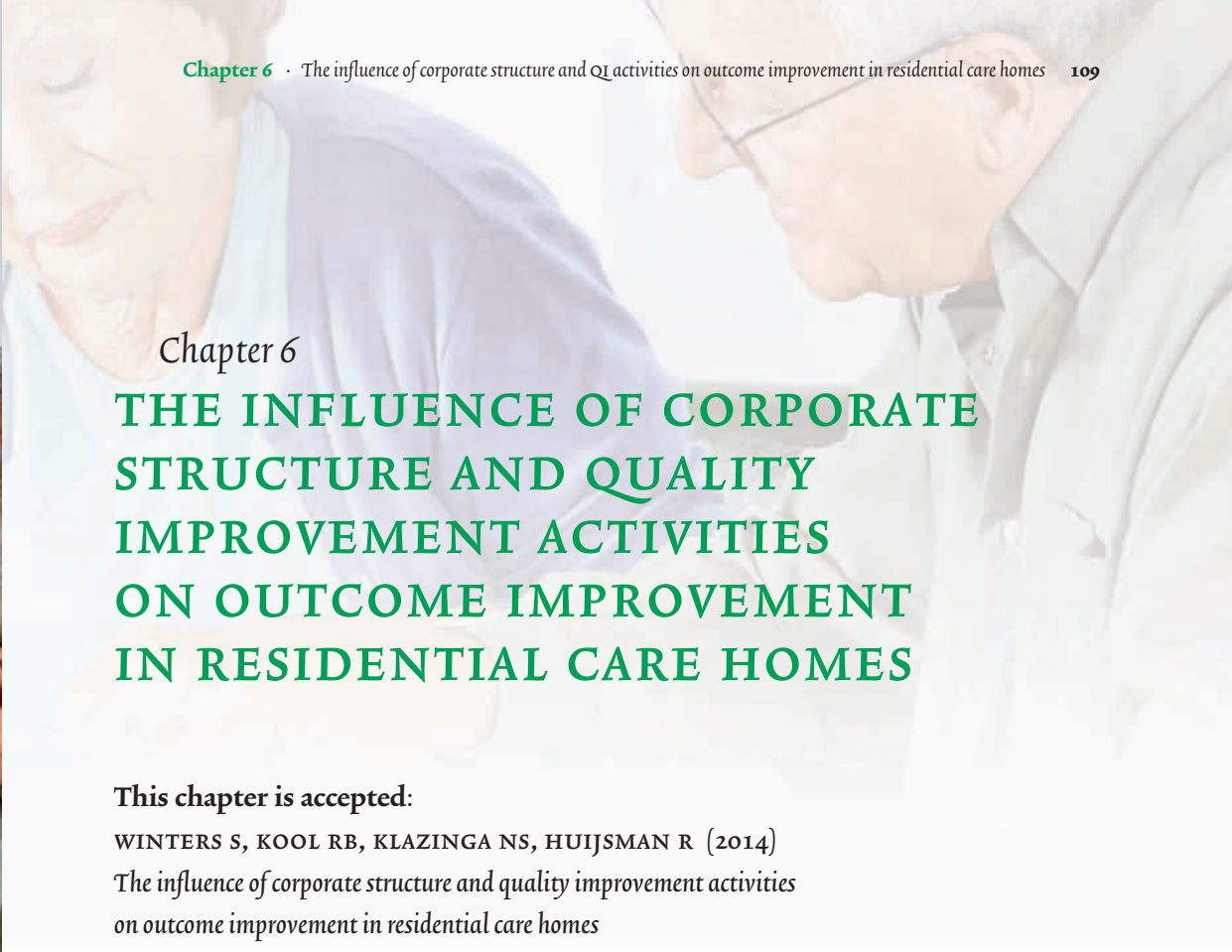

Chapter 6

THE INFLUENCE OF CORPORATE STRUCTURE AND QUALITY IMPROVEMENT ACTIVITIES ON OUTCOME IMPROVEMENT IN RESIDENTIAL CARE HOMES

This chapter is accepted:

WINTERS S, KOOL RB, KLAZINGA NS, HUIJSMAN R (2014)

The influence of corporate structure and quality improvement activities on outcome improvement in residential care homes

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ABSTRACT

Objective
To examine the impact of corporate structure and quality improvement (QI) activities on improvements in client-reported and professional indicators between 2007-2009.

Design
A cross-sectional study using organisational survey and indicator multilevel modeling to test relationships between corporate structure, QI activities and performance improvements on indicators.

Setting
169 residential care homes for the elderly in the Netherlands.

Main outcome measures
Change between 2007-2009 in client-reported and professional indicators.

Results
A middle-size corporate structure was associated with QI. The QI activity 'multidisciplinary team meetings', was positive correlated with the indicator 'safety environment' for somatic and psycho-geriatric care. The QI activities 'educational material' and 'direct work instructions' were associated negatively with the indicator 'availability of personnel' for somatic clients, but positively for psycho-geriatric clients. QI activities such as 'health plan activities', 'clinical lessons', and 'financial activities' had no relationship to improved performance. For psycho-geriatric clients mainly organisational QI activities were positively associated with QI. The mediating role of the corporate structure for performing QI activities appeared stronger for the change in client-reported than for professional indicators.

Conclusion
This study reveals associations between QI activities and corporate structure and changes in indicator performance. A corporate structure was associated with improvement in client-reported indicators, but less on professional indicators, which assumes a central policy at corporate level with impact on client-reported indicators, in contrast to a more local level approach towards activities that result in QI on professional indicators. Tailoring QI activities at the right managerial level may be important to achieve improvement.

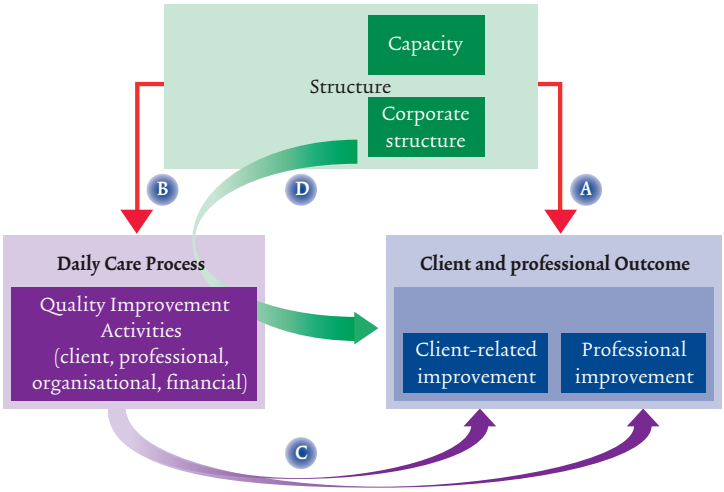
BACKGROUND

In 2006, market-oriented reforms were initiated by the Dutch government with the aim to increase efficiency, and enhance performance and accountability in residential care homes.[1, 2] The role of health insurers was strengthened by selective regional contracting with healthcare providers.[3-6] In response, several organisations changed their structure, merging into large healthcare conglomerates and began to take on quality improvement (QI) by changing processes of care. Specially trained quality staff were educated or hired

and investments were made to support QI activities.[3, 6-8] The Dutch association for residential and home care organisations developed and introduced a quality framework for both accountability and QI purposes. It included a set of client-reported measures and a set of professional quality indicators and instructions how to measure these.[9] Organisations started monitoring their performance by measuring outcomes, client-reported measures and professional quality indicators.

Grol et al have described a model for successful QI that identifies relevant activities with residential, professional, organisational and financial characteristics.[10] They raised several questions, including whether single or combined QI activities are the most effective and which process-oriented QI activities have the most effect on outcome. In this paper, we sought to evaluate the impact of structural organisational changes on the quality of care of Dutch residential care homes. For this study, we adapted and modified a model developed by Kunkel that describes the relationships among structure, process and outcome (*figure 1*).[11] Previous studies have shown a strong influence of structure elements such as the region, the size of the corporate structure and the organisational capacity on quality as measured through outcomes (*Arrow A in figure 1*).[4, 11-14] Structure also influences the QI process (*Arrow B*). The influence of the QI process on outcome (*Arrow C*) has been described previously.[3] Our hypothesis is that corporate structure and the mix of QI activities selected by these organisations will be associated with improved client-reported outcomes and to a lesser degree on the performance on professional indicators (*focusing on arrows C and D in figure 1 and the potential mediating role of C on D*).

Figure 1 *Research model*



METHODS

Using data on the organisational structure of 169 residential care home organisations, a survey of QI activities, and professional and client indicator data, we tested the associations of interest using changes in the professional indicators and client-reported outcomes between 2007 and 2009 as the dependent variable.

A web-based questionnaire was developed to measure both the structural features, including the number of residents and the number of locations served by the corporate entity and to obtain a summary of their QI activities. This research by questionnaire was performed in 2009, just before the results of the measurement in 2009 were known. The residential care home organisations were invited to participate, with the recommendation of the Dutch association for residential and home care organisations. Relevant QI activities were identified, defined and classified by an expert panel and ultimately, 27 QI activities were categorized into four groups: resident-related, professional-related, organisation-related and financial-related activities. The motivation for QI (the triggers), the implementation strategies as well as the organisation characteristics were selected from the literature and the expert panel. The development and pilot testing of the questionnaire has been described in detail elsewhere.[15]

The quality of care (dependent variables) included client-reported and professional indicators. These were based on standardized instruments that were developed as part of the Dutch national set of indicators to measure outcomes from the perspective of the client and processes of care delivered by professionals.[9, 16] In 2009, the total set of quality indicators was more extensive than described in this paper. For this research we used only the quality indicators, which were still in use in 2012. All organisations are obliged to use questionnaires and interviews, the CQ-Index, to gather and report data at the level of the single healthcare location with several locations forming one organisation. The data are used to calculate the indictors every two years. The CQ-Index consists of a four-point scale[1-4] with higher scores representing better results. To measure changes in professional care, we used professional indicators from a national standardized set of quality indicators that was developed by the Dutch association for residential and home care organisations in cooperation with professional organisations and experts from the field.[9] For intramural care, including somatic care as well as psycho-geriatric care, six quality indicators were collected at the level of the client by the organisation by self-recording every year.[16] (*see Box 1*). The indicators for professional care were calculated as a percentage of all clients, *e.g.* the percentage of the all clients suffering from depression in relation to all clients. A lower score means a better performance. To measure the magnitude of improvement (the dependent variable), we used a baseline measurement of the quality indicators in 2007 and a second measurement in 2009. The change between 2007 and 2009 was calculated for each indicator and each organisation. We report the results separately for somatic and psycho-geriatric care.

Box 1 *The outcome component: quality indicators*

Indicators	Brief description
Client reported indicators	
Shared decision-making	Make decisions in consultation with the clients/representatives
Attitude	The attitude of the care-givers
Information	The information given by the organisation
Meals	The taste of meals the organisation prepares and serves
Competency and safety	The competence of care-givers and the safety of the care they give
Comfort	The cleaning of the home of the client
Atmosphere	The atmosphere in the organisation
Housing and privacy	Enough living space and respect for privacy
Activities	The possibilities for daytime activities
Safety living environment	The safety of the environment of the client
Availability of personnel	The presence and availability of workers in the organisation
Professional indicators	
Falling incidents	% of clients with an incident of falling
Medicine incidents	% of clients who had an incident with medicines
Psycho-pharmacy	% of clients who use psycho pharmacy
Anti depressants	% of clients who use anti depressants
Problem behavior	% of clients with problem behaviour
Depression	% of clients suffering from depression

ANALYSIS

Dependent variables

First, the change between 2007 and 2009 was calculated for each indicator and each organisation. After case-mix adjustment including education, age, gender and health status, we determined whether the difference was significant by performing a paired t-test.[16]

Because some locations were part of a larger corporate structure and therefore nested hierarchically, we performed multilevel analyses, constructing separate models for each of the relationships of interest with the client-reported and professional indicators as dependent variables. First, we constructed a base model (*model 1*) for comparisons that included the baseline scores on indicators (2007) and capacity, because the potential for improvement of indicator scores depends on baseline values.[17] Capacity of locations was used as an adjuster because capacity was known to influence improvement on indicators.[15] This model included no random effects.

To investigate the relation between QI activities and the dependent variables (*Arrow c*), we developed model 2, by calculating in a variance analysis, to test whether a QI activity significantly explained changes in indicator scores. Next, all significant QI activities were entered forward step by step in the model. Only QI activities, which were significant and gave a better model fit, were included in the multilevel analysis. Random effects were not included.

To investigate the influence of the corporate structure on QI (*Arrow A*) we constructed model 3, which added the corporate structure to model 1 and allowed for a random intercept. To investigate the influence of the corporate structure on choosing and performing QI activities, we constructed model 4. Model 4 added both the corporate structure and the QI activity variables to test the relationship between the combination of these factors (*Arrow D*) on the client-reported and professional indicator scores. This was also specified as a random effects model.

The – 2 likelihood and χ^2 of every quality indicator calculated, we determined the – 2 log likelihood of models 2, 3, and 4 in comparison with model 1. The intraclass correlation (ICC) was measured.[18] Deviance tests or likelihood ratio tests were used to compare the relative fit of the different models. The difference in deviance of two nested models has a χ^2 distribution with degrees of freedom equal to the number of extra parameters in the larger model. Results were considered statistically significant when two-sided $p \leq .05$. The percentage of explained variance was computed. The analysis was carried out in SPSS, version 20.

RESULTS

The characteristics of the residential care organisations are described in Table 1. Almost two thirds of the organisations were residential homes and a quarter nursing homes. A quarter of the organisations had between 1 and 3 locations; early 20% had more than 18 locations.

Table 1 *Basic characteristics of the study population*

	N	%
Profession		
• Member of directional board	17	10.1
• Location manager	37	21.9
• Head of unit/care manager	24	14.2
• Team leader	5	3.0
• Quality employee	77	45.6
• Missing	9	5.3
Total	**169**	**100.0**
Educational level		
• Middle level	7	4.1
• High level	151	89.3
• Missing	11	6.5
Total	**169**	**100.0**
Working duration		
• 6 months-1 years	11	6.5
• 1-3 years	27	16.0
• 3-5 years	11	6.5
• 5-10 years	31	18.3
• > 10 years	80	47.3
• Missing	9	5.3
Total	**169**	**100.0**

	N	%
Type of service		
• Nursing homes	44	26.0
• Homes for the elderly	125	74.0
Total	**169**	**100.0**
Capacity		
• 1-68	51	30.2
• 69-112	51	30.2
• >112	50	29.6
• Missing	17	10.1
Total	**169**	**100.0**
Corporate structure		
• 1-3	41	24.3
• 4-11	55	32.5
• 12-18	40	23.7
• >18	33	19.5
Total	**169**	**100.0**

Table 2 presents the improvement on quality indicators between 2007 and 2009 for somatic care and psycho-geriatric care. Client-reported indicators of somatic care performance improved on ten indicators during the 2-year period. Only two of the eleven client-reported indicators of psycho-geriatric care improved ('shared decision-making' and 'housing and privacy'). Of the six indicators of professional care, five improved. For each indicator, the mean change in indicator performance expressed as a percentage of baseline performance, the maximum decline in performance, maximum improvement, and standard deviation are presented in Table 2.

Table 3 displays the QI activities reported by organisations. On average, organisations reported 15.1 (sd 5.9) QI activities. The mean duration of the QI activities lasted longer than twelve months, the mean number of teams in which the QI activity was implemented ranged from 2.3 to 4.5. Most employees were included in the implementation team and they felt supported by higher management. Table 3 gives an overview of the activities and the used implementation strategies.

