Quality improvement in a publicly provided long-term care system: the case of Norway

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Abstract

Objective. To explore the extent to which quality improvement activities are implemented in the Norwegian long-term care system for older people, and to determine if variations in the extent and scope of quality improvement activities are associated with the characteristics of the first-line care leaders, the sector or the size of the municipality.

Design. A cross-sectional telephone survey supplemented with information from public records and official municipal websites. Data were organized according to six total quality management components, and a sum score was developed to measure quality improvement. Variations in the extent of quality improvement activities were analysed using multivariate analysis.

Setting. Thirty-two Norwegian municipalities stratified according to region and population size.

Participants. Sixty-four first-line leaders in nursing homes and home-based care.

Main outcome measure. A sum score has been used as a measure of quality improvement activities.

Results. The unit’s quality improvement activities varied by quality improvement components and by municipality. The technical component that requires training in tools and techniques was low; the general components as ‘leader’s involvement’ and ‘employee participation’ were more common. The size of the populations of the municipalities showed a significant independent association with the scope of quality activities.

Conclusions. The six quality improvement components varied from high to extremely low, and the large municipalities had more quality activities than small- or medium-sized municipalities.

Keywords: long-term care, public sector, quality improvement, leadership

High-quality long-term care (LTC), whether provided publicly or privately, is reported to be a challenge [1, 2]. In response, many countries have placed stronger emphasis on quality improvement, and a number of initiatives have been undertaken to improve the quality of social service and health care [3, 4]. One of these initiatives, National Quality Strategies, has been adopted by England, Denmark and Norway [5]. Norway’s strategies focused on internal control and quality improvement [6, 7]. Internal control ensures that health and social services follow current laws and regulations. Quality improvement based on international quality models and methods, especially the approaches of Total Quality Management and the Deming Cycle. The Deming Cycle, a method for improving processes, comprises four steps: plan, do, study and act [8]. The methods and ideas behind Total Quality Management are used to improve systems of care and as a guide to analysing quality improvement in organizations [5]. Total Quality Management can be divided into six components: ‘priority of quality’, ‘leader’s involvement’, ‘process orientation’, ‘measure of performance’, ‘employee participation’ and ‘customer focus’ [5, 9, 10].

Some research on quality improvement activities has been performed [2, 9, 11], but the literature on quality improvement in LTC is still sparse [1, 12]. The aim of this exploratory study was to acquire greater knowledge about quality improvement activities in nursing homes and home-based care in Norway, where LTC is publicly financed, operated and controlled. LTC provision in Norway is the responsibility of the lowest level of public administration, the municipalities [12]. Each municipality has at least one nursing home and provides an extensive home-based care as well.

There is no regional or national system in Norway for reporting clinical outcomes in LTC. The municipalities make annual reports on costs, production, staff and structure data for care of the elderly and disabled to the national database, Statistics Norway; these data are not restricted to older people living in LTC settings, however.
Quality improvement analysis is related to the six components of Total Quality Management mentioned above [5]. Previous research has found that various factors affect quality improvement activities: governmental (national quality strategies, inspections) [5]; organizational (ownership, costs, organizational design, technology and culture) [1, 13, 14]; leadership (turnover, education, behaviour) [2, 14, 15]; and in-staff factors (turnover, education, staffing levels, staff skill mix, job satisfaction) [16–18]. To obtain greater knowledge about quality improvement activities in LTC in Norway, we focus on leadership and organizational factors, based on scientific literature [2, 9, 11, 14] and clinical experience.

Nurse leaders play a key role in quality improvement [14, 15]. Aspects of their leadership have been studied, and two have emerged as essential, education and turnover [2, 9]. Structural working conditions vary for nursing home and home care employees, in particular, as they either work with others within a nursing home facility or must travel to clients’ homes where they usually work alone. As few comparative studies of quality improvement activities in nursing homes and home-based care have been conducted [1], the effect of these different care giving contexts is not known. As municipalities are responsible for quality improvement activities in their LTC, one can assume that different municipalities assign different priorities to quality improvement. The 430 Norwegian municipalities are small, with a mean of 9000 inhabitants and a median of 4000 [19]. It is possible that the population size of a municipality affects the extent of activities in LTC.

