

Nursing home care quality: a cluster analysis

Nursing home
care quality

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Abstract

Purpose – The purpose of this paper is to explore potential differences in how nursing home residents rate care quality and to explore cluster characteristics.

Design/methodology/approach – A cross-sectional design was used, with one questionnaire including questions from quality from patients' perspective and Big Five personality traits, together with questions related to socio-demographic aspects and health condition. Residents ($n = 103$) from four Norwegian nursing homes participated (74.1 per cent response rate). Hierarchical cluster analysis identified clusters with respect to care quality perceptions. χ^2 tests and one-way between-groups ANOVA were performed to characterise the clusters ($p < 0.05$).

Findings – Two clusters were identified; Cluster 1 residents (28.2 per cent) had the best care quality perceptions and Cluster 2 (67.0 per cent) had the worst perceptions. The clusters were statistically significant and characterised by personal-related conditions: gender, psychological well-being, preferences, admission, satisfaction with staying in the nursing home, emotional stability and agreeableness, and by external objective care conditions: healthcare personnel and registered nurses.

Research limitations/implications – Residents assessed as having no cognitive impairments were included, thus excluding the largest group. By choosing questionnaire design and structured interviews, the number able to participate may increase.

Practical implications – Findings may provide healthcare personnel and managers with increased knowledge on which to develop strategies to improve specific care quality perceptions.

Originality/value – Cluster analysis can be an effective tool for differentiating between nursing homes residents' care quality perceptions.

Keywords Cluster analysis, Care quality, Nursing homes, Residents' perceptions

Paper type Research paper

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Introduction

Nursing home service quality requires investigation owing to their highly vulnerable residents (Hughes and Moore, 2012). Most nursing home residents are old and frail, and they have complex health problems. They are dependent on advanced individual nursing care (Nakrem *et al.*, 2011). With increasing longevity and growing elderly population, people requiring nursing home care is rising quickly in Norway (Syse and Pham, 2014), as elsewhere in Europe (Luijben *et al.*, 2013). To understand how nursing homes resident experience care quality, it is important to ask the individuals in question. What do we know about residents' care quality perception? Studies involving residents in nursing homes are often small samples (Train *et al.*, 2005; Westin and Danielson, 2007; Nakrem *et al.*, 2013). Relatives and healthcare personnel are often asked to respond owing to the residents' poor physical and mental health (Crow *et al.*, 2002). When nursing home residents are asked, they tend to rate the care higher than both their relatives and nursing staff (Hasson and Arnetz, 2010).

A review found that service quality for older people is still poor despite considerable efforts to improve care (Askari *et al.*, 2011). Previous research indicated that most patients received good basic care in Norwegian nursing homes, but quality varied with residents' daily living activities (ADL) (Kirkeveld and Engedal, 2006). Care quality was strongly negatively associated with low ADL, mental capacity and aggressive behaviour. Ward types, more patients and fewer staff all had a negative influence on care quality

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(Kirkevold and Engedal, 2008). A more recent review found no consistent relationship between nurse staffing and care quality (Backhaus *et al.*, 2014). Another study investigating factors influencing residents' satisfaction with care provision found that healthcare staff satisfaction affected residents' satisfaction. More care hours seemed to have a positive impact on satisfaction and older residents were more satisfied with care than younger (Chou *et al.*, 2003). The ambiguities between residents' nursing home perceptions as their home, and at the same time the institution where they receive healthcare, tend to have a negative impact on residents' care quality perceptions (Nakrem *et al.*, 2013). Nursing home administrators tend to claim that they provide person-centred or holistic care, but research indicates that institutional goals take precedence (Hughes and Moore, 2012).

A general trend towards positive patient-reported healthcare evaluations could be taken as a sign that most patients form a homogeneous, reasonably pleased group and consequently that there is little need for quality improvement. However, studies using cluster analysis to explore potential differences and similarities among hospital patients revealed significantly different patient groups (Grøndahl *et al.*, 2011; Bjertnæs *et al.*, 2013). No similar studies are available for nursing homes, which demonstrates the need to investigate quality initiatives. Cluster analysis may uncover residents' characteristics, who consider healthcare quality better and those that consider it worse, and thus allowing healthcare quality work to be tailored to where it is most needed.