Table 2 *Quality improvement on the quality indicators*

	Somatic care						Psycho-geriatric care					
	Score 2007	*Score 2009*	*Δ 2007 - 2009 in %*	*min Δ*	*max Δ*	*sd Δ*	*Score 2007*	*Score 2009*	*Δ 2007 -2009 in %*	*min Δ*	*max Δ*	*sd Δ*
Client reported indicators												
Shared decision-making	2.69	2.73	1.53%	−1.15	0.93	0.42	2.85	2.90	1.86%	−0.20	0.60	0.18
Attitude	3.36	3.45	2.60%	−0.51	0.57	0.18	3.47	3.44	−1.02%	−0.14	0.14	0.08
Information	2.86	2.87	0.48%	−1.16	0.72	0.28	3.30	3.29	−0.21%	−0.29	0.50	0.21
Meals	2.94	2.99	1.69%	−0.48	0.69	0.21	3.46	3.45	−0.41%	−0.14	0.16	0.07
Competency and safety of care	3.44	3.51	1.81%	−0.35	0.55	0.16	3.31	3.28	−1.97%	−0.15	0.19	0.08
Comfort	3.33	3.34	0.35%	−0.62	0.40	0.19	3.21	3.15	−1.89%	−0.47	0.48	0.20
Atmosphere	3.39	3.43	1.11%	−0.38	0.45	0.17	3.14	3.05	−2.77%	−0.48	0.17	0.13
Housing and privacy	3.78	3.76	−0.68%	−0.42	0.24	0.10	3.51	3.57	1.54%	−0.25	1.52	0.33
Activities	3.41	3.46	1.48%	−0.29	0.67	0.17	2.96	2.89	−2.33%	−0.35	0.22	0.15
Safety of living environment	3.71	3.75	1.24%	−0.20	0.25	0.09	2.84	2.80	−1.50%	−0.40	0.47	0.19
Availability of personnel	2.94	3.00	2.30%	−0.36	0.54	0.17	3.00	3.17	−2.77%	−0.39	0.22	0.16
Professional indicators												
Falling incidents	1.05	0.98	−6.91%	−3.10	1.39	0.61						
Medicine incidents	1.09	0.97	−10.71%	−13.32	4.40	1.52						
Psycho-pharmacy	.99	0.96	−3.06%	−1.15	1.33	0.35						
Use of anti-depressants	.94	0.99	4.99%	−3.01	4.50	0.63						
Problem behaviour	.94	0.93	−1.45%	−2.40	1.22	0.40						
Depression	1.00	0.97	−3.24%	−1.86	1.38	0.53						

Table 3 *Quality improvement activities*

QI activity	N	%	Used implementation strategy
Resident activities			
Health plan resident	163	96.4	meetings, guidelines, training
MD team meetings	113	66.9	meetings, guidelines, training
Conversation residents	113	66.9	meetings, guidelines, training
Residents' council	98	58.0	meetings, magazines for clients, information sessions
Informing residents	145	85.8	meetings, magazines for clients, information sessions
Professional activities			
Training/education	158	93.5	meetings, guidelines, training
Educational material	67	39.6	meetings, guidelines, training
Clinical lessons	82	48.5	meetings, guidelines, training
Direct work instructions	103	60.9	meetings, training, information sessions
Professional protocol	120	71.0	meetings, guidelines, training
Organisational activities			
Primary care delivery	142	84.0	meetings, guidelines, information sessions
Quality management	139	82.2	meetings, guidelines, information sessions
Evaluation of QI	146	86.4	meetings, guidelines, information sessions
Performance control	122	72.2	meetings, guidelines, information sessions
Document management	86	50.9	meetings, intranet, guidelines
Organisation protocols	120	71.0	meetings, intranet, guidelines
HRM	93	55.0	meeting, guidelines, information sessions
Technical services	43	25.4	meeting, guidelines, information sessions
Activities for residents' room	92	54.4	meetings, magazines for clients, information sessions
Activities meals	110	65.1	meetings, magazines for clients, information sessions
Activities cleaning	64	37.9	meeting, guidelines, information sessions
Additional facilities	43	25.4	meetings, magazines for clients, information sessions
Development/maintenance	69	40.8	meetings, magazines for clients, information sessions
Complaints	84	49.7	meeting, guidelines, information sessions
Environment activities	45	26.6	meetings, guidelines, information sessions
External advice	73	43.2	meeting, information sessions, training
Financial activity			
Financial activities	25	14.8	meetings, guidelines, information sessions

Table 4a-c shows the observed relationships between QI activities and indicators (*Arrow* C). For almost every indicator one or more QI activities had a significant correlation, but not always in a positive direction. For example, the QI activity 'multidisciplinary team meetings', had a positive correlation with the indicator 'safety environment' for somatic and psycho-geriatric care. The QI activities 'educational material' and 'direct work instructions' were associated negatively with the client-reported 'availability of personnel' indicator for somatic clients, but these same QI activities were positively correlated with the client-reported 'shared decision-making' indicator for psycho-geriatric clients. For psycho-geriatric care *e.g.* 'cleaning' had a positive association with performance improvement on 'comfort', 'organisation protocols had a positive association with performance improvement on 'information' and 'maintenance/development' had a

positive association with performance improvement on 'meals'. Several QI activities (*e.g.* 'health plan activities', 'conversation with residents', 'clinical lessons', 'activities concerning HRM' and 'financial activities') had no relationship to improved performance on indicators.

Table 5 summarizes the multilevel models testing the association between changes in indicator scores during the two-year period (the rows) and the organisation-reported QI activities and corporate structure. The results for model 1 confirm that baseline score is a predictor of change in score. Several QI activities had a negative relationship with the indicators suggesting that organisations not reporting these activities had improvement on the indicator. For model 2, we found a significant better model fit for six out of the 23 indicators, which means that the variance was significant associated with QI activities. Model 3 results show that for six out of 23 quality indicators, the variance was significantly associated with differences in corporate structure. The ICC's in model 3 varied from 0% to 100% for the client-reported indicators. For professional care indicators the ICC varied from 0% to 13%. When both corporate structure and QI activities were entered into the model (*Model 4*) the ICC's varied from 0% to 92% for the client-reported indicators and from 0% to 8% for professional care indicators. The combination of structure and QI activity was a statistically significant influence on indicator change for eight out of the 23 indicators.

Table 4a *Correlation quality improvement activity and somatic quality indicators*

	Resident activities					Professional activities					Organisational activities															Fin
Pearson Correlation ▶ Client-reported indicators: Somatic care 2009-2007 ▼	Health plan resident	MD team meetings	Conversation residents	Residents' council	Informing residents	Training/education	Educational material	Clinical lessons	Direct work instructions	Professional protocol	Primary care delivery	Quality management	Evaluation of QI	Performance control	Document management	Organisation protocols	HRM	Technical services	Act. residents' room	Activities meals	Activities cleaning	Additional facilities	Developm./maintenance	Complaints	Environment activities	External advice	Financial activities
Shared decision-making	-	-.031	.137	-.191	-.079	-.345	.126	-.134	-.223	-.217	-.210	-.212	-.184	-.134	-.357	-.183	.106	-.225	-.280	-.019	-.113	-.116	.027	.115	.049	.000	-.075
Attitude	-	.115	.077	-.188	-.099	-.207	.082	.084	-.189	.002	-.005	.019	.063	-.087	-.254	-.015	.211	-.182	-.113	-.004	-.090	.028	-.002	.079	-.015	-.153	.011
Information	-	.212	.090	-.157	.035	-.043	.099	-.225	.112	.005	-.039	-.119	-.002	.121	-.072	.232	-.085	-.221	.127	.243	.120	.014	.257	.225	-.037	-.029	-.039
Meals	-	.051	-.151	-.277	-.296	-.139	-.254	.202	-.268	.027	-.235	-.305	-.090	-.102	-.118	-.078	-.210	.051	-.102	-.106	-.045	-.082	-.158	-.150	-.117	-.185	-.147
Competency/safety of care	-	.103	.010	-.293	-.103	-.055	-.017	-.003	-.241	.036	.028	.026	.102	-.069	-.293	.057	.142	-.203	.025	.081	-.080	.010	.100	.220	-.031	-.118	-.007
Comfort	-	.072	.008	-.176	-.201	.140	-.261	-.202	-.188	-.123	.189	-.127	.050	.037	.098	.118	-.136	-.274	.143	.129	.088	-.153	.306	.100	-.111	.056	-.151
Atmosphere	-	-.073	.093	-.372	-.127	-.096	-.212	.059	-.308	-.099	.006	-.007	-.155	-.268	-.241	-.170	-.045	-.360	.031	.196	.033	.027	.032	.103	-.116	-.024	.028
Housing and privacy	-	-.077	.096	.004	-.109	.020	-.005	.151	.082	.104	-.071	.203	.274	.126	.041	.196	-.201	-.249	-.032	.015	-.004	.032	-.073	.188	.069	.104	.151
Activities	-	.108	.141	-.433	-.072	.052	.006	.095	-.279	.151	.184	.108	.129	-.037	-.161	-.125	.040	-.188	.030	.190	-.021	.131	.038	.232	.108	-.005	-.041
Safety environment	-	.387	-.022	-.171	-.097	.247	.167	.199	-.049	.231	.146	.130	.134	-.022	-.279	.087	.253	-.014	-.020	.065	-.111	-.018	-.086	.069	-.052	-.228	.081
Availability personnel	-	-.128	-.085	-.481	-.002	-.230	-.303	-.012	-.431	-.160	-.188	-.166	-.127	-.199	-.397	-.206	-.036	-.242	-.129	.045	-.093	-.042	.067	.058	-.250	-.207	-.136

Table 4b *Correlation quality improvement activity and psycho-geriatric quality indicators*

	Resident activities					Professional activities					Organisational activities																Fin
Pearson Correlation ▶ Client-reported indicators: Psycho-geriatric care ▼	Health plan resident	MD team meetings	Conversation residents	Residents' council	Informing residents	Training/education	Educational material	Clinical lessons	Direct work instructions	Professional protocol	Primary care delivery	Quality management	Evaluation of QI	Performance control	Document management	Organisation protocols	HRM	Technical services	Act. residents' room	Activities meals	Activities cleaning	Additional facilities	Developm./maintenance	Complaints	Environment activities	External advice	Financial activities
Shared decision-making	-.098	.049	.149	-.302	-.119	-.465	.241	-.152	-.041	-.003	-.156	-.065	-.267	-.315	-.079	-.349	.017	-.066	-.404	.302	-.163	.072	-.363	-.110	.074	.088	.068
Attitude	.137	.060	-.035	-.055	.001	.027	-.104	.117	-.242	.126	.269	.107	.045	-.321	-.120	-.262	-.125	-.019	-.200	.014	-.248	-.239	-.244	-.329	-.188	-.143	-.007
Information	-.128	-.384	-.185	-.068	-.135	-.022	-.378	.058	-.388	-.278	.313	-.073	-.081	-.464	-.072	-.447	-.231	-.186	-.179	.136	-.020	-.134	-.014	-.126	-.314	-.044	-.223
Meals	.126	-.144	.036	-.122	.204	-.353	-.031	-.049	-.111	.088	.006	.194	.176	.105	.171	.008	-.099	.020	-.372	-.021	-.381	-.043	-.459	-.254	-.072	.084	-.084
Competency/safety of care	.138	-.100	.148	.056	.066	.103	-.267	.078	-.281	.015	.248	.197	-.067	-.223	.051	-.230	-.149	-.156	-.174	-.014	-.328	-.247	-.319	-.227	-.349	-.145	.025
Comfort	.200	-.038	.013	-.230	.134	-.247	-.324	-.144	-.265	-.054	.203	.234	-.057	-.126	.037	-.056	-.039	.006	-.253	-.172	-.434	-.081	-.156	-.510	-.318	-.029	-.222
Atmosphere	.051	-.114	-.046	-.155	.090	-.065	-.039	-.261	-.018	-.045	.108	.145	.184	.126	-.042	-.029	-.170	.106	-.085	-.123	-.339	-.157	-.248	-.361	-.270	-.044	.043
Housing and privacy	-.016	.098	.127	-.110	.056	.068	.227	-.100	.040	.082	.109	-.026	.069	.107	-.130	.101	.252	.481	.110	.160	.311	.372	.343	-.200	.403	.306	-.181
Activities	.267	-.341	-.177	-.034	.063	-.077	-.298	.303	-.318	-.013	.275	.023	-.013	-.211	.076	-.064	-.071	-.009	-.145	-.156	-.155	-.246	-.241	-.235	-.202	-.180	-.284
Safety environment	.138	-.445	.088	-.067	.056	-.183	-.194	-.115	-.112	-.141	.058	.148	.089	-.064	.069	-.143	-.341	-.279	-.328	.007	-.305	-.375	-.245	-.184	-.329	-.029	-.240
Availability personnel	.176	-.307	-.140	.032	.256	.045	-.468	.007	-.322	-.122	.258	.170	.174	-.109	.094	-.139	-.273	-.161	-.137	-.102	-.300	-.243	-.131	-.289	-.460	-.078	-.220

Table 4c *Correlation quality improvement activity and professional quality indicators*

	Resident activities					Professional activities					Organisational activities															Fin
Pearson Correlation ▶ Professional ▼	Health plan resident	MD team meetings	Conversation residents	Residents' council	Informing residents	Training/education	Educational material	Clinical lessons	Direct work instructions	Professional protocol	Primary care delivery	Quality management	Evaluation of QI	Performance control	Document management	Organisation protocols	HRM	Technical services	Act. residents' room	Activities meals	Activities cleaning	Additional facilities	Developm./maintenance	Complaints	Environment activities	External advice	Financial activities
Falling incidents	.033	.004	.011	.043	.067	.012	-.072	.006	-.069	.082	.000	-.010	-.058	-.062	.001	-.085	-.029	-.115	.064	-.105	-.090	-.050	-.048	-.099	-.036	-.031	-.120
Medicine incidents	-.079	.031	-.126	-.118	-.044	.000	.146	.086	-.142	.063	-.051	-.085	.030	-.071	-.178	-.131	.106	-.048	-.052	-.044	-.155	-.020	-.084	-.168	.049	-.063	-.005
Psycho-pharmacy	.000	-.046	.024	.032	-.168	.024	-.131	.022	.031	-.035	.011	.015	-.035	-.085	-.039	-.047	-.042	.081	-.045	.064	.017	.168	.029	.066	-.033	.122	.038
Use of anti-depressants	-.021	.083	.103	-.052	-.022	.059	-.112	.153	.140	.140	.074	.029	-.001	.112	.120	.024	.027	.031	-.028	.010	-.043	-.019	-.112	.043	.164	-.021	-.042
Problem behaviour	-.045	-.028	.006	.024	-.077	-.033	-.228	.131	.033	-.096	-.093	-.052	-.100	-.089	-.081	-.135	.019	.000	-.005	-.046	-.088	-.157	-.096	-.087	-.142	-.012	.017
Depression	.028	-.064	-.022	.030	-.113	.078	-.098	.074	-.001	.017	-.058	-.034	.000	-.011	.009	-.094	.048	.011	.127	.036	-.005	-.191	.111	-.092	-.032	.147	.015

Yellow: Significant at the p ≤ 0.05 level (two sided)

Table 5 *Models showing the relationships between indicator change scores, QI activities, and corporate structure*

Indicator (dependent variable) ▼	**Model 1: 2009-2007 difference** *no random intercept, controlling for baseline score and capacity*			**Model 2:** *QI activity, controlling for baseline score and capacity*	**Model 3:** *random intercept corporate structure, controlling for baseline score and capacity*	**Model 4:** *random intercept corporate structure and QI activity, controlling for baseline score and capacity*
	coef	*residual*	*–2LL*	*coef*	ICC	ICC
Client-reported indicators: Somatic care 2009-2007						
Shared decision-making	2.13	0.12*	49.14	2.67*	0.11	0.00*
Attitude	2.08	0.02*	–25.07	–	0.00	–
Information	1.47	0.05*	11.10	–	0.24	–
Meals	1.43	0.03*	–15.32	1.67	0.88	0.76
Professional competency	2.49	0.02*	–40.40	2.88*	0.58	0.63*
Living comfort	1.20	0.03*	–10.61	1.00	0.00	0.00
Atmosphere	1.51	0.02*	–26.62	1.66*	0.69	0.35*
Housing and privacy	0.64	0.01*	–67.68	0.51	0.54	0.77
Activities	1.45	0.02*	–34.89	1.57*	0.64	0.64*
Safety of environment	1.23	0.01*	–86.11	1.44	0.17	0.06*
Availability personnel	0.84	0.03*	–16.22	1.00*	0.63	0.17*
Client-reported indicators: Psycho-geriatric care 2009-2007						
Shared decision-making	0.91	0.04*	4.21	1.69	0.99*	1.00*
Attitude	0.74	0.01*	–33.64	–	0.03*	–
Information	1.69	0.04*	6.35	1.59	0.92	0.92
Meals	0.79	0.00*	–36.67	0.81	0.18	0.77
Professional competency	1.56	0.01*	–35.01	–	0.00	–
Living comfort	1.10	0.02*	–1.94	1.03	0.00	1.00
Atmosphere	0.40	0.01*	–27.11	–	0.03	–
Housing and privacy	2.01	0.09*	23.67	1.19	0.35	0.00
Activities	1.44	0.01*	–15.66	–	1.00*	–
Safety of environment	1.63	0.02*	–6.96	1.85	0.00	0.67
Availability personnel	1.55	0.02*t	–8.37	1.11	0.52	0.38
Professional indicators: Intramural 2009-2007						
Falling incidents	0.82	0.21*	196.48	–	0.00*	–
Medication incidents	1.00	0.82*	383.48	1.04	0.01*	0.00
Psycho-pharmacy	0.38	0.10*	94.80	0.55	0.13	0.03
Use of anti-depressants	0.53	0.28*	230.55	0.48*	0.00	0.00
Problem behavior	0.48	0.10*	87.79	0.49	0.04	0.03
Depression	0.55	0.18*	177.68	0.56	0.10*	0.08*

* *Significant at the $p \leq 0.05$ level (two sided).*

DISCUSSION

In this study we investigated the hypothesis that both corporate structure and QI activities, and their mutual relationships, influence improvements in quality indicator performance over a two-year period in residence care homes for the elderly in the Netherlands. For client-reported indicators in somatic care only two QI activities had a positive relationship with a quality indicator: 'development/maintenance' with 'comfort' and 'multidisciplinary team meetings' with 'safety environment'. Paradoxically, we found negative correlations between many of the organisation-reported QI activities and indicator improvement in the somatic care group suggesting that failure to perform QI activities is associated with improvement in performance.