This paper addresses two general research questions: What quality improvement activities are implemented in LTC? Can the variation in quality improvement activities be explained by the characteristics of the leader, the sector or the municipality?

Methods

Sample and data collection

The data presented in this paper stem from the Norwegian Life Course, Aging and Generation study (NorLAG). A sub-project in NorLAG compares the operation of LTC services in Norwegian municipalities (or boroughs within the large municipality of Oslo) in structure, resource use and quality. The 32 municipalities in the NorLAG sample are stratified first according to geographical regions and second by population size. Five regions are represented: the Oslo region, Southern Inland Norway, Southern Coastal Region, Central Norway and Northern Norway. Except for the Oslo region, where there are no small boroughs, municipalities with different population sizes were selected, small (200–4499; n = 10), medium (4500–17 999; n = 9), and large (18 000–160 000; n = 13). We sought to include a range of municipalities within each level of population size based on social indicators as well.

Data were collected from three sources: telephone interviews, public records and official municipal websites.

Telephone interviews were conducted with first-line leaders in charge of operations. Middle managers in LTC service in the 32 municipalities were asked to select two leaders from the lowest organizational level: one first-line leader from a nursing home and one from home-based care. An e-mail informed potential participants about the study, and appointments were arranged for the interviews. Two leaders refused and were replaced by two others. The 64 telephone interviews were conducted between January and April 2006, and lasted for 25–65 min (mean = 40 min). All interviewers were conducted by the same person.

An interview guide was developed, based on methods and models of quality improvement used by Norwegian health authorities [6, 7], and questions used in earlier research in the area [2, 11] adapted to a Norwegian context. In all, the interview guide had 32 closed and open-ended questions, 13 about quality improvement activities (see Table 1). Responses, which related to the respondent’s situation in 2005, were written down during the interview and typed into MSWord immediately after the interview. Some of these answers were coded into SPSS statistics software by the interviewer.

Public records data were collected from the KOSTRA database on Norwegian municipalities compiled by Statistics Norway, and included information on population size and whether or not the municipalities had completed nationally standardized user surveys in LTC.

Official municipal Websites were used to provide information about strategic plans and annual reports of the municipalities.

Dependent variable

In order to capture the complexity of quality improvement [3], six components and 13 variables were used to create an additive index with between one and three variables comprising the operational definition of each of the six components. The six components carry an equal weight in the additive index; each can have a score between zero and three points, and the total score, as shown in Table 1, varies between 0 and 18 points. This developed sum score has been used as a total measure of quality improvement in a unit. Validity of the data was assessed using principal component analysis with varimax rotation. Two of the six components of Total Quality Management (‘priority of quality’ and ‘leader’s involvement’) were combined into one, leaving all together five components. Reliability as measured by Cronbach’s alpha was 0.64.

Independent variables

Four independent variables were used to explain the extent to which leader characteristics, work place and municipality size could affect quality improvement activities within a unit: (a) formal education in management (a minimum of one year full-time management education versus no further education); (b) leader’s tenure (number of years’ tenure as a leader in current position); (c) sector (home-based care versus nursing home); and (d) population of the municipality (small, medium, large). (Table 2).

Data analysis

The data were first analysed descriptively in order to produce data on quality improvement activities in each of the six
quality improvement components in the units. The sum score was used as a measure of total quality improvement in each unit, and analysis of covariance (ANCOVA) was conducted in order to identify possible associations between quality improvement and the four independent variables. Tests for normality showed the residuals to be approximately normally distributed and the normal plot did not identify outliers.

**Results**

**The quality activities**

The units’ quality improvement is shown in Table 1. Activity varied among components from high to extremely low.