For psycho-geriatric care we found several positive correlations between organisational QI activities and indicator performance improvement, such as 'cleaning', 'technical services', 'complaints' and 'maintenance'. It appeared that for the clients responding as proxies on behalf of psycho-geriatric residents, activities which had a direct visible effect, had more impact on quality results than activities which took place in the back office of an organisation.

Changes in several of the professional care indicators were either negatively associated or not associated with QI activities (such as 'health plan activities', 'clinical lessons', 'activities concerning HRM' and 'financial activities'). Previous research of Grol and colleagues suggested that a combination of activities can lead to better outcomes.[10] Our results are not consistent with that prior research as we found few activities or combinations of activities that were strongly associated with improved professional care performance. This finding implies that QI activities may need to be tailored to the specific indicator if it is to improve. More research might identify whether there are other QI activities or features that can drive improvement on indicators in the residence care home sector.

Corporate structure did seem to explain the variance in indicator improvement. Some corporate structures are tended to show more improvement than other corporate structures. Prior studies showed that middle-sized organisations are generally more successful in improving quality (*Arrow* A).[13] These and smaller organisations (less capacity) are more likely to be motivated (or triggered) to take actions to improve than larger organisations (*Arrow* B). Our results are consistent with the prior studies in suggesting that corporate structure is among the important factors in QI.

Aside from scale and capacity, do other features of organisations contribute to better QI?

It could be that some organisations have a stronger 'improvement culture' than others. Our results confirm findings of studies by Bonias and by Groene.[19, 20] Bonias found a positive relation between high performance work systems and higher quality care delivery. Groene and colleagues found, by using a maturity classification scheme, that in hospitals a more developed QI system is associated with lower rates of adjusted hospital complications. André underlined the importance of work culture.[21] Nieboer and colleagues found that in nursing homes environmental dynamism, formal external exchange of information, transformational leadership, commitment to quality, and an innovation strategy were significantly correlated with an innovative culture.[22]

We did see a contrast between the influence of the corporate structure on improvement

for client outcomes and professional care indicators. The mediating role of the corporate structure appeared strongest for the change in performance indicators related to the client perspective. For professional care indicators the role of the corporate structure was less dominant. The combination of QI activities and corporate structure suggests that both are important to understanding improvements in performance.

Our results may be relevant to residential care homes in planning their QI activities. Organisations may need to focus differently on different managerial levels on improving client-reported indicators and professional care indicators. Client-centeredness, measured by the client-reported indicators covering for example meals and cleanliness may be determined by policy decisions at the level of the corporate leadership. In residential care homes, professional policies regarding care measured by the professional performance indicators are less clearly influenced by corporate leadership.

The study has several limitations. Our measures of corporate structure and process are fairly rudimentary and limited by available data. More detailed and comprehensive measures of structure and process could help identify important relationships. The self-reported data may have led to over- or underreporting of the implementation of QI activities. Selection bias may have influenced our results although the size of the corporate structures of the participants was equal to the corporate structures in the Netherlands. While this is a fairly large study, sample size may have limited the power of the complex models. The cross sectional design may also be problematic and might account for the negative associations we observed between QI activities and improvement if it is the case that organisations choose to undertake QI activities because of slow improvement (*i.e.*, reverse causation).

CONCLUSIONS

This study reveals associations between QI activities and corporate structure and changes in indicator performance for both somatic and psycho-geriatric elderly populations receiving care in residential homes in the Netherlands. Corporate structure appeared more influential on client-reported indicators than on professional care indicators. This assumes a central policy at corporate level for client-reported indicators, in contrast to a more local level approach towards professional indicators. Tailoring QI activities at the right managerial level to improve indicator scores on different indicators may be important to achieve overall improvement.

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Chapter 7

EXPLORING DAY-TO-DAY QUALITY IMPROVEMENT IN SOMATIC LONG-TERM CARE IN THE NETHERLANDS

A mixed method multiple case study

This chapter is as an article submitted for publication

ABSTRACT

Background

The implicit assumption of quality improvement (QI) is that a good structured and organisation-wide approach leads to better work processes. Improving work processes will lead to improved outcomes. But is this assumption valid, particularly in the somatic long-term care to the elderly? The aim of the study is to explore how QI initiated by feedback on client-related outcomes works in daily practice and to look for the most successful structure, process and outcome factors in realizing QI.

Methods

This study used a mixed methods approach. It is based on 434 facilities of long-term care to the elderly of whom three outcomes were known in 2007, 2009 and 2011. We used quantitative methods to determine best and worst practices with regard to client-related outcomes and qualitative methods to identify crucial structure, process and outcome factors in a selected sample of long-term care facilities that were reported by stakeholders to be of importance in realizing QI.

Results

Culture and leadership were the most important factors that differed between best and worst practices. We learn from best practices that QI was organised close to the client and that professionals used outcome elements to improve, in the contact with the clients.

Conclusions

To improve the QI activities in somatic long-term care to the elderly, culture and leadership of facilities are essential factors. This study emphasized the importance of analysing client-related outcomes, to give insight into the mechanism of QI in the somatic long-term care to the elderly in order to be more successful in QI.

BACKGROUND

The assumption in quality improvement is that a good structured and organisation-wide approach leads to better work processes. Improving the work processes will lead to better outcomes.[1] Since 2007, long-term care facilities for the elderly in the Netherlands can base their quality improvement (QI) activities on client-related outcomes as measured by the Consumer Quality-Index, CQ-Index for long-term care (Box 1).[2, 3] From previous research, we know that only the availability of outcomes is no guarantee for QI.[4] Long-term care facilities for the elderly perform many different QI activities based on outcomes to improve the quality of care processes. Examples are making health plans for clients,

training, developing guidelines and reorganising cleaning activities.[5] However, for many QI activities, no direct or even an inverse relation could be shown with client-related outcomes.[5-7] Apparently, we need to know more about the mechanism behind QI in long-term care to the elderly in order to know how to be more successful in QI.

Box 1 *Scales of the CQ-Index: description and number of items of the scales*

Indicators	Brief description	Number of items
Care plan and evaluation	Presence of a care plan and the evaluation with the client of this plan	1
Shared decision-making	Making decisions in consultation with the clients/ representatives	4
Attitude	Attitude of the care givers	4
Information	Information given by the organisation	5
Body care	Care for the body of the client given by care givers	3
Meals	Taste of the meals prepared and served by the organisation	1
Competency and safety	Competence of the care givers and the safety of the care they give	6
Comfort	Cleaning of the client's home	1
Atmosphere	Atmosphere of the organisation	4
Housing and privacy	Enough living space and respect for privacy	5
Activities	Possibilities for daytime activities	5
Autonomy	Determining the daily schedule by the client	4
Mental wellbeing	Experience of mental support	5
Safety living environment	Safety of the client's environment	1
Availability of personnel	Presence and availability of workers in the organisation	4

Previous research has shown that QI is associated with different factors. There are barriers for QI, such as lack of knowledge, increased paperwork, high costs and limited time.[8, 9] There are also facilitators such as the corporate structure.[10] The presence of a corporate quality system and shared values on quality could be relevant.[11] Leadership has been mentioned as a facilitator in QI[12-14] even as focussing on patient-centredness.[12, 15-21] Another study showed that the involvement of healthcare workers in QI activities was positively correlated with better outcomes.[22] Further, the culture of a facility, defined as shared beliefs, norms and behaviour, has been associated with QI.[15-20, 23] Overseeing these results, the way that management translates QI activities to the professionals and how professionals actually improve the daily processes could even be more associated with better outcomes than the QI activities themselves. Therefore, the aim of this paper is to explore how QI on client-related outcomes works in daily practice and to look for the most successful structure, process and outcome factors in realizing QI. To identify these factors, we study best and worst practices in QI in the somatic long-term care facilities.

METHODS AND ANALYSES

Identifying best and worst practices on client-related outcomes

The CQ-Index for long-term care - through which client-related outcomes are measured - is mandatory for all long-term care facilities in the Netherlands. These data need to be collected every two years for three types of long-term care organisations: somatic care, psycho-geriatric care en home care. The data are case-mix adjusted for gender, age, education and health status. In order to select best and worst practices, we focused on client-related outcomes of 434 facilities that provide somatic long-term care to the elderly. We chose this population for two reasons. Firstly, in these somatic care settings clients answer the CQ-Index questions themselves during an interview. This in contrast to psycho-geriatric care settings where client outcomes are collected using proxy-respondents. Secondly, in somatic long-term care we found that overall quality improved between 2007 and 2009; no such effect was found in psycho-geriatric care.[24] We retrieved client-related outcomes from the public national database in which aggregated client-related outcomes are presented for long-term care facilities. This public database provides client-related outcomes from 2007 and onwards. We selected long-term care facilities that provided client-related outcomes in 2007, 2009 and 2011.

Analysing the inter organisational contrast in client-related outcomes as a measure for QI, we used purposive sampling by maximizing the difference in outcomes.[25,26] To determine the best and worst practices, we firstly calculated for each facility and specific client-related outcome the improvement that was made from 2007 to 2009 as well as from 2009 to 2011. Secondly, in order to arrange the facilities in best, intermediate and worst practices we calculated for each outcome percentile groups, analogue to the method used in the national benchmark for long-term care in the Netherlands.[26] Percentile group 1 consisted of 43 facilities with the lowest improvement on the client-related outcomes, and percentile group 10 showed the highest improvement on these outcomes (also 43 facilities). The other facilities (N = 348) formed the intermediate groups (percentile group 2–9). Improvements are easier to realize when the baseline score of outcomes is lower.[27] In order to take account of the baseline score in 2007 we, thirdly, calculated percentile groups based on the baseline score on each outcome and calculated the mean for each facility over all scores of the percentile groups. We randomly chose two facilities from the highest and lowest group as best practices and worst practices and asked them to participate in this study. When they refused, we asked the next facility in the group until we had two participants from each group. In total, seven facilities refused to participate, due to the investment of time.

Case study and interviews

We collected documents of the four selected facilities and studied them thoroughly. Next, we performed semi-structured in-depth interviews with professionals, middle management, members of the board, quality managers, facility managers, cooks and clients. In total, 24 face-to-face interviews were held and 3 interviews were done by telephone. The interviews were balanced between best and worst practices as shown in Table 1.

Table 1 *The interviewees per group for the selected best and worst practices*

Interviewees	Best practice 1	Best practice 2	Worst practice 1	Worst practice 2
Care givers	1	1	1	1
Middle management	2	1	2	1
Member of the board	2	1	1	1
Quality manager	1	2	1	1
Facility manager /cook	1	1	1	2
Client council		2		
Total	***7***	***8***	***6***	***6***

The goal of the interviews was to get a comprehensive picture of how the facility worked on QI in the period 2007–2011. Topics discussed in the interviews were based on a topic list made from an analysis of documents, websites, and other information of the facilities. The topic list was based on the model of Donabedian (structure, process and outcome) and factors mentioned in literature to be crucial for QI.[1] In order to test the completeness of the topics, we discussed them with thirteen experts with more than ten years of experience with QI and organisational development in long-term care to the elderly. They all mentioned culture and leadership as important for QI. We added these as specific structure elements to the list. The three topics were detailed in nine elements, and this became the frame of the topic list used during the interviews:

- *Topic 1*: Structure, with six elements: region, type of care, capacity, corporate structure, culture and leadership;
- *Topic 2*: Process, with two elements: QI activities and the process to QI;
- *Topic 3*: Outcome, with one element: the use of outcome elements in the process to QI.

We did not predefine the topics and elements exactly, but asked open questions in order to explore whether and how these topics and elements contributed to QI. At the end of the interview, a summary of the interview was given and a member check was asked. After each interview, two researchers (SW and a research assistant) discussed the level of saturation on the topics and elements. All interviews were recorded and transcribed. Key points extracted from the text were marked with codes covering the nine elements, using Atlas.ti, version 4.2. Two researchers (SW and a research assistant) coded the transcripts independently. When coded differently, the differences were discussed until agreement was reached. We made summaries for each facility covering the nine elements. This summary of the interviews was sent to the participants for authorisation. Finally, these summaries were scored by two authors (SW and TK) independently whether the element was present in the QI policy and practice of the facility or not. The scores were discussed until agreement was reached. In the results we present our findings and illustrate the findings with quotes, selected by SW.

RESULTS

In Table 2 we present the basic characteristics of the 434 long-term care facilities from which we selected the best and worst practices. The majority were homes for the elderly. Almost a third of the facilities were located in the Western part of the Netherlands. Half of the facilities had more than 100 residents and a third of the facilities were part of a larger corporate structure consisting of 11-20 facilities.

Table 2 *Basic characteristics of the 434 somatic long-term facilities included in the study*

Type of services	N	%	Valid Percent
Nursing homes	156	35.9	36.9
Homes for the elderly	221	50.9	52.2
Combination	46	10.6	10.9
Missing	11	2.5	
Total	**434**	**100.0**	
Geographical location	**N**	**%**	**Valid Percent**
North	78	18.0	18.4
East	91	21.0	21.5
South	125	28.8	29.6
West	129	29.7	30.5
Missing	11	2.5	
Total	**434**	**100.0**	
Capacity	**N**	**%**	**Valid Percent**
1-50	51	11.8	11.9
51-100	165	38.0	38.6
>100	211	48.6	49.4
Missing	7	1.6	
Total	**434**	**100.0**	
Size corporate structure	**N**	**%**	**Valid Percent**
1-5	107	24.7	25.3
6-10	104	24.0	24.6
11-20	131	30.2	31.0
>20	81	18.7	19.1
Missing	11	2.5	
Total	**434**	**100.0**	

In Table 3 we present the percentile scores for all facilities based on the client-related outcomes, ranging from 179 till 320. The selected facilities were both nursing homes and homes for the elderly and located in the Eastern, Southern and Western part of the Netherlands. In Table 4, we present the similarities and differences between the selected best practices and worst practices on the structure, process and outcome topics to QI.

Table 3 *Counted percentile scores for all client-related outcomes, classified in percentile groups*

Classification	Number	Counted percentile score between
Worst practices in QI (percentile 1)	43	179-218
Middle category in QI (percentile 2-9)	348	218-285
Best practices in QI (percentile 10)	43	285-320

Table 4 *Overview similarities and differences between best (BP) and worst practices (WP)*

	BP 1	BP 2	WP 1	WP 2
Region				
Cooperation in the region	■	■	■	●
Health insurer stimulates quality	■	■	■	★
Impact Healthcare Inspectorate on quality	■	■	■	●
Competitive position	■	■	●	●
Type of care				
Amount of clients with severe disabilities or psycho-geriatric care	■	■	■	■
Capacity				
Being a part of a corporate structure is necessary	■	■	■	■
QI easier in facilities with small capacity	■	■	■	■
Part of a corporate structure				
Level of autonomy in QI	■	■	■	★
Number of shared services such as quality policy, HRM, finance	■	■	■	■
Daily improvements				
Using direct feedback of clients in quality policy	■	■	●	●
Aimed at directly solving problems of clients	■	■	●	●
Commit appointments	■	■	●	●
QI activities				
Easy to understand QI activities	■	■	★	■
Improve with involvement of professionals	■	■	■	■
Special education on QI	■	■	■	■
Communication with clients by magazines, meetings on QI	■	■	●	■
Exit interviews as source for QI	■	★	■	■
Internal audits	■	■	■	■
Protocols, guidelines	■	■	■	■

■ = *presence,*
● = *not presence,*
★ = *unknown*

	BP 1	BP 2	WP 1	WP 2
Quality outcomes				
Accountability of management for outcomes	■	■	■	■
Outcome as starting point for improvement	■	■	■	■
Outcomes are discussed with professionals	■	■	■	●
Outcomes are monitored by professionals	■	■	●	●
Culture				
Creating team spirit	■	■	■	●
Aimed at open and fair communication	■	■	■	●
Addressing each other's behaviour	■	■	●	●
Expressing expectations	■	■	★	●
Employees are proud of the organisation	■	■	●	★
Aimed at client-centredness	■	■	●	●
Leadership				
Clear policy on QI	■	■	■	■
Limited hierarchy	■	■	●	●
Coaching style of leadership	■	■	●	●
QI policy translated on unit level	■	■	●	■
Managers show interest in employees	■	■	■	●

■ = *presence,*
● = *not presence,*
★ = *unknown*

The contribution of structure to quality improvement

Capacity and corporate structure

Best practices and worst practices both indicated that QI would be an easier task in facilities with a small capacity. QI is easier to reach, for the overview, engagement of professionals to their job, a more personal approach and the easier way to supervise professionals. One team leader in a best practice described the capacity issue as follows: *'In a facility with a large number of clients (> 100), professionals can hide themselves and take no responsibility'.* At the same time, both best and worst practices mentioned that a facility with a corporate structure size that is too small, is not viable. Being part of a corporate structure is necessary, *'together we are strong'*, commented a facility manager in a best practice. In a corporate structure, knowledge and policy on quality, finance and HRM could be shared. In the best practice as well as the worst practice a quality system and quality managers were present and quality was explicitly an item of the agenda of the board.

Region

Boards of best and worst practices felt the external pressure, *e.g.* demands of health insurers and supervision by the Healthcare Inspectorate with regard to QI. The client-related outcomes could be helpful to monitor over years. The Healthcare Inspectorate contributed to QI by selecting topics for supervision such as hygiene. By visiting facilities, planned and unexpectedly, for inspection on this topic, they rightly placed the emphasis on necessarily improvements. One team leader of a worst practice spoke about the visits as

a burden: '*QI is sometimes very ad hoc … when the Healthcare Inspectorate was not visiting us, this was not a priority*'. The health insurers contributed to QI by stimulating QI activities on low outcomes. As a manager of a best practice said: '*The health insurers have consultation with the client board about the quality of care … and we have to demonstrate a plan for improvement*'. The worst practices judged their competitive position in the region worse than best practices. One team leader of the worst practice spoke as follows: '*We have missed some opportunities the by lack of competence … and our environment developed more than we do in restoring, computerization, and administration. If you have to find a place for your father, than it is a very easy choice*'.

Type of care

Although this study focuses on somatic care, most interviewees have experience in different types of care (somatic and psycho-geriatric care). We asked whether type of care is a characteristic to take into account for QI and how this characteristic influenced QI. The interviewees were unanimous that the type of care (somatic or psycho-geriatric) has an impact on how quality is implemented in daily practices. A manager of a worst practice for the two types of care explained the differences as follows: '*In general, the family wants a clean living room and clean clothes, and the client also wants sociability*'.

Culture and leadership

In culture and leadership, the best and worst practices were most distinctive of all elements. In worst practices, addressing each other's behaviour was not a normal way of acting. In contrast, in best practices the culture was characterized as open, honest and fair and employees addressed each other's behaviour. The management advocated open access and showed clear leadership, created clear goals and made expectations clear for the professionals and clients. There were also differences in how best and worst practices brought quality to the professionals. The managers of best practices shared the same coherent view on how to improve the quality of care and how to translate continuously this view to the daily practice. One best practice manager described this coherence as: '*We need only one word to understand each other. We know each other and we have the same view of looking at care processes and clients.*' The best practices invested in autonomy of professionals by creating a learning environment where it is possible to make mistakes under the condition that you learn from it. Best practice managers were working close to the professionals and coaching them. They stimulated professionals to improve daily care immediately if possible, in cooperation with clients. A best practice manager quoted the following on this subject: '*As manager, you are the motivator and stimulator. You have to explain everything, to work together with the professional and to change. If you explain what you want, the main part is done.*' Best practices were more successful in finding and keeping professionals and being attractive for higher qualified employees.

Management of worst practices seemed to be less involved in the daily practice. Managers in worst practices coordinated QI, and usually organised QI projects in study groups under their supervision. Therefore, their involvement in daily care processes was limited. The QI in worst practices was seen as top down, not always coherent and sometimes ad hoc, as stated by a worst practice team leader as follows: '*Usually changes are top down implemented and at the end you just have to do it, that is difficult.*' The worst practices interaction between professionals and clients was less than in the best practices and the client-centredness was not a dominant theme in worst practice policy and practice. As a medical director of a worst practice told us: '*The client council tried to change things, but the way how the manager*

communicated was not good and there was no documentation and follow up of agreements. According to the manager everything was possible, but nothing was implemented.'

The contribution of process to quality improvement

The QI activities did not differ between the best and worst practices: both used the same interventions and methods: facilitating and organizing education, improvements planned systematically, giving information to professionals and clients in information meetings. The responsibility for QI did not differ either, yet professionals of best practices tried to solve the problems of the clients immediately in daily processes. They have the possibility to translate and change the daily process into a new situation that better fits, including new routines, appointments with colleagues and so on. Work seemed to be organised very close to clients. Differences could also be found in the involvement of clients. Clients in best practices received feedback about the outcome of the improved quality of care and the best practices tried explicitly to satisfy the needs of the clients as much as possible. Clients seemed to be involved in QI more in best practices than in worst practices, as stated by a manager of a best practice: '*With the client council, we discuss the outcomes of the* CQ-Index. *We discuss with each other on which points we have to improve. Further, we (management) have conversations with clients in the living room, every six weeks. There you hear the small problems clients deal with. Mostly, we can solve these problems immediately.*' Best practices kept in touch with their clients to discuss the meaning of the client-related outcomes and to plan activities. In contrast, worst practices invented mostly QI activities themselves without involvement of clients. A manager of a worst practice reflected on the involvement of clients and why she changed that in 2013: '*We measured the experiences of our clients and two years later, we did this again. Then, we received the feedback reports and it looked as if nothing had been done. I can't understand this, because we spent a lot of effort in several projects. How is it possible that the clients do not see this? This year (2013), I spoke to the clients to hear their stories and what they tried to say. The outcomes of the* CQ-Index *are just numbers, but these numbers reflect a lot of experience. If I do not understand that, then I cannot do the right thing.*'

The contribution of outcome to quality improvement

Both best and worst practices used client-related outcomes in their planning and control cycle, as described in the processes above. We also asked if the best and worst practices used the scores of the outcomes, for instance by comparing these scores to other facilities, for QI. Both indicated that comparing scores was useful in giving clues for QI. The board of an organisation used this information as starting point for QI projects, but not for monitoring quality. The task of evaluation and monitoring QI of daily work was done by professionals themselves in best practices and by managers or staff in worst practices. As reported by a best practice cook: '*I recognize the satisfaction at the pay desk and in the shop and in how clients react. I ask for feedback. That's how I monitor the quality of care. If clients told me that the meat is stodgy or the potatoes are not cooked well, I would taste it myself and rectify this as soon as possible… we learned to be client oriented. Everybody received cards: this is how we have contact with each other. Just like McDonalds. 'Is your question sorted out and did I solve your problem?*' For worst practices information such as client-related outcomes and satisfaction of employees, were important to monitor quality, and managers of facilities developed quality plans for QI. The manager made the progress on QI accountable to the board.

DISCUSSION

The aim of this paper was to explore in the Netherlands how QI, as measured with client-related outcomes, works in daily practice of somatic long-term care and to look for the most successful structure, process and outcome factors in realizing QI. We found that best and worst practices differed especially in the way QI was actually carried out and in the way management inspires the professionals in improving daily care processes. In the principles of QI, structure, process and outcome play an important role: a good structured and organisation-wide approach results in better work processes (step one: from structure to process) and improving work processes lead to better outcomes (step two: from process to outcome). Here we discuss the differences between best and worst practices in these both steps.

From structure to process

Our study showed that the interviewees believe that a small facility within a larger corporate structure leads to more QI. We found in the interviews as well as in quantitative analyses that region is associated with QI.[24] However, best and worst practices of somatic long-term care in our study differed mostly on culture and leadership, also elements of the structure in the model of Donabedian.[1] We could distinguish the following activities as crucial elements in realising QI that all reflect the necessity of an open and client-centred culture:

1. discussing and monitoring outcomes by professionals;
2. addressing each other's behaviour;
3. leaders being close to workplace level;
4. taking immediate action for problems of clients;
5. managers showing coaching style of leadership;
6. translating complex quality improvement policy to unit level into easy-to-understand language;
7. managers showing interest in employees.

In looking for efficient ways for attaining QI, facilities should be aware of the importance of culture and leadership. QI might be hard to attain without an open and client-centred culture.

From process to outcome

The success of best practices might teach us that improving the work processes in long-term care facilities for the elderly should be organised decentralized, close to the clients in the daily practice. We found that a best practice manager works close to the professional and translate the QI policy into very practical activities at an easy-to-understand level. For QI it seems necessary that managers have the capability to tell the story, the narrative, to clients and professionals and discuss with them the strategy on how to improve.
Our results confirm the results of a study of Stoopendaal and Bal that described similar findings in long-term care organisations in the Netherlands: '*The action of implementing improvements can be interpreted as multiple translations that make changes real*'.[28] They found that 'improvement projects were not accomplished in a linear way, instead, they were shaped in a network process (...) involving various translations and inscriptions practices'.

Limitations

We only investigated the somatic long-term care in the Netherlands. Although we did not investigate the psycho-geriatric care we expect similar findings in this sector. The finding that culture and leadership are crucial factors for QI is consistent with findings in other settings, as hospitals.[29, 30] Next, we used data from a national database. These data were adjusted, whereby differences between facilities - which could be relevant for QI - could disappear. Further, we conducted interviews in 2013, whereby we asked the interviewees to oversee the 2007-2011 time period. The answers could be biased with information about the present-day time. Therefore, in the interview, this time period was mentioned repeatedly in most questions, to keep the attention of the interviewee. Finally, the sample size for in-depth interviews was small and may not be representative of the population. Although interviews have those limitations, this method was the most opportune method to explore 'the world of QI'.

CONCLUSION

To investigate QI in somatic long-term care facilities for the elderly, the structure, process and outcome classification is helpful when interviewing representatives of facilities. Culture and leadership, as aspects of the structure and the way how quality improvement is performed and stimulated, are essential factors in realising improvement in the Netherlands. This study emphasized the importance of client-related outcomes and to analyse these data, to give insight into the mechanism of QI in long-term care to the elderly in order to be more successful in QI.

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Quality
Service
Realibility
Efficiency
Responsibility

Chapter 8

GENERAL DISCUSSION

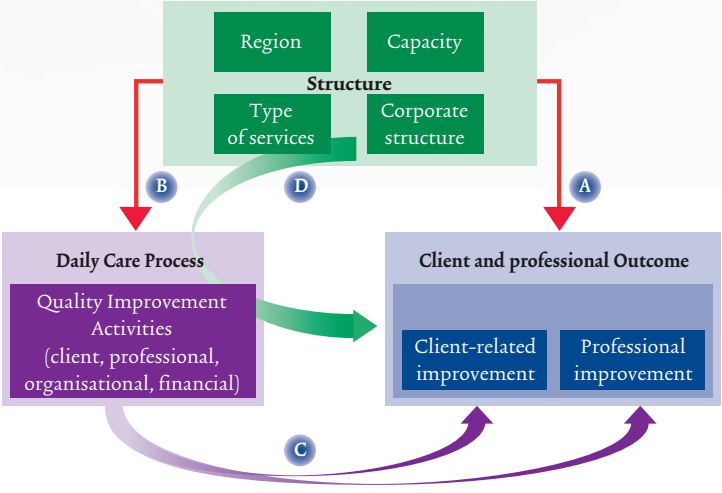
CONCEPTUAL MODEL AND RESEARCH QUESTIONS

The trias of Donabedian plays a crucial role in scientific theories about quality. Quality improvement comprises structure, process and outcome elements, the trinity of quality improvement. This thesis explores the impact of structure, process and outcome elements on quality improvement as well as their mutual relationships in long-term care organisations in the Netherlands. It aims at identifying opportunities for long-term care facilities to improve. The central aim of this thesis was:

'to give insight into the influences of structure, process and outcome on quality improvement in long-term care'.

To investigate this aim we used a conceptual research model (*see Figure 1*). In this model structure, process and outcome as well as their mutual relationships are presented.

Figure 1 *Research model*



Structure was divided into four components: the region in which a healthcare provider is located, the type of healthcare services provided, the capacity of the healthcare provider expressed in the number of clients and the size of the corporate structure.

Process referred to quality improvement activities, classified into four main groups of activities.

Outcome included both client-related outcome measures and professional outcome measures as well as the resulting improvements with respect to these outcome measures.

In order to reach the aim of the thesis, first of all we needed to gain a better view of the validity of the instruments measuring client-related outcomes. Whereas the instruments

measuring professional outcomes already have evidence-based roots,[1] the client-related outcome instruments have only been tested to a limited extent. Therefore, *we explored the validity and reliability of the instruments in long-term care for the elderly* (Research question 1).

The process from quality improvement of the daily work to improved outcomes is not an isolated one. Structure elements, such as capacity and region, are associated with this process (*see Figure 1: Arrow* A *and* B). We formulated research question 2: What is the influence of structure on client-related and professional outcomes (*Arrow* A) and 3: *What is the influence of structure on the quality improvement activities (Arrow* B).

Our expectation that quality improvement activities would to lead to improved outcomes led us to formulate research question 4: *'Which quality improvement activities contribute to the improvement on client-related and professional outcomes (Arrow* C*)?'*

As a result of the market-oriented healthcare system, organisations merged with one another, in order to survive competition forces and transparency demands related to quality performance. This merging of organisations led to new corporate structures. Literature shows that the nature of a corporate structure should not be underestimated when explaining quality improvement. This further raised the question as to whether the corporate structure affects quality improvement and if so, whether it has different effects on professional and client related outcome measures? For that reason, we formulated research question 5: *Does the corporate structure have an effect on improving outcomes by stimulating and performing quality improvement activities to improve the daily process of care?*

The quantitative studies described above were complemented with a qualitative study, described in Chapter 7. In order to shed some light on the 'real world behind the numbers' we finished this thesis by *investigating which factors determine the difference in outcome improvement between best and worst performing practices with respect to client-related outcomes (Arrow* D*, research question 6).*

This final chapter summarises the main findings of this thesis and provides an answer to the research questions. Next, the methodological strengths and weaknesses of the research methods used are reflected upon. Finally, we reflect on the mechanism underlying quality improvement, explore the generalisability of our findings and discuss the practical consequences and scientific challenges.

MAIN FINDINGS

The reliability and validity of client-related outcome measures

In Chapter 2 and 3, the CQ-Index, an instrument measuring the experience of clients or their families with care, was pilot-tested, and its psychometric characteristics were investigated by multilevel analyses. We concluded that the CQ-Index is a valid and reliable instrument to measure client experiences with limited effects of interviewer characteristics on the outcomes. This instrument is now part of the Dutch set of quality outcomes for transparency and quality improvement.

Conclusion
The CQ-Index is a valid and reliable instrument to measure experiences with care for the elderly by clients.

The influence of structure on client-related and professional outcomes

In Chapter 4, we measured the level of outcome improvements between 2007 and 2009 using two outcome sets: professional outcome measures and client-related outcome measures. We found that the performance on client-related outcome measures of long-term care providers for somatic care and home care improved for nearly all outcome measures. In contrast, the care for psycho-geriatric clients worsened for six out of fifteen outcome measures. As for the performance on professional outcome measures for intramural care, some outcome measures improved. For home care none of the outcome measures significantly improved.

We also investigated whether the structure characteristic 'region' was associated with quality outcomes that were measured in 2009. The results of this study suggested that public transparency with respect to outcomes may indeed lead to quality improvement. We showed that region was associated with outcomes. Providers in the Western part of the Netherlands performed significantly worse than those in other regions. This could be related to the local culture of the people living there: perhaps a more critical tendency exists towards answering the questions in the Western part of The Netherlands, or differences in the corporate cultures of providers between the regions. Health insurers could possibly influence these differences by discussing and stimulating quality improvement when contracting care.

To complete the picture, we determined with variance analyses whether the other structure characteristics 'capacity' and 'structure size' were also associated with quality outcomes. We found that large facilities and large structure sizes were negatively associated with outcomes.[2]

Conclusion
Transparency regarding outcomes may lead to quality improvement. We found regional differences on outcomes. The Western part of the Netherlands performed worse than other parts. Capacity and structure size were negatively associated with outcomes.

The influence of structure on quality improvement activities

In Chapter 4 we discussed the association of region, a structure element, with outcomes. In Chapter 5, we explored the association of the four elements of structure (type of service, region, capacity and corporate structure) with *quality improvement activities*. To gain insight into the quality improvement activities performed, we developed a classification of quality improvement activities in long-term care, consisting of client-related, professional, organisational and financial activities. We found that experts in quality improvement labelled most activities as organisational activities. On average, organisations reported to have performed 15 (sd 5.9) quality improvement activities. The triggers for performing these quality improvement activities were mostly as a result of internal insights or coming

from the quality system. The way in which quality was improved could be labelled as intensive and routine.

With respect to the *type of care* provided, nursing homes and residential homes performed different quality improvement activities as compared to the home care setting. In the residential setting, a higher number of quality improvement activities were reported with regard to multidisciplinary team meetings, informing clients, training professionals, direct instructions during work, primary delivery of care to clients and organisational guidelines.

Region also turned out to be an important factor. A higher number of performed client-related quality improvement activities were reported in the Western part of the Netherlands. In the Southern part, organisations reported to have been more frequently triggered by healthcare insurance and financial incentives. In the Western part, preventing problems was most often reported as a trigger.

Moreover, we found that organisations with a small *capacity* (<68 clients) performed fewer activities as compared to larger organisations.

We demonstrate that a *corporate structure* comprising more than 18 organisations performed quality improvement activities less frequently with regard to multidisciplinary team meetings and guidelines for professionals. These organisations, however, did perform activities on cleaning and maintenance more frequently. Medium-sized corporate structures (12-18 facilities) were triggered more often for improvement than larger or smaller corporate structures.