<table>
<thead>
<tr>
<th>Quality improvement components</th>
<th>Quality improvement activities</th>
<th>Score– % scale</th>
<th>Score &gt; 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priority of quality</td>
<td>Has written quality objective</td>
<td>0–1</td>
<td>77</td>
</tr>
<tr>
<td></td>
<td>Has carried out quality projects</td>
<td>0–2</td>
<td>84</td>
</tr>
<tr>
<td>Leader’s involvement</td>
<td>Leader participates in quality work</td>
<td>0–3</td>
<td>56</td>
</tr>
<tr>
<td>Process orientation</td>
<td>Has used flow chart</td>
<td>0–1</td>
<td>14</td>
</tr>
<tr>
<td>Measure of performance</td>
<td>Has used the result from identified nonconforming care for performance</td>
<td>0–1</td>
<td>3</td>
</tr>
<tr>
<td>Employee participation</td>
<td>Has used results from internal indicators for quality improvement</td>
<td>0–1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Has used statistical process control</td>
<td>0–1</td>
<td>0</td>
</tr>
<tr>
<td>Customer focus</td>
<td>Works in groups on quality improvement</td>
<td>0–1</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>Quality improvement is discussed in meetings</td>
<td>0–1</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>Quality improvement is a topic in in-service training</td>
<td>0–1</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Use of patient satisfaction data</td>
<td>0–1</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>Regular meetings with patients and next of kin</td>
<td>0–2</td>
<td>23</td>
</tr>
</tbody>
</table>

*Score-scale = Possible value per variable.*

A majority of the leaders reported having given priority to quality. However, the written quality objectives found in their strategic plans and annual reports were of an overarching nature, such as *Health services should be of a highly professional standard.*

More than half the leaders were involved in quality improvement, initiating projects, determining the nature and amount of quality improvement work to be done, and surveying the progression and results in the projects. The number of quality projects varied from one to eight, the most frequent being safe medication (*n = 11*). Besides leading the work, leaders were active in quality groups and in documentation of quality improvement work. Although 31% of leaders did not participate in any form of quality work, they were aware of their role and responsibility for quality improvement work.

Only 3% of units had no system to eliminate the cause of potential detected nonconformity. Of the units that identified nonconformity, 61% immediately undertook some corrective measure, although they did not analyze their own data or use the results for improving the performance. Two nursing homes had their own internal quality indicators. The prevalence of bed sores, urine incontinence, contractures, falls and weight loss was counted during three 1-week sample periods annually and reported to the top manager.

Quality improvement was on the agenda at ward meetings in about half of the units. Training in methods for documentation of nonconformities was the main topic at these meetings. Employees of two units received training in process orientation in quality improvement.

User surveys were conducted in 44 units, and involved users’ opinions of LTC and the adaptation of services to users’ needs; nationally standardized user surveys were conducted by 38 units, and six units conducted various other forms of user surveys.

**Multivariate analysis**

The sum index score could range from 0 to 18 points, although the actual values varied from 1 to 12. The mean score was 6.7 points; the median was 6 points. The mean score of the leaders with formal management education was 7.7; the mean was 6.0 for those with no further education. The sector’s mean score was 6.8 points in nursing homes and 6.5 in home-based care. Differences in mean score among the municipalities were small, 4.7; medium, 6.7; and large, 8.2 points.

A sum index score was used as a dependent variable and four independent variables were analyzed using a multivariate analysis.

Bachelor’s degrees in nursing were held by 97% of the first-line leaders, and 39% had formal management education. The leaders had been in their current positions for an average of 5 years. Neither management education nor leader’s tenure showed any association with quality improvement activities in the units, and there was no difference as a function of nursing homes versus home-based care. The size of the municipality had an impact, however, as the largest municipalities had significantly more quality improvement activities than the small- or medium-sized municipalities did.
Descriptive analyses between the sum index score and the 32 municipalities (paired for sectors) showed that four municipalities had equal scores; eight municipalities differed by one point, nine municipalities by two points and 11 municipalities by three or more points. Population size of municipalities did not affect the differences.

Discussion

This study has shown that efforts to improve quality in LTC still have a long way to go in Norway, especially in smaller municipalities.