Conclusion

Quality appears to be high on the agenda of providers, with an average of 15 performed quality improvement activities per organisation. Most activities can be labelled as organisational activities. Triggers for quality improvement activities mostly come from within the organisation and the way they performed these activities could be labelled as routinely.

The structure elements 'type of care', 'region', 'capacity' and 'corporate structure' were all associated with the number of performed quality improvement activities as well as the way organisations were triggered for quality improvement activities. Quality improvement is not an isolated process, but a rather complex one and encompasses many influencing factors.

Quality improvement activities contributing to improved client-related and professional outcomes

In order to be able to answer the fourth research question, we compared the client-related and professional outcomes of 2007 with those of 2009 and tried to identify quality improvement activities that were associated with the differences between those years. The results of this study, presented in Chapter 5, indicated that several outcomes were improved between 2007 and 2009. We found that when the baseline score was low, the outcome on the subsequent measurement had improved substantially. Furthermore, we identified specific quality improvement activities, that were either positively or negatively associated with improvement. For example, 'multidisciplinary team meetings' were

positively associated with 'safety living environment' in somatic care and psycho-geriatric care. In contrast, 'shared decision-making', 'training/education', 'document management' and 'activities for the clients' room' were negatively associated with outcomes in both somatic care and psycho-geriatric care. Activities concerning the 'client council' and 'document management' were negatively associated with outcomes in somatic care. Furthermore, we identified several activities which were neither positively or negatively associated with client-related or professional outcomes, namely: 'health plan activities', 'clinical lessons', 'activities concerning HRM' and 'financial activities'.

Conclusion

Low performance on outcomes seems to initiate quality improvement activities. However, quality improvement activities do not guarantee improved outcomes. Activities that are successful with respect to all types of services could not be identified. Apparently, quality improvement is not as one-dimensional as expected and seems to be influenced by many other factors.

Effects of the corporate structure on improved outcomes by stimulating quality improvement activities

In order to answer the fifth research question, we investigated in Chapter 6 in residential settings whether the corporate structure was associated with the variance between client-related and professional outcomes between 2007 and 2009. We found that the corporate structure was indeed associated with improved outcomes. However, we found large differences with respect to the effect on client-related (0 to 100%) and professional outcomes (0 to 13%). When we calculated the variation of the corporate structure through performing and stimulating quality improvement activities to improve the daily process of care, this varied from 0% to 92% for the client-related outcome measures and from 0% to 8% for the professional care outcome measures for eight out of 23 outcome measures. We concluded that the mechanism for quality improvement is different for client-related subjects as opposed to professional issues.

Conclusion

The corporate structure of an organisation is more associated with quality improvement outcomes, rather than quality improvement activities. However, corporate structure is more associated with the quality improvement for client-related outcomes than for professional outcomes. Quality improvement on client-related subjects appears to be associated with a more centralised approach in contrast to professional issues, which are more locally initiated.

Factors determining the difference in outcome improvement between best and worst practice facilities with respect to client-related outcomes

To explore the issues that could be a cause for the influence of the corporate structure as mentioned in the last paragraph, we performed case studies with best and worst practice facilities in quality improvement. In Chapter 7 we presented these case studies, whereby we noticed that culture and leadership were crucial factors for being successful in quality improvement on an organisational level, rather than the predefined structure, process or outcome elements. We found six items of culture and leadership distinguishing best practices from worst practices:

Culture

1 Client-centredness;
2 Addressing each other's behaviour

Leadership elements

1 Leaders being close to workplace level/organisations showing a limited level of hierarchy;
2 Managers showing coaching style of leadership;
3 Translating complex quality improvement policy to unit level into easy-to-understand language;
4 Managers showing interest in employees

Culture and leadership can be regarded as structure elements including hierarchy, coaching style and client-centredness. Some elements represent the way in which the quality of daily processes improved, presented in Arrow D in our research model. In Figure 2 we placed culture and leadership in the structure component of the model and added culture and leadership elements in Arrow D.

Conclusion

Best and worst practices regarding quality improvement show differences in culture and leadership. These characteristics can be incorporated in the structure element of the conceptual model of this study as well as in the way quality improvement activities are performed and stimulated to reach improved outcomes in daily care processes.

Figure 2 *Adapted model for quality improvement in long-term care*

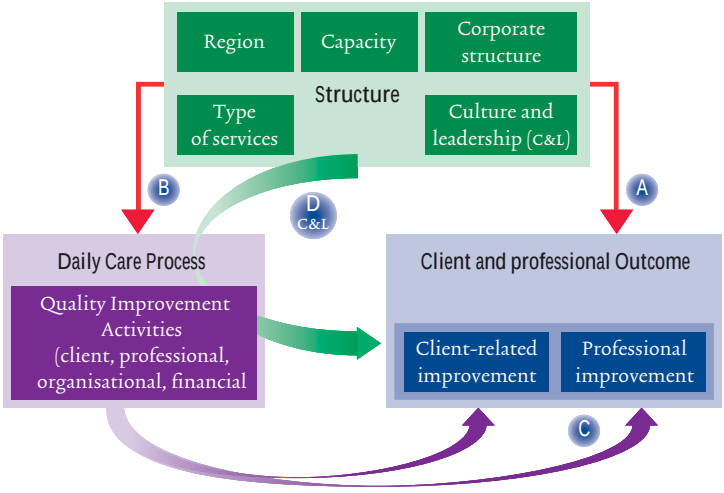


Table 1 summarises the mutual relationships of structure, process and outcome, including their effects on quality improvement. We summarised associations of the structure characteristics with 'process', 'outcome' and 'quality improvement' respectively. We also summarised how 'process' associates with 'outcome' and 'quality improvement' and how corporate structure and quality improvement activities (*Arrow* D) associate with quality improvement.

Table 1 *Summary of the mutual relationships of structure, process and outcome, including their effects on quality improvement*

Structure	Process	Outcome	Quality improvement 2007-2011
Corporate structure	**Arrow B** Small and large structures ▸ less triggers for quality improvement activities	**Arrow A** Large structure ▸ lower outcomes. Structure influencing client-related outcomes more than professional outcomes	**Arrow A** No differences between structure sizes, but differences *between* corporate structure
Capacity	**Arrow B** Small capacity ▸ more triggers, less activities	**Arrow A** Small and middle size capacity ▸ improved outcomes	**Arrow A** No differences between capacity
Region (N-E-S-W)	**Arrow B** Western and Northern part ▸ more activities	**Arrow A** Western region ▸ lower outcomes	**Arrow A** In the Northern part the mean quality improvement is less than in other regions. The Western region did not differ from other regions.
Culture and leadership			**Arrow A** Best and worst practices distinguished by open culture and clear leadership with responsibility for improvement on the workplace level
Process **Quality improvement activities**		**Arrow C** Outcome is not the main trigger for quality improvement activities. Low outcomes are associated with more quality improvement activities	**Arrow C** Quality improvement activities is not automatically associated with quality improvement
Structure and Quality improvement activities			**Arrow D** Huge impact of structure on client outcomes, less on professional outcomes

CONCLUSION

The main findings of this thesis have been summarised in Table 1. The column 'quality improvement' shows that structure characteristics such as size, capacity and region were associated with quality outcome. However, only region was associated with quality improvement. As can be seen in the third column, outcome seems to be a trigger for

quality improvement, but not the main trigger for quality improvement activities. Quality improvement activities do not automatically lead to quality improvement. The corporate structure has a major association with the quality improvement of client-related outcome measures but rather less with the professional outcome measures. The main difference in characteristics of the corporate structure between best and worst practices seems to be culture and leadership.

Methodological reflections on the research

We used several methods to examine the aims of this thesis. The specific limitations of each of the study methods have already been described in the previous chapters. Here, the general strengths and weaknesses of the study methods used are described. Firstly, we used a model for our research, being a simplification of reality. Secondly, in our research we used three types of methods for data collection: questionnaires, national databases and interviews. Each of the three types of data collection methods has its own limitations. Finally, not all of the described studies have been conducted in the different settings of care for the elderly, questioning the representativeness of our findings. The constraints posed by each of these issues are described below.

The simplification of reality by using a model

In this thesis we used a model to explore the relationship between structure, process and outcome. A limitation of using a model is the reduction of the reality. For this study we simplify the 'structure', 'process' and 'outcome' element. The division in structure, process and outcome is also not as clear as the model suggests and some characteristics of quality improvement are located in between those elements. Furthermore, we mainly investigated single relationships and concluded, more than once, that an investigation of a single relation is not that simple in a real situation. We should be aware that these elements and their mutual relationships are more comprehensive than what we used them for in our study. It would be very interesting to investigate the full model and the simultaneous interaction between the various elements. Nonetheless, the model we used based on data that could be obtained, partly opened the black box showing how quality improvement 'works'.

Data collection by using questionnaires

Questionnaires were used in this thesis investigating the effect of interviewer characteristics in obtaining client experiences and describing nature and scope of quality improvement activities performed by healthcare providers. Both the studies on interviewers effect (N = 10) and healthcare organisations (N = 193) had limited number of participants. Although we showed that the participating responders seemed to be representative for the total population, it could still be biased. Furthermore, the open recruitment of participants and the self-reporting character of the questionnaires could have led to selection and response bias.

The outcome measures from the national database

On the one hand, the client-related outcome measures seem to be robust, as we concluded in Chapter 2 and 3. Data were carefully and independently collected and analysed. The influence of interviewer characteristics on outcome is limited. On the other hand, the

professional outcome measures are self-registered by organisations in long-term care. Moreover, as these data are also used for purchasing healthcare services by health insurers, it makes them an easy target for gaming. Manipulating these data may result in higher budgets.[3] We suggest, therefore, to be careful when using these professional quality data. For this purpose these data were not used from 2010 onwards.

Data collection by conducting interviews

Interviewing as a method of data collection can produce much information. However, it has its limitations due to subjectivity, and also as usually only a small sample size is possible. We conducted interviews in 2013, asking the interviewees to oversee the period 2007–2011. The answers could be biased with information about the present-day time (recall bias). Finally, the sample size for in-depth interviews was indeed small (27 interviews) and may therefore not be representative for the population. However, despite its limitations, this method seemed to be the most appropriate one to explore 'the world behind the numbers'.

Long-term care for the elderly

In this thesis we focused on the long-term care for the elderly and suggested findings for the whole sector. However, in some studies we were not able to investigate somatic care, psycho-geriatric care and home care. For some studies a representative sample of home care organisations could not be reached, hence home care organisations were excluded from the study. In the last study, we only investigated somatic care and excluded psycho-geriatric care and home care. As a consequence, not all conclusions could automatically be transferred to the whole sector of long-term care for the elderly.

REFLECTION ON THE MECHANISM OF QUALITY IMPROVEMENT

In our introduction we stated that an important theory of quality improvement presumes the presence of an improvement cycle, the Plan-Do-Study-Act cycle (PDSA-cycle).[4] Knowledge about one's own performance on quality will (potentially) lead to quality improvement, while quality improvement activities will lead to improved outcomes.[4] The theory presumes that providers are willing to improve when evaluations show poor quality of care and a market-oriented context will encourage the push towards quality improvement.[5–8] In this market-oriented healthcare system, better care can be reached by purchasing high quality care by health insurers and choosing better care by clients when outcomes are publicly available (transparency). These incentives must stimulate quality improvement initiatives. Is this mechanism working as we expected it would?

In this thesis, we found that poor quality of care was an incentive to improving quality within organisations (*micro level*). A study by Zuidgeest showed that quality outcomes sometimes proved a starting point for quality improvement.[9] Having quality outcomes is, however, no guarantee for quality improvement. We noticed that the use of outcome information of the CQ-Index to start quality improvement and monitoring quality has several limitations.[10–15] The measurements with the CQ-Index are expensive and it takes a long time to receive feedback. Organisations reported that the feedback reports were often difficult to understand, while the unit of measuring on an organisational level, is too generic for concrete results on unit or ward level. There seem to be ceiling effects on

outcomes and, because of the standardised way of measuring, there is no room for monitoring own policy targets of organisations, but only the standardised outcomes. These disadvantages could be a reason why the use of the CQ-Index outcomes for monitoring policy, being necessary for the PDSA-cycle, is limited on the micro level.

In this thesis, we could not find a direct relationship between quality improvement activities and improved outcomes. Capacity and size did not contribute to quality improvement either. We saw that the corporate structure was positively associated with quality improvement, but the influence of the corporate structure differed between client-related and professional-related outcomes. We concluded that improvement on client-related outcomes was associated with a more centralised approach, rather than the improvement on professional outcomes. Furthermore, we learned from best practices that culture and leadership, as regularly discussing outcomes with clients, addressing behaviour, translate policy to practice and coaching professionals, were essential factors in improving outcomes. We defined culture and leadership as aspects of the structure and the way how quality improvement is performed and stimulated. These findings are in line with results of several other studies. The culture of an organisation, defined as shared belief, values, norms and behaviour, contributed to quality improvement.[10, 11, 16-20] The engagement of the leaders with quality improvement is an essential facilitator in quality improvement[4, 21-23] just like a focus on patient-centredness.[10, 11, 16-19, 22, 24] In another study, the involvement of healthcare workers with quality improvement activities is pointed out as being relevant in getting improved results.[25] In our study we concluded that the corporate structure, especially culture and leadership, contributed to improved outcomes, instead of quality improvement activities. Quality improvement does not only require a systematic approach, but also a relation based approach.

Quality improvement is not an isolated occurrence as organisations interact in a competitive region, and the region interacts with them to improve the quality of care (*meso level*). On a meso level the health insurer uses outcome information to purchase healthcare services and to create a context that stimulates organisations to improve their quality of care. We found evidence that the quality debate on CQ-Index outcomes between health insurer and provider actually takes place. Providers and health insurers have a mutual responsibility for quality of care. In their turn, health insurers are accountable on a national level for the way in which they monitor and stimulate better quality outcomes. In our analysis we found that the quality improvement activities as well as the quality improvement itself differed per region, but we did not investigate the way how health insurers actually used outcomes, nor the reason for those differences. Previous research showed that financial incentives can have a positive effect on the quality of care, although the effect is modest and the incentive is not often used in nursing home settings.[26-30]

On this level clients were able to *choose* a provider of their own choice based on outcome information. The influence of the potential clients on quality improvement is less clear. Some studies show that patients use public quality outcomes only partly in the complex process to choose the healthcare provider of their choice. Patients do not act as consumers on a market.[31] While choosing a provider, the experience of family, neighbours and the general practitioner are leading. Patients take account of structural, process and outcome characteristics of providers, depending on their own characteristics and wishes.[32] The information could be more appropriate, based on the needs of patients.[33-35] On a meso

level, choosing a provider by clients is not yet a pure rational process of comparing outcome data.

On a national level (macro level), the association for clients in care for the elderly expects providers to be transparent about their outcomes of care. The Dutch association for residential and home care organisations, ActiZ, mentioned transparency as a requirement for membership. They used the outcomes to annually publish a status quo about quality. Literature shows the importance of developing and having instruments measuring outcomes of quality of care as a condition for transparency and accountability.[17, 34-39] ActiZ, has developed a benchmark system, instruments to measure outcomes, a public transparency website and they support national programmes for quality improvement. The mechanism to improve quality of care by transparency on a national level contributes directly to quality improvement activities.

On a national level the government and the Healthcare Inspectorate operate as well. On this level, transparency could lead to general awareness in quality performance and the opportunity of identifying badly performing organisations by the Healthcare Inspectorate.[8, 38] They can use outcome information for identifying special risks to monitor such as medication safety, fall incidents and malnutrition. In the interviews with the best and worst practices, the announced and non-announced visits of the Healthcare Inspectorate were also mentioned several times, as a facilitator of quality improvement plans.

Other outcomes measuring the clients' perspective and outcomes used in other settings, such as patient reported outcome measurements (PROMs), are not very useful because the goal of long-term care clients is mainly caring instead of curing. It seems that the best way for clients to be heard is to measure their experiences through the developed CQ-Index. This should be a reason for client-related outcome measures in long-term care to be an essential part of our quality system design.

The benefits of the market-oriented system and industrial profit models for quality improvement

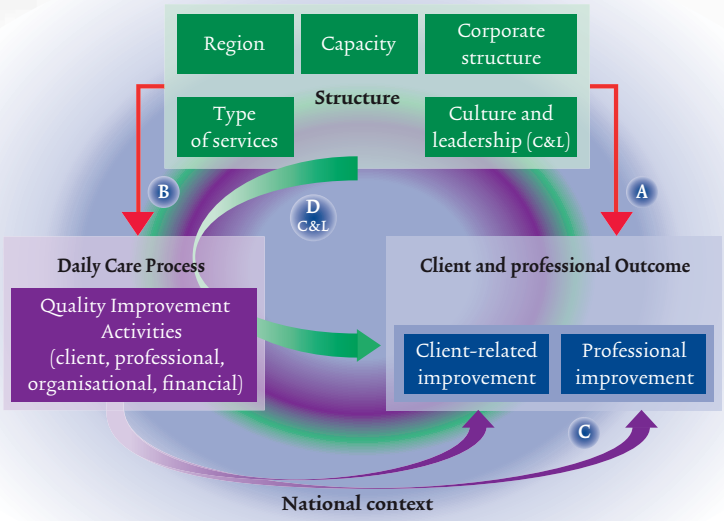
The introduction of a market-oriented healthcare system has led to improved care by debating high quality of care with health insurers. This incentive stimulated quality improvement initiatives. However, this system did not lead to choosing better care by clients as yet. An elementary part of this healthcare system is that healthcare providers, health insurers as well as clients take their responsibility for quality improvement. In the last decade, we have seen that all of these parties have indeed done so.