Quality improvement activities in LTC

The four most common components of quality improvement were priority of quality, leader's involvement, employee participation and customer focus. With the exception of user surveys, these are general quality activities that have not necessarily been established as the result of an explicit decision to emphasize quality work. Process orientation and performance measures are more specifically related to quality improvement, and are directly linked to technical quality work. Flowcharts, which are recommended to make the work process visible and to focus on the improvement of processes [10], were used in 13% of the units. Studies from Kansas, USA, have shown greater use of this approach. In one study of nursing homes, for example, 19.8% had used flowcharts in the preceding year [9]; another study showed a 47.5% usage rate [2]. Some US studies have shown that the Deming Cycle is well suited to quality improvement work [20], and to assessing whether or not changes in organizations create improvement [10, 21]. Six percentage of units in this Norwegian study used the cycle. Performance measures, especially statistical process control, are not used. Research shows that feedback of quality measurement information to staff resulted in better care processes and outcomes [22]. There are at least two commonalities between the components' process orientation and measure of performance; they consist of tools and techniques that require instruction in order to be put to use in quality improvement work [23], and they are perceived as being difficult to use [24].

Table 2 Associations between the sum score in quality improvement and characteristics of the leader, the sector and size of the municipality in LTC in Norwegian municipalities

<table>
<thead>
<tr>
<th></th>
<th>Difference in number of activities</th>
<th>95% Confidence Interval</th>
<th>P-value</th>
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</thead>
<tbody>
<tr>
<td>Formal education in management (versus none)</td>
<td>1.0</td>
<td>−0.5 to 2.4</td>
<td>0.18</td>
</tr>
<tr>
<td>Leader's tenure (per year)</td>
<td>0.1</td>
<td>0.0 to 0.2</td>
<td>0.10</td>
</tr>
<tr>
<td>Sector</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home-based care (Ref. category)</td>
<td>0.1</td>
<td>−1.2 to 1.4</td>
<td>0.82</td>
</tr>
<tr>
<td>Nursing home</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population of municipality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small (Ref. category)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td>1.7</td>
<td>−0.1 to 3.4</td>
<td>0.07</td>
</tr>
<tr>
<td>Large</td>
<td>3.2</td>
<td>1.6 to 4.8</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Analysis of Covariance (ANCOVA). \( r^2 = 0.32 \).

Quality improvement and characteristics of leaders, sectors and municipalities

Lack of progression in quality improvement work has been explained in a number of ways, lack of formal education being one [9, 25]. The results of this study show that first-line leaders were highly educated, with basic education and management education, but formal education and tenure in the job had no impact on leader involvement in quality improvement. A 1997 Norwegian study showed that 20 out of 32 colleges of nursing had curriculum components on quality improvement [26]. Furthermore, quality improvement was included in the national framework curriculum for nurses’ education in Norway in 2000. Only five of our respondents had been educated after 2000, which means that they did not receive training in quality improvement as part of their basic education, although 16% of employees received quality improvement training at their units. In the Adams-Wendling and Lee study, 59% of staff in 51 facilities had been educated on the principles of quality improvement; other researchers have pointed to the need for education in quality improvement [27]. The lack of knowledge about quality improvement may be a reason why the two technical components of quality improvement had low scores in our study. Øvretveit [14] and Batalden et al. [21] confirmed this finding.

A high turnover among leaders has been noted as a barrier to the successful implementation of quality improvement [9, 28]. In the study by Adams-Wendling and Lee, more than half of the respondents had been in their current jobs for 1 year or less. Others studies confirm this. Leaders need time to adjust to their role so that they can inspire and influence quality improvement work [15]. Given that first-line leaders in our study had been in their current jobs for an
average of 5 years, any lack of quality improvement involvement cannot be explained by a high turnover among leaders.

Our study was conducted in both nursing homes and home-based care, enabling us to compare quality improvement activities in these two settings. Nursing homes and home-based care differ with respect to structural conditions, which may be a significant factor in facilitating quality improvement activities at the lowest organizational level. No differences were found between the two settings. It may be that nursing homes and home-based care face the same municipal requirements, which has led leaders in home-based care to provide meeting places for employees. The associations between the sum index score and the municipalities paired with sectors did not show any such trends, however.