The industrial sector proved to be an example for healthcare regarding quality improvement. The PDSA-cycle of Berwick[4] and the Structure-Process-Outcome model of Donabedian[40] were examples which were frequently used in healthcare settings. In this study, we found limited evidence that the PDSA-cycle is performed completely for quality improvement. In this model the result of each phase serves as input for the next phase. An obstacle in completing the cycle is mainly the lack of frequently available outcome information.

In this study, we have seen that when investigating quality improvement the model of Donabedian, including the trinity of quality improvement, could be helpful, although the

mechanism of quality improvement is much more complex than as presented in that model. Reflecting on the quality improvement mechanism in the Netherlands, we found interlocking relationships between the macro, meso and micro levels. These relationships are relevant components in exploring the phenomena of quality improvement and justify the reality of quality improvement. These interlocking levels strengthened the mechanism of quality improvement. In our research model, the micro and meso levels were incorporated, while the macro level was lacking. We thereupon adapted our research model and added the national context, see Figure 3. The mechanism of quality improvement seems to be a comprehensive and balanced model, contributing to an improved quality of care, even though it should be noted that the mechanism has not been completely worked out on every level yet and it does need further perfection.

Figure 3 *Adapted model for quality improvement in long-term care*



GENERALISABILITY OF OUR FINDINGS

Our last study was performed solely in somatic care, and not in psycho-geriatric care and home care. It is an interesting question as to what extent our findings are relevant within the whole sector for elderly care as well as for other healthcare sectors. We expect that our findings with respect to culture and leadership will also hold for psycho-geriatric care as well, because of similarities between both kinds of care. For home care, extrapolation of results is rather difficult. In home care higher educated professionals work more solitary at

the patient's home. Organising leadership in this particular situation is more distal than in intramural care.

We know that in other sectors structure, process and outcome elements have an impact on quality improvement, as well as in long-term care. Kunkel et al. indeed found evidence in hospitals that structure correlates with process and outcome, and that process correlates with outcome.[41] Kaplan et al. described a model for understanding success in quality (MUSIQ).[14] In this model 25 contextual factors were identified as influencing quality improvement success. Structure, process and outcome elements were part of this model, as well as culture and leadership. They stated that factors related to the quality improvement team might directly result in quality improvement success, whereas factors within the organisation and external context are believed to influence success indirectly. Also the study of Jacobs et al. concluded that culture is an important element in hospitals.[42] They found a relationship between culture and performance.

However, the hospital sector differs from long-term care for the elderly, mainly because in the Netherlands in the last sector the level of education of professionals is lower. We therefore think that a team leader or manager, working alongside working staff in order to translate work to practical tasks, to motivate and to stimulate quality improvement activities, is a crucial factor in quality improvement in long-term care for the elderly, rather than in other sectors. Building the bridge between policy and actual activities and formulating challenges and achievable targets is one of the essential tasks of these managers.[43] The translation in practical details by the team manager could be less specific for higher educated professionals, such as in a hospital. Furthermore, for Dutch hospitals additional outcome information is available, in contrast to the long-term care for the elderly. Patient experiences, patient satisfaction and patient-related outcome measures (PROMs) are available and many clinical professional outcomes. This informs the hospital professionals directly about the results of their work and profession and could be an incentive for improvement. Nevertheless, the Quaser study, performed in hospitals, showed the importance of paying attention to soft outcome measures as well.[44]

International perspective

Our research is based on the Dutch long-term elderly care, which has its specific characteristics. To what degree our conclusions about quality improvement in the long-term care in the Netherlands can be applied to the international context should be a subject for further studies. The mechanism of quality improvement on different levels and the impact of culture and leadership could also apply to other countries. However, it could be that organisations in other countries have a more hierarchical culture. Another aspect that should be analysed in international perspective is the way in which the level of quality in long-term care for the elderly is measured. Several other instruments have been developed to measure the quality of care for elderly in other countries. These instruments should be compared with one another in order to be able to give an adequate impression about the Dutch health policy situation.

PRACTICAL IMPLICATIONS

The usefulness of outcome measures

While performing this research a national debate was going on about the usefulness of quality outcome measures for quality improvement, started by the branch organisation of healthcare providers in long-term care for the elderly, ActiZ. ActiZ stated that the quality outcome measures that organisations are obliged to measure, are hardly of any use for internal quality improvement. This thesis seems to confirm the doubts about the practical use of outcome measures for quality improvement. When introducing the CQ-Index, it was considered to serve many goals on macro, meso and micro level. But it might well be too many goals on too many levels. The quality outcome measures gathered by the CQ-Index appeared to be useful to initiate an improvement of the quality of care, though not to monitor the achieved quality improvement. Measuring once every two years is not frequent enough for monitoring, necessary for the PDSA-improvement cycle. However, this thesis showed that providers do not act in an isolated system. Stakeholders, such as health insurers and the Healthcare Inspectorate, contribute to quality improvement on an organisational level as well. This study showed that introducing quality measures creates external pressure, which stimulates quality improvement. Abandoning of these introduced quality outcomes would mean taking a step backwards. Instead of that, new additional instruments and resources could help to fill the gap between outcome measures, quality improvement and monitoring. We would like to suggest the following four additional quality policy measures:

1. Create organisational structural conditions;
2. Introduce additional tailor-made instruments;
3. Educate managers who are directly responsible for quality improvement;
4. Share knowledge in national programmes.

Create organisational structural conditions

Structure elements such as size of a corporate structure, capacity and region do not really contribute to quality improvement. However, organisations with a small and middle sized capacity (less than 100 clients) have improved outcomes, while large corporate structures (>18 locations) have lower outcomes. An optimum of scaling seems to exist: a relative small capacity (less than 100 clients), incorporated in a middle size structure. A relative small location perhaps gives a personal touch, credits for professionals, more personal attention and so on. But more locations in a middle size structure could create the opportunity of sharing specific knowledge and a condition for learning from each other.

Introduce additional tailor-made instruments

To make instruments more useful for quality improvement, they should be tailor-made and useful to the specific level of a ward or unit. They should give information on clients' view on the concrete daily process more frequently. We would like to suggest the following opportunities for improving quality outcomes in Dutch long-term care for the elderly:

1. To conserve the core of the CQ questionnaire for benchmark purposes at a national level;
2. To explore introducing new modules with specific themes (national level);

3 To increase the frequency of reporting, for example a few days after the measurement to directly monitor the quality of care progress (organisational level);
4 To use more sophisticated methods such as iPads, reviews on rating sites, asking feedback on Twitter and Facebook, in order to facilitate more frequent reports (organisational level);
5 To measure on a unit level instead of a location level (organisational level);
6 To develop a national ICT register programme for registering professional outcome measures in daily practice in an uniform way (national level).

Educate managers who are directly responsible for quality improvement

Explaining and motivating how to improve quality requires training effort to meet the needs of professionals. New methods are necessary, in order to explain what lies behind the numbers. Translating outcomes and telling the easy-to-understand narratives is necessary to build a bridge between outcomes and improvement. This is not necessarily a capacity that managers have. Therefore, they should be trained to translate outcomes into quality improvement activities that are realistic in everyday practice. Furthermore, professionals need to be trained to take up the responsibility of solving the daily problems of clients immediately.

Share knowledge in national programmes

National programmes for quality improvement could invest in supporting quality culture and the right leadership activities. In the Netherlands we have had several programmes to stimulate quality improvement, the most important examples of which are the long-term care 'Care for Better (Zorg voor Beter)' and 'Inn for Care (In voor Zorg)'. 'Care for Better' was mainly oriented on professionals and had several themes such as dementia, depression, and health plans, but a small part had been reserved for general quality improvement. 'Inn for Care' has modules for improvements on business operations, cooperation's, technology and professionals (efficient use of qualified professionals). A programme focussing on leadership could be the next and indispensable step.

SCIENTIFIC CHALLENGES

The focus of our research was on quality improvement within organisations, reflected by outcome measures. Structure, process and outcome seem to be important and interlocked elements in quality improvement. We investigated only a few characteristics of these three elements. Furthermore, a part of the research focused on client-related outcome measures only, whereby we found that the mechanisms of quality improvement between client-related and professional outcomes were not equal. Further research could investigate the differences between these mechanisms.

In our research we found interlocking relationships between micro, meso and macro level, interacting with each other. One of the major challenges in this research area is exploring how quality improvement can be effective. Effectiveness can be organised by structuring the organisation and equipping it with relevant characteristics for quality improvement, such as leadership and responsibility for quality at an operational level.

More characteristics such as characteristics related to religion, culture or leadership could be incorporated in a study design. The major challenge will be to investigate the quality improvement concept as a whole, with all its mutual relationships.

In this thesis we used both quantitative and qualitative research methods to investigate quality improvement. Both methods produced relevant insights, which would not have been found when only one of the research types would have been used. Both methods have their own strengths and together they deepen the understanding of the phenomena of quality improvement in long-term care in the Netherlands. Further studies should also include both quantitative and qualitative research methods.

We learned that focusing on outcome serves several goals, such as creating transparency and accountability, generating purchase and choice information. In order to actually improve elderly care, translating outcomes and telling the narratives is necessary to build the bridge between these outcomes and the daily work and the relation with the client. How to actually reach this goal in practice and how to identify the facilitators and barriers is a new challenging field for academics.

Finally, we only touched briefly upon the impact of the stakeholders and the external context in general in the quality debate. Further research could investigate whether and how stakeholders can optimally use the information for purchasing and choosing.

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SUMMARY

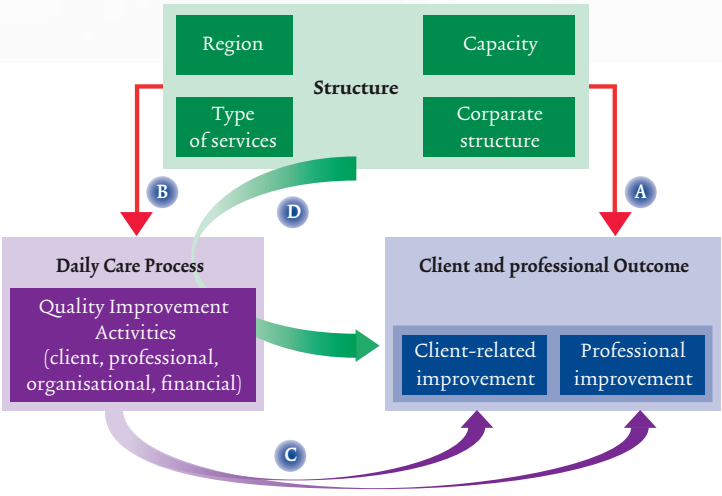
This thesis is about the mechanism of quality improvement in the long-term care for the elderly in the Netherlands. The central aim of this thesis is to

'give insight in the influences of structure, process and outcome on quality improvement in long-term care'.

In order to reach this aim we formulated the next questions. In the questions we refer to arrows. These arrows are outlined in a research model, Figure 1.

1. How reliable and valid are the client-related outcome measures?
2. What is the influence of structure on client-related and professional outcome measures (*Arrow* A, *see Figure 1*)?
3. What is the influence of structure on the quality improvement activities (*Arrow* B)?
4. Which quality improvement activities contribute to the improvement of the client-related and professional outcome measures (*Arrow* C)?
5. Does the corporate structure have an effect on improving outcomes by stimulating and performing QI activities to improve the daily process of care (*Arrow* D)?
6. Which factors determine the difference between best and worst practices on client-related outcomes (*Arrow* D)?

Figure 1 *Research model*



In *Chapter 2* we discuss the reliability and validity of client-related outcome measures, the first research question. We introduce an instrument for measuring the experience of clients or their family, the CQ-Index, which is developed and pilot tested. We conclude that the CQ-Index is a valid and reliable instrument to measure client experiences. The instrument produces outcome measures (indicators) which are part of the Dutch set of quality outcomes for transparency and quality improvement.

This new instrument encompasses several methods for data collection. One method is interviewing clients in residential and nursing homes. It could be that, in spite of an intensive introduction programme and training, interviewers influence the client in answering and thereby, the results on quality outcomes. We investigate this issue in *Chapter 3*. The question is whether we can find an influence on outcome measures of ten different interviewers. We identify limited interviewer effects on the outcomes, but training, interview guides, supervision and educational meetings are necessary.

Chapter 4 describes the measurements of quality improvement between 2007 and 2009 based on two outcome sets, professional outcome measures and client-related outcome measures. Further, we investigate whether the region in the Netherlands is associated with quality outcomes measured in 2009, research question 2. The assumption is that the healthcare insurers, which operate regionally, could influence quality improvement by providers. For almost every outcome measure, the performance improves for somatic care and home care. However, the care for psycho-geriatric clients gets worse for six out of fifteen outcome measures. The performance on some professional outcome measures for the intramural care improves, for home care no outcome measures improve significantly. We show that the region is associated significantly with outcomes. Providers in the West perform worse than other regions. This association can be a result of local culture of the people living there: there can be a more critical tendency in answering the questions in the West, or differences in the corporate cultures of providers between the regions. Health insurers can influence these differences by discussing and stimulating quality improvement while purchasing care. The study suggests that public transparency about outcomes may lead to quality improvement.

In *Chapter 5* we analyse quality improvement activities performed by healthcare providers. We present a classification of quality improvement activities in long-term care, consisting of client related, professional related, organisation related and financial related activities. We find that experts labelled most activities as organisational activities. On average, each organisation reports an average of 15 (sd 5.9) quality improvement activities. The triggers for quality improvement are mostly internal and the way quality improvement is performed can be labelled as intensive and habitual. We find further that structure characteristics associate with quality improvement activities. In this chapter we answer research question 3.

In *Chapter 6* we investigate whether we can find quality improvement activities which lead to quality improvement (research question 4) en whether a corporate structure influences the quality improvement (research question 5). For this research question, we compare the scores in 2009 with 2007 on the CQ-Index outcome measures and professional outcome measures. We try to find quality improvement activities which explain the difference between those years. There are quality improvements on several outcome measures and, for almost every outcome measure, the baseline score is an explanation for the outcome. We detect quality improvement activities, which are positive and negative correlated with improvement. The corporate structure has an effect on improving outcomes. But the effect of the corporate structure on quality improvement differs for client-related and professional outcome measures. Apparently, the corporate structure contributes to quality improvement for both types of outcome measures, but the mechanism for quality improvement based on these measures works differently.

In *Chapter 7* we explore the issues that might cause the influence of the corporate structure and we perform case studies with best and worst practices in quality improvement. In these case studies we identify culture and leadership as crucial factors for being successful in quality improvement at organisation level, more than the predefined structure elements, process elements or the use of outcome measures. We find six items of culture and leadership that distinguish best practices from worst practices. Culture and leadership, as aspects of the structure and the way how quality improvement is performed and stimulated, are essential factors in realizing improvement. We added these characteristics in our research model, see model 2. These items are:

Culture

1 Client-centredness;
2 Addressing each other's behaviour

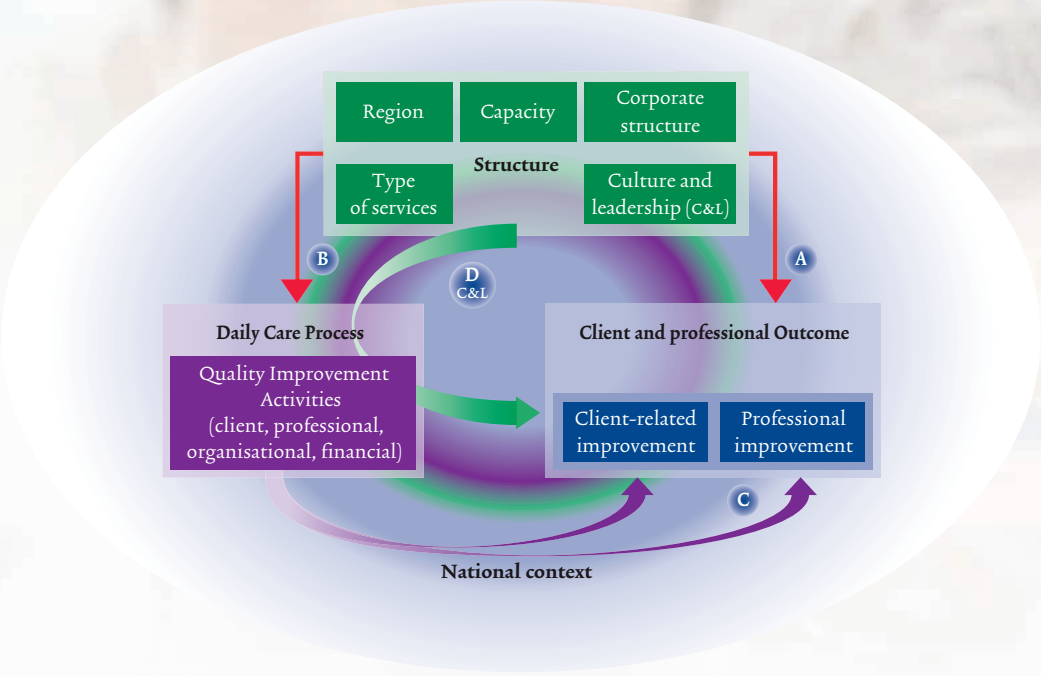
Leadership elements

1 Leaders being close to workplace level/organisations showing a limited level of hierarchy;
2 Managers showing coaching style of leadership;
3 Translating complex quality improvement policy to unit level into easy-to-understand language;
4 Managers showing interest in employees

In *Chapter 8* the main findings of this thesis, several methodological issues, a reflection on the mechanism of quality improvement and implications for practice as well as science are discussed. We cannot find a direct relation between quality improvement activities and better outcomes. Capacity and size do not contribute to quality improvement either. We see that the corporate structure is an explaining factor for quality improvement, but the influence of the corporate structure differ between client-related and professional outcomes. Quality improvement is not an isolated process within organisations. They interact with the region they located in and the region influences them to improve the quality of care (meso level). The results on the outcome measures can be use on meso level for purchase and choice information. We find evidence that the quality debate on CQ-Index outcomes between health insurer and provider actually happens. The use of choice information is unclear. At national level (macro level) stakeholders take their responsibility to be transparent about the outcomes of care by developing a benchmark system with instruments for measuring outcomes. Branch organisation ActiZ considers transparency as a requirement for membership, publishes outcome information, develops a public transparency website and supports national programmes for quality improvement. The Healthcare Inspectorate can use outcome information for choosing special risks to monitor such as medication safety, fall incidents and malnutrition. The mechanism to improve the quality of care by transparency at national level contributes directly to quality improvement activities.

Reflecting on the quality improvement mechanism in the Netherlands, we find interlocking relationships between the macro, meso and micro levels. These relationships are relevant components in exploring the phenomena of quality improvement and justify the reality of quality improvement. We adapted our research model and added the national context, see Figure 2.

Figure 2 *Adapted model for quality improvement in long-term care*



This thesis demonstrates that structure, process and outcome elements are important to improve the quality of care of the somatic long-term care. Culture and leadership, as aspects of the structure and the way how quality improvement is performed and stimulated, are essential factors in realizing improvement on client-related outcome measures. Perhaps more factors can be detected. Further research is required to examine these factors, the mechanism of quality improvement in other settings in the long-term care and whether our findings are similar for client-related and professional outcome measures.

In this thesis we start to explore effective quality improvement interventions and the right conditions for quality improvement in the long-term care. However, we do not detect effective quality improvement interventions. The way of organising and structuring culture and leadership for quality improvement, including the way how implementation of narrative methods can be used successfully, are challenging new fields for research. Investigations about quality improvement must be seen in mutual relations on the micro, meso and macro levels to give a more complete insight in quality improvement. Finally, we briefly discuss the way stakeholders could have influence on quality improvement. More understanding of this mechanism, and the differences between the different stakeholders is an interesting part of research that contributes to a better understanding of quality improvement in all its dimensions.

SAMENVATTING

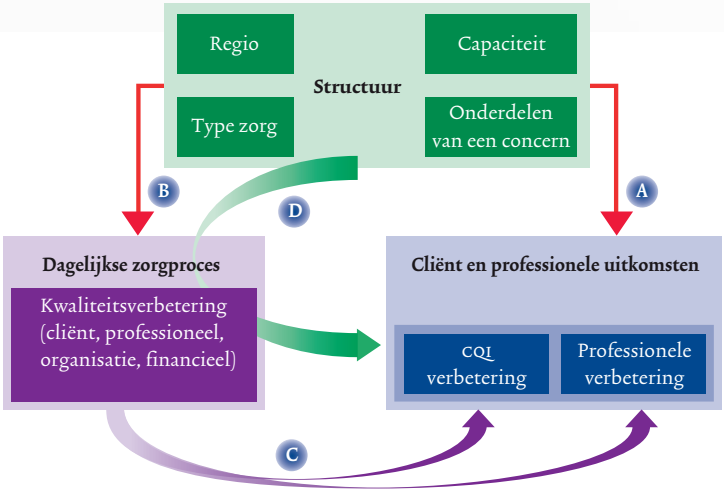
Dit proefschrift gaat over kwaliteitsverbetering in de ouderenzorg in Nederland. Het onderzoekt de beïnvloedende factoren op kwaliteitsverbetering en probeert het mechanisme van kwaliteitsverbetering aan de dag te leggen. Het centrale doel van het proefschrift is:

'Het geven van inzicht in de invloed van structuur, proces en uitkomsten op kwaliteitsverbetering in de ouderenzorg'.

Om deze vraag te kunnen beantwoorden hebben we zes deelvragen geformuleerd. De deelvragen verwijzen naar pijlen in het onderzoeksmodel (*Figuur 1*) van het onderzoek.

1. Hoe betrouwbaar en valide zijn de cliëntgebonden uitkomsten?
2. Wat is de invloed van structuur op cliëntgebonden en professionele uitkomsten (*Pijl A*)?
3. Wat is de invloed van de structuur op kwaliteitsverbeteracties (*Pijl B*)?
4. Welke kwaliteitsverbeteractiviteiten dragen bij aan de verbetering van cliëntgebonden en professionele uitkomsten (*Pijl C*)?
5. Heeft het concern een effect op de verbetering van uitkomsten door het stimuleren en uitvoeren van kwaliteitsverbeteracties om de dagelijkse zorg te verbeteren (*Pijl D*)?
6. Welke factoren bepalen het verschil tussen best en worst practices op cliëntgebonden indicatoren (*Pijl D*)?

Figuur 1 *Onderzoeksmodel*



Hoofdstuk 2 behandelt een deel van de eerste onderzoeksvraag. We introduceren een meetinstrument waarmee de cliëntgebonden indicatoren gemeten kunnen worden, de zogenaamde CQ-Index. We beschrijven de ontwikkeling en validatie van de CQ-Index voor drie doelgroepen in de ouderenzorg: somatische cliënten, psychogeriatrische cliënten en cliënten die zorg thuis ontvangen. De vragenlijst wordt bij somatische cliënten mondeling, door middel van interviews, afgenomen. Voor de overige doelgroepen wordt een vragenlijst

verstuurd naar respectievelijk de vertegenwoordigers van psychogeriatrische cliënten en cliënten die thuiszorg ontvangen. We concluderen dat de vragenlijst een valide en betrouwbare vragenlijst oplevert waarbij diverse thema's/indicatoren worden gemeten. Een opsomming van deze indicatoren staat beschreven in Box 1. Hiermee beantwoorden we ten dele onderzoeksvraag 1.

Box 1 *Overzicht cliëntgebonden indicatoren*

Indicatoren	Somatische zorg	Psychogeriatrische zorg	Zorg thuis
Zorgplan en evaluatie	■	■	■
Inspraak en overleg	■	■	■
Bejegening	■	■	■
Informatie	■	■	■
Telefonische bereikbaarheid		■	■
Lichamelijke verzorging	■	■	■
Maaltijden	■	■	
Professionaliteit en veiligheid	■	■	■
Respectering vrijheidsbeperkingen		■	
Wooncomfort	■	■	
Sfeer	■	■	
Privacy en woonruimte	■	■	■
Dagbesteding en participatie	■	■	■
Zelfstandigheid en autonomie	■	■	■
Mentaal welbevinden	■	■	■
Veiligheid woonleefomgeving	■	■	■
Betrouwbaarheid zorgverleners		■	■
Beschikbaarheid van personeel	■	■	■
Samenhang in zorg			■
Totaal	**15**	**18**	**15**

Hoofdstuk 3 gaat in op de vraag of, aangezien de vragenlijst onder somatische cliënten wordt afgenomen door interviewers, een interviewer een effect heeft op de resultaten van de organisatie. Als dat het geval zou zijn, dan zou een resultaat op een CQ-Index niet het gevolg zijn van eigen prestatie, maar deels ook van een interviewer. Daarmee zou het instrument niet valide zijn. In hoofdstuk 3 beantwoorden we daarmee onderzoeksvraag 1. In het onder-zoek hebben we bekeken of van 10 verschillende interviewers een invloed op de indicatoren zichtbaar was. We concluderen dat de invloed van interviewers op de indicatoren beperkt is. Echter, een goede training, een inwerkprogramma, begeleiding en terugkommomenten van interviewers blijft cruciaal om de variatie tussen interviewers te voorkomen.

Om te onderzoeken welke kwaliteitsverbeteracties bijdragen aan het verbeteren van de kwaliteit van zorg is het noodzakelijk om te weten óf de kwaliteit van zorg wel verbetert. *Hoofdstuk 4* beschrijft een onderzoek naar de verschillen in kwaliteit tussen 2007 en 2009 op cliëntgebonden indicatoren, die beschreven zijn in Box 1, en de zorginhoudelijke

indicatoren. Daarnaast onderzoeken we of de regio waarin een organisatie is gelokaliseerd, van invloed is op de score, onderzoeksvraag 2. De onderliggende gedachte is dat zorgverzekeraars, die regionaal werken, mogelijk een invloed kunnen hebben op de kwaliteitsverbetering van zorginstellingen. We zien dat de kwaliteit van zorg vanuit het perspectief van de cliënten voor de somatische en zorg thuis over het algemeen verbetert. Voor de zorg voor psychogeriatrische cliënten is dat niet zo. De zorg op de zorginhoudelijke indicatoren verbetert over het algemeen ook. We zien ook dat er een invloed is van de regio op de kwaliteitsverbetering van zorginstellingen. De organisaties in het Westen van Nederland verbeteren over de hele linie minder dan de organisaties elders in het land. Dat kan beïnvloed worden door het beleid van de zorgkantoren (zorgverzekeraars). Het kan ook zo zijn dat mensen in het Westen van het land kritischer zijn bij het delen van hun ervaringen.

In *hoofdstuk 5* beschrijven we welke kwaliteitsverbeteractiviteiten zorginstellingen tussen 2007 en 2009 hebben uitgevoerd en wat de aanleiding is om een kwaliteitsverbeteractiviteit uit te voeren. Verder bekijken we of structuurkenmerken als regio, type zorg, capaciteit en grootte van een concern dit proces van kwaliteitsverbetering beïnvloeden. Organisaties voeren gemiddeld 15 kwaliteitsverbeteracties uit. We hebben deze acties geclassificeerd naar cliëntgerelateerde, organisatiegerelateerde, professie gerelateerde of financieel-gerelateerde activiteiten. De redenen voor het verbeteren van kwaliteit zijn voornamelijk interne inzichten of dat de actie voortvloeit uit het interne kwaliteitssysteem. Dit suggereert een interne focus op kwaliteitsverbetering. Verder is de wijze waarop de instellingen kwaliteit verbeteren routinematig (bijeenkomsten organiseren, cursussen, protocollen ontwikkelen, et cetera). We zien verder dat alle genoemde structuurkenmerken van invloed zijn op de uitgevoerde kwaliteitsverbeteractiviteiten. Daarmee beantwoorden we onderzoeksvraag 3.

In *hoofdstuk 6* onderzoeken we of we kwaliteitsverbeteracties kunnen vinden die leiden tot de kwaliteitsverbeteringen (onderzoeksvraag 4) en of het concern waar een organisatie onderdeel van uitmaakt, invloed heeft op de kwaliteitsverbetering (onderzoeksvraag 5). We kijken hierbij naar het verschil van de cliëntgebonden indicatoren (de CQ-Index) en zorginhoudelijke indicatoren tussen 2007 en 2009. We vinden dat kwaliteitsverbeteracties leiden tot zowel positief als negatief resultaat op de indicatoren. De acties verklaren slechts ten dele de kwaliteitsverbetering op de indicatoren. Daarentegen verklaart het feit dat een organisatie onderdeel uitmaakt van een concern een heel groot deel van de gevonden kwaliteitsverbetering, vooral voor de cliëntgebonden indicatoren. Voor de zorginhoudelijke indicatoren was dat minder het geval. Blijkbaar draagt het concern voor een groot deel bij aan het al dan niet bereiken van kwaliteitsverbeteringen voor cliëntgebonden indicatoren, maar voor de zorginhoudelijke indicatoren werkt het mechanisme van kwaliteitsverbetering anders.

In *hoofdstuk 7* gaan we op zoek naar waarom de ene organisatie beter in staat is om tot kwaliteitsverbetering te komen dan de andere organisatie. We zoeken naar het verhaal achter de cijfers. Hiervoor vergelijken we de best practices in kwaliteitsverbetering met de worst practices. Opvallend is dat een uitgevoerde kwaliteitsverbeteractie relatief weinig effect had op de uitkomst, in tegenstelling tot het onderdeel zijn van een concern. Concerns verschillen significant van elkaar in hoeverre zij kwaliteitsverbetering bereiken. Capaciteit en grootte van een concern zijn hierin geen bepalende factoren. Cultuur en leiderschap blijken voor een belangrijk deel het verschil te bepalen tussen best en worst

practices. Cultuur en leiderschap zijn onderdelen van de structuur en de wijze waarop de uitkomsten van zorg verbeterd worden (*Pijl* D). Hiermee beantwoorden we onderzoeksvraag 6.

In Tabel 1 geven we een overzicht van de bevindingen.

Tabel 1 *Bevindingen van het onderzoek*

Structuur	Proces	Uitkomst	Kwaliteitsverbetering 2007-2011
Concern	**Pijl B** Kleine en grote concerns * voelen minder aanleiding voor kwaliteits-verbeteracties	**Pijl A** Grote concerns * lagere uitkomsten. Structuur heeft meer invloed op de CQI, en minder invloed op de op professionele uitkomsten	**Pijl A** De grootte van een concern is niet bepalend voor kwaliteits-verbetering, maar er zijn wel significante verschillen tussen concerns met betrekking tot het bereiken van kwaliteits-verbetering
Capaciteit	**Pijl B** Minder bedden * meer aanleiding, maar minder kwaliteits-verbeteracties	**Pijl A** Minder bedden en instellingen van een gemiddeld grootte * betere uitkomsten	**Pijl A** De capaciteit is niet bepalend voor het bereiken van kwaliteitsverbetering
Regio (N-O-Z-W)	**Pijl B** Westen en Noorden van Nederland * meer activiteiten	**Pijl A** Het Westen van Nederland * lagere uitkomsten	**Pijl A** In het noorden van Nederland is de gemiddelde kwaliteitsverbetering minder dan in andere delen van Nederland. Het Westen verschilt niet van de andere regio's
Cultuur en leiderschap			**Pijl A** Best en worst practices verschillen van elkaar op de open cultuur en duidelijk leiderschap met verant-woordelijkheid voor kwaliteits-verbetering op de werkvloer
Proces en kwaliteitsverbeteracties		**Pijl C** Uitkomsten zijn niet de belangrijkste aanleiding voor kwaliteitsverbeter-acties, maar lage uitkomsten leiden wel tot verbeteracties	**Pijl C** Kwaliteitsverbeteracties leiden niet automatisch tot kwaliteitsverbetering
Structuur en kwaliteitsverbeteracties			**Pijl D** De structuur heeft invloed op CQI uitkomsten, maar minder op professionele uitkomsten

De discussie in *hoofdstuk 8* beschrijft kort nogmaals de onderzoeksvragen en beantwoordt deze, zoals in het voorgaande is gepresenteerd. Daarna worden methodologische kanttekeningen bij het onderzoek genoemd. De discussie eindigt met een reflectie op het mechanisme van kwaliteitsverbetering in de ouderenzorg en geeft tenslotte praktische en wetenschappelijke implicaties.

Methodologische kanttekeningen

Het onderzoek kent enkele beperkingen. Hier noemen we kanttekeningen die een algemeen karakter hebben.

Versimpeling van een model

In deze thesis hebben we een model gebruikt om de relaties tussen structuur, proces en uitkomst te duiden. Een model is een eenvoudige weergave van de werkelijkheid. De elementen in het model versimpeld en in werkelijkheid veel omvattender en lastiger uit elkaar te halen dan in het model is onderzocht.

Dataverzameling door middel van vragenlijsten

Voor het onderzoek naar het effect van de interviewer op uitkomsten van kwaliteit en het onderzoek naar kwaliteitsverbeteracties in zorginstellingen zijn vragenlijsten gebruikt, die door een beperkt aantal participanten is ingevuld (N = 10 bij het interview onderzoek, N = 193 bij het verbeteronderzoek). Dat zou tot een vertekening van de resultaten kunnen leiden.