Scott et al. [29] point out that the culture of an organization is related to performance; and Schein [30] has noted that what people do—their activities—is a significant component of organizational culture. Thus, quality improvement activities can be an indication of whether or not units have implemented the quality improvement philosophy. The results of this study show that large municipalities have more quality improvement activities than small municipalities do. Large municipalities may have established more comprehensive internal management systems, requiring that quality be one of several areas of documentation. New organizational trends may also attract large municipalities. Large municipalities have more employees—both leaders and nurses—creating a more extensive professional network, and ideally enabling them to implement national quality guidelines. Large municipalities are more likely than smaller communities to have a larger pool of nurses to draw from, and therefore more likely to have nurses who have chosen leadership as a career path. Furthermore, leaders in large and small municipalities may have widely differing approaches to controlling the work practice of their employees. In small municipalities, the leaders may assess quality by watching the care directly and by the feedback from the inhabitants of the community who know the elderly person and the leader. In large municipalities, however, leaders may require quality improvement activities as a part of their management system.

Other causes of small quality improvement activities

The quality improvement philosophy has not been fully implemented in LTC. Does the implementation of quality improvement in itself represent the main challenge, or is the primary challenge related to some quality improvement components? Rondeau and Wägar [31] found that fully 70% of attempts at implementing quality improvement in nursing homes have failed a finding that they consider to be the result of ineffective implementation systems. Øvretveit [5] concluded that quality improvement is not easy to implement, because of the way it is introduced into the organization and used by leaders. Lucas et al. [27] and Davies and Cripac [32] are clear about the need for a proactive approach to quality improvement—one that includes both education and training as key factors to successful implementation.

LTC in Norway is characterized by a small number of first-line leaders, each one supervising an average of 31 employees. Part-time employees are used extensively in LTC; in fact 40% of employees worked <19 h per week in 2005 [33]. Both these factors may affect quality work in the unit; first-line leaders may be exceptionally busy with all the administrative and personnel-related tasks associated with a workforce with highly prevalent part-time appointments.

This study investigated four factors associated with quality improvement activities, but other factors should be investigated in the future. Are there associations between quality improvement activities and the leader’s formal and informal education in quality improvement philosophy and tools? Have large municipalities established more comprehensive internal management systems? If so, have these systems created differences between quality improvement activities in large versus small municipalities? This study provides no information about the associations between quality improvement activities and the actual quality of care. So far, we consider this as an open question to be discussed in the light of further empirical research. In the future, Norway will be collecting clinical outcome data for LTC that will allow researchers to study the associations between quality improvement activities and clinical outcome indicators.

Methodological considerations

This study comprised 64 units in 32 municipalities—the same 32 municipalities involved in the Norwegian NorLAG study. Although this is a small sample, the municipalities were strategically selected and represent typical demographics practically in all region of the country. The results should provide a good indication of key aspects of quality improvement activities in LTC in the municipalities in Norway.

Middle managers in the selected municipalities were contacted in order to help us to find respondents. In municipalities where these managers had a choice of several first-line leaders, they may have selected respondents with a special interest in quality improvement or respondents who had shown particularly good results in quality improvement work in their unit. If this is the case, the descriptive results may be skewed toward the positive.

There may be a social desirability bias in the answers given by the informants in this study. However, one person—a nurse—conducted all telephone interviews, thereby creating what may have amounted to a conversation between colleagues. We believe this reduces social desirability bias. In addition, the questions were stated objectively: (e.g. How is it done? Which measurements are used?), and were followed by questions about the progress, the results and the documentations.

Conclusion

In this study, we analysed the scope of quality improvement activities based on six quality improvement components. The results show that nursing homes and home-based care units made greater progress in implementing the general quality
improvement components than they did in implementing the technical quality improvement components that require training in tools and techniques. Leaders had not undergone this training as part of their basic nursing education, in further management education, or in internal training in the municipalities. Quality improvement involvement varied among municipalities. A sum index score was used as a dependent variable and four independent variables were analysed in a multivariate analysis in order to explain the variation. The size of the population of the municipalities showed a significant independent association with the scope of quality improvement activities, in that large municipalities had more activities than small municipalities did.

References


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