Uitkomstindicatoren van een nationale database

De cliënt-gebonden indicatoren worden onafhankelijk gemeten en bieden weinig ruimte om te beïnvloeden. De zorginhoudelijke indicatoren worden geregistreerd door zorginstellingen zelf. Deze kunnen zij aanpassen om bijvoorbeeld te vermijden dat een slecht resultaat op de indicatoren een invloed heeft op het budget dat zij afspreken met de zorgverzekeraar. Dit maakt dat we deze set van indicatoren na 2009 niet meer gebruikt hebben in het onderzoek.

Dataverzameling door middel van interviews

Interviewen als methode voor dataverzameling levert veel informatie op maar heeft ook een zekere subjectiviteit in zich, zeker als het gaat om een periode dat al even geleden is. Daarnaast is slechts een beperkt aantal interviews mogelijk gezien het intensieve karakter ervan. Ondanks deze beperkingen was deze methode de manier om zicht te krijgen op het verhaal achter de cijfers.

Ouderenzorg

In het onderzoek gaat het alleen over de ouderenzorg en voor sommige studies alleen over een deel van de ouderenzorg. We vermoeden dat de resultaten ook voor andere sectoren gelden, maar hebben dat niet onderzocht.

Reflectie op het mechanisme van kwaliteitsverbetering

In de introductie beschreven we een belangrijke kwaliteitstheorie, de verbetercyclus, oftewel de PDSA cyclus, Plan-Do-Study-Act. De veronderstelling is kennis over uitkomsten van zorg zal leiden tot kwaliteitsverbetering. In een marktgericht systeem, zoals in Nederland, verwachten we dat de kwaliteit van zorg verbetert, doordat zorgverzekeraars kwalitatief betere zorg inkopen en cliënten de zorgaanbieders kiezen die een kwalitatief betere zorg verlenen. Deze prikkels stimuleren zorginstellingen om de kwaliteit van zorg te verbeteren. Maar werkt dit mechanisme ook zo?

Verder zien we dat uitkomstindicatoren een zorginstelling (micro level) helpen bij het kiezen van een onderwerp voor verbetering, vooral als er mindere prestaties zijn. Voor het monitoren van kwaliteitsverbetering bieden de uitkomstindicatoren te weinig houvast, omdat deze te weinig frequent gemeten worden. Verder is het opvallend dat we geen directe relatie vinden tussen de uitgevoerde kwaliteitsverbeteractie en een behaalde verbetering. We zagen wel een sterke invloed van het concern bij het behalen van betere uitkomsten, maar dat verschilde tussen cliëntgebonden en professionele uitkomsten. In de laatste studie onderzochten we voor somatische afdelingen hoe het verbeteren van de kwaliteit van zorg nu echt in z'n werk gaat. Het echt verbeteren van kwaliteit vindt plaats dichtbij het contact tussen medewerker en cliënt, waarbij de medewerker de verantwoordelijkheid én mogelijkheid heeft om de zorg snel aan te passen. Om aan te voelen waar en hoe de zorg verbeterd kan worden heeft de leidinggevende een cruciale rol in het vertalen van de resultaten naar eenvoudig te begrijpen activiteiten. Een open cultuur waarbij aanspreken van elkaar de gewoonte is, is hierbij een belangrijke factor.

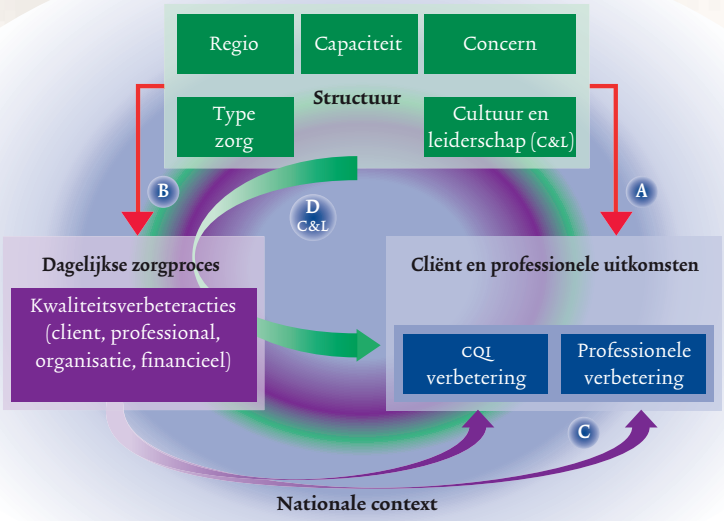
De indicatoren kunnen op regionaal niveau (meso level) gebruikt worden om zorg in te kopen en cliënten de mogelijkheid te geven om een zorgaanbieder te kiezen die past bij hun wensen. Hoewel we niet onderzocht hebben of zorgverzekeraars kwaliteitsinformatie actief gebruiken bij de zorginkoop of kwaliteitsverbetering stimuleren, vinden we in verschillende regio's inderdaad verschillende kwaliteitsverbeteracties. De zorgverzekeraars worden daarnaast aangesproken op hoe zij hun verantwoordelijkheid nemen bij het toezien op kwaliteit van zorg. Het gebruik van kwaliteitsinformatie door cliënten is echter nog beperkt. Cliënten lijken zich niet als consumenten te gedragen waarbij prijs en kwaliteit de belangrijkste elementen zijn voor een keuze. Bij het kiezen van een instelling zijn oordelen van familie, vrienden en huisarts leidend. Desalniettemin kan de keuze-informatie wel beter gepresenteerd worden.

Op nationaal niveau (macro level) nemen de verschillende stakeholders hun verantwoordelijkheid om kwaliteit van zorg op nationaal niveau in te bedden. Zo is er een lidmaatschapseis van de branche organisatie om kwaliteit transparant te maken, zijn er instrumenten ontwikkeld om kwaliteit te meten, te tonen en te vergelijken en wordt jaarlijks verantwoording afgelegd over de kwaliteit van zorg. Het transparant maken van de kwaliteit van zorg in kwaliteitsindicatoren leidt tot bewustwording hierover, dat er eenvoudigweg niet zou zijn, als er geen informatie over beschikbaar is. Daarnaast leidt toezicht door de inspectie eveneens tot kwaliteitsverbeteractiviteiten.

Het mechanisme van kwaliteitsverbetering etaleert zich op de drie niveaus, micro, meso en macro niveau. De niveaus versterken elkaar en zijn op elkaar inwerkende relaties, die

aan het mechanisme van kwaliteitsverbetering meer recht doen dan in dit onderzoek beschreven. Het micro en meso niveau maakte al onderdeel uit van het onderzoek, het macro niveau (nationale context) ontbrak. Daarom passen we het onderzoeksmodel aan, zie Figuur 2.

Figuur 2 *Onderzoeksmodel*



Generaliseerbaarheid van de resultaten

Voor het monitoren van kwaliteitsverbetering van zorg op sectorniveau, is het belangrijk om uitkomstmaten te hebben, zoals waardering door cliënten en professionele indicatoren. In andere sectoren zijn naast deze indicatoren vaak aanvullende uitkomstmaten beschikbaar, zoals de effectiviteit van behandeling. Deze aanvullende uitkomstenmaten geven een completer beeld van de kwaliteit van zorg. In de ouderenzorg echter ontbreken deze uitkomstmaten. De cliëntwaardering wordt daarmee extra belangrijk. Verder zien we dat ook in andere sectoren structuur-, proces- en uitkomstfactoren direct invloed hebben op de kwaliteitsuitkomsten en kwaliteitsverbetering.

In onze laatste studie concludeerden we dat naast bovengenoemde factoren, leiderschap en cultuur belangrijke factoren zijn in het verbeteren van de kwaliteit van zorg in de somatische langdurige zorg. Onze bevindingen komen overeen met de bevindingen die in ziekenhuizen gevonden zijn. We vermoeden daarom dat de genoemde factoren ook van belang zijn voor de andere onderdelen van de langdurige ouderenzorg (psychogeriatrie en thuiszorg) en eveneens internationaal zullen gelden. Daarbij komt dat het opleidings-

niveau van de medewerkers in de ouderenzorg lager is dan bijvoorbeeld de ziekenhuissector en de geestelijke gezondheidszorg. Dat maakt dat de rol van de leidinggevende in het verbeteren van kwaliteit des te belangrijker in deze sector.

Consequenties voor de praktijk

Tijdens het uitvoeren van dit onderzoek is een debat ontstaan over de bruikbaarheid van de (cliëntgebonden) indicatoren voor kwaliteitsverbetering en –monitoring van instellingen, gestart door ActiZ, de branchevereniging van zorginstellingen in de ouderenzorg. Dit onderzoek lijkt de twijfels over de bruikbaarheid te bevestigen. De resultaten op indicatoren helpen bij het maken van een keuze waar verbeterd moet worden, maar niet bij het monitoren van kwaliteit. Echter, transparantie, benchmarken en externe druk vanuit diverse stakeholders dragen eveneens bij aan kwaliteitsverbetering. In plaats van het loslaten van kwaliteitsmetingen, zou eerder een aanvulling op kwaliteitsmetingen gewenst zijn, zoals:

1 *Zorg dragen voor structurele organisatorische condities*

Structuurkenmerken als grootte van een concern en capaciteit dragen weliswaar niet bij aan het verbeteren van de kwaliteit van zorg, op de waardering van zorg heeft het wel invloed. Cliënten waarderen de zorg beter bij kleinere instellingen (minder dan 100 cliënten) van een kleiner of middelgroot concern (minder dan 18 locaties). Kleinere locaties zijn wellicht geschikter om een persoonlijke benadering te blijven behouden en, indien onderdeel van een concern, beschikken daarnaast over voldoende expertise om een kwalitatief goede zorg te leveren.

2 *Introduceren van aanvullende op maat gemaakte instrumenten*

De huidige CQI Verpleging, Verzorging en Thuiszorg, zou, naast een standaard basis vragenlijst, verrijkt kunnen worden met aanvullende modules, die specifieke thema's uitvraagt die aansluiten bij het beleid van zorginstellingen. De standaardvragenlijst is bruikbaar voor benchmarken, de modules dragen bij aan het beleid van de instelling. Daarnaast zou de terugrapportage aan zorginstellingen snel gerealiseerd moeten worden, waarbij naast de resultaten van de CQI gebruik gemaakt wordt van meer eigentijdse informatiebronnen zoals Zorgkaart Nederland, Facebook en Twitter.

Zorginstellingen zelf zouden op afdelingsniveau op eenvoudige (digitale) wijze, met behulp van iPads, de vragenlijst kunnen inzetten om op afdelingsniveau kwaliteits-informatie te genereren en kwaliteit van zorg te monitoren. Tenslotte zou de professionele kwaliteit een verbeterslag maken wanneer registratie van indicatoren een elementair onderdeel uitmaken van het primaire proces. Een nationaal registratie systeem is hiervoor noodzakelijk.

3 *Scholen van managers die direct verantwoordelijk zijn voor kwaliteitsverbetering*

De rol van managers bij kwaliteitsverbetering is essentieel gebleken. Als managers in staat zijn goed het verhaal achter de cijfers te vertellen aan hun medewerkers en te vertalen naar kwaliteitsverbetering, kan dat een belangrijke bijdrage leveren aan het verbeteren van de zorg. Professionals moeten dan wel de verantwoordelijkheid en mogelijkheid krijgen om de zorg dichtbij de cliënt aan te passen.

4 Deel de kennis en ervaring in nationale programma's
Uit dit onderzoek is gebleken dat leiderschap en cultuur belangrijke elementen zijn voor het verbeteren van de kwaliteit van zorg. In nationale programma's zouden deze elementen een prominente plek moeten innemen.

Wetenschappelijke uitdagingen

De focus van ons onderzoek lag op het verbeteren van de kwaliteit van zorg, gebaseerd op indicatoren. Structuur-, proces- en uitkomstelementen bleken belangrijk. We hebben slechts enkele kenmerken van deze elementen onderzocht en voor een deel van het onderzoek alleen op de cliëntgebonden indicatoren. Het mechanisme van kwaliteitsverbetering voor cliëntgebonden en professionele indicatoren werkt waarschijnlijk niet identiek. Verder onderzoek zou hier een antwoord op moeten geven. Daarnaast zouden ook andere kenmerken in een dergelijke opzet meegenomen kunnen worden (zoals religie, kenmerken van een cultuur, kenmerken van leiderschap, et cetera). Om kwaliteitsverbetering te bereiken is het vertellen van het verhaal en het vertalen van uitkomsten naar praktische activiteiten essentieel. Deze narratieve methoden zijn een nieuw gebied voor onderzoek. De kwantitatieve methoden worden verrijkt met kwalitatieve methoden van onderzoek.

Een andere uitdaging is het onderzoeken hoe kwaliteitsverbetering in de zorg voor ouderen effectief kan worden ingezet. Deze studie is een eerste aanzet daartoe geweest. Effectief organiseren en structureren van een organisatie en de organisatie toerusten met de juiste kenmerken van kwaliteitsverbetering is en blijft een interessant onderzoeksveld. Mogelijk leidt nieuw onderzoek tot nieuwe instrumenten en uitkomstmaten.

Tenslotte hebben we kort de invloed van stakeholders op kwaliteitsverbetering aangestipt. De wijze waarop stakeholders de informatie gebruiken en bijdragen aan de verbetering van de zorg is een nog verder te ontdekken veld voor onderzoek.

DANKWOORD

Nu het promotieonderzoek een einde nadert, blik ik terug op de totstandkoming van het onderzoek en het onderzoek zelf. Het traject heeft ups en downs gekend, maar veel mensen in mijn omgeving hebben het mogelijk gemaakt de promotie tot een goed eind te brengen.

Mijn allereerste dank gaat uit naar *Anton Metske*, bestuurder van SVVE *De Archipel*. Toen hij nog directeur van Stichting Zorginstellingen Rijswijk, waar ik als kwaliteitsfunctionaris in 1995 een onderzoek verrichtte naar de wensen van potentiële cliënten van bewoners van Rijswijk. Tijdens het onderzoek gaf hij de suggestie om hierop te promoveren. Deze gedachte heeft me niet meer losgelaten.

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ABOUT THE AUTHOR

Sjenny Winters - van der Meer was born in Roelofarendsveen, a small village in the Western part of the Netherlands, on June 7, 1967. She finished her secondary education in 1984 and graduated in 1988 for nurse at the bachelor study for nursing in Leiden. In the same year she began Healthcare Sciences at Maastricht University. In 1991 she got her master's degree specializing Nursing Sciences. During her study, she worked as a district nurse in Maastricht. After graduation, she started working as a head of a department in a nursing home in Rotterdam and later on in Rijswijk at Stichting Zorginstellingen Rijswijk.

In 1993 she became quality manager in the same organisation. In this organisation, she performed a patient survey in Rijswijk, which investigated the wishes and expectations of elderly who will be the next population in nursing homes and homes for the elderly.

In December 1997 she started working at Berenschot Batalas, a consultancy company. She participated and coordinated several projects dealing with quality questions in all different kind of organisations. Because of her interest in the healthcare sector, she was

transferred from the quality department of Berenschot, to the healthcare department. In this period she was involved in the development of the benchmark model in the Netherlands for nursing homes, homes for the elderly and home care.

In 2002 she changed for a job as senior researcher at Prismant, a leading agency in healthcare information and research. Her focus was on patient oriented projects. She was for example from 2003 to 2006 project manager of the national patient satisfaction research for hospitals. From 2006 to 2011 she managed the pilot testing and implementation of the CQ-Index for the long-term care.

Since 2012 she works at the Scientific Institute for Quality of Healthcare (IQ healthcare), a part of the Radboud University Medical Centre in Nijmegen, also managing projects with a focus on the perspective of the patient.

Since 2010, she spends her free time on being secretary of Rotary Zeist, and coordinated activities such as a sciencecafé for kids or the avenue New Generations.

Sjenny is married to Bart Winters and they have two kids: Stijn (12 years old) and Niels (10 years old).

PHD PORTFOLIO

PhD student	Sjenny Winters
Department	Institute of Health Policy and Management
Work	Prismant and Scientific Institute for Quality of Healthcare
PhD period	2007-2014
Promotor	Prof. Dr. Robbert Huijsman en Prof. Dr. Niek Klazinga
Supervisor	Dr. Tijn Kool

PHD TRAINING

Courses

Course Rules and Organisation for Clinical Researchers	2013
Qualitative Research Methods in Health Care	2012
Implementation Science	2012
Academic writing for PhD students	2011
Course developing and evaluating measure instruments	2006
Training customer-friendly writing	2000/2004
Course knowledge of labour	2000
Lead Auditor Course	1998
Self evaluation conform the EFQM	1997
Course Quality Assurance	1996-1997
Course Quality and Quality legislation	1995

Working, teaching and coaching experience

Project leader research projects	2001-now
Training internal auditing	1998-now
Insight in the Dutch Healthcare	2007-2011
Coaching several long-term care organisations in quality improvement	1997-2011
Developing a quality system for a long-term care facilities	1993-2011
Head of a department of a long-term care facility	1991-1993

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- *Quality improvement in the care for the elderly: results of a systematic Inventory,* EUPHA, Amsterdam, 2010.

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