Aim

Our aim was to explore differences in how nursing homes residents rate care quality by using cluster analysis and by exploring cluster characteristics regarding person-related and external objective care conditions. The following objectives were addressed:

- (1) explore residents' profiles regarding patients' care quality perceptions (perceived reality (PR)); and
- (2) Describe and compare person-related conditions: demographic characteristics, health-related aspects, personality and the external objective care conditions that characterise and profile residents' clusters.

Method

Design

We used a cross-sectional design.

Research sample

The sample included residents living in four nursing homes in one municipality in a county comprising 18 municipalities and 33 public nursing homes in South-East Norway. The nursing homes varied from 40 to 87 residents (two to six wards), which represent the nursing homes in Norway. There were 216 residents in the nursing homes when the study was conducted. Residents meeting the following inclusion criteria were invited to participate: able to communicate; health status should permit participation; clinical dementia rating (CDR) (Hughes *et al.*, 1982) score should be ≤ 1 and; be willing to participate. The head nurse in each ward assessed the inclusion criteria and 139 persons were included. In total, 103 residents agreed to participate and answer the questionnaire; a 74.1 per cent sample (47.9 per cent population response rate).

Data collection

The head nurse in each ward was responsible for giving oral and written information about the study's aims and methods to residents included in the study. Those who agreed to take

part were randomly divided into two groups, with two interviewers conducting half the interviews each. The registered nurse (RN) interviewers had experience working with elderly people with various CDR ratings. They were scientific development workers in municipal health services where the nursing homes were part. They did not know the respondents they interviewed. Interviews were conducted in the respondents' rooms. Interviewers read each question aloud and wrote responses on the scales following each question. The completed questionnaire was returned in a sealed envelope to the head nurse's office, from where the researcher collected them.

Questionnaire

Questionnaires included 64 items, which measured respondents' care quality perceptions (PR and subjective importance (SI)), and questions regarding person-related conditions: socio-demographic aspects, health conditions and personality.

Cluster variables: PR

Cluster variables "Patient's care quality perception: perceived reality" were measured using the "Quality from the patient's perspective (QPP)" questionnaire short version (Wilde Larsson and Larsson, 2002) and items from the QPP long version (Wilde *et al.*, 1994). The questionnaire is patient-centred and derived from a theoretical care quality model (Wilde *et al.*, 1993). Care quality can be understood in organisation resource structures, encompassing person-related, physical and environmental conditions by patient preferences, which encompass both rational and human aspects. The model includes four dimensions (47 items) covering: caregiver's medical-technical competence (13 items), caregiver's identity-oriented approach (13 items), care organisation's physical-technical conditions (ten items) and care organisation's socio-cultural atmosphere (11 items). Each item was evaluated using PR and SI. The PR variables described how the respondent experienced various aspects and described their actual care perceptions. Items were evaluated with sentences related to the statement: "This is what I experienced [...]" (e.g. I have ample opportunity to get out of bed when I want to). A four-point response scale ranging from 1 (do not agree at all) to 4 (completely agree) was used. Each item also had a "not applicable" response. Each dimension's index was calculated by adding item scores and dividing the sum by items answered within that dimension. The PR Cronbach's α coefficients in this study were 0.67 for medical-technical competence; 0.87 for identity-oriented approach; 0.51 for physical-technical conditions; and 0.64 for socio-cultural atmosphere.

The person-related condition: socio-demographic characteristics, health-related aspects, SI and personality

Socio-demographic characteristics and health-related aspects comprised six items from the QPP questionnaire (Wilde Larsson and Larsson, 2002): age, sex, education, inpatient stay and respondent's self-rated health condition in response to: "How would you describe your present physical health condition"; and "How would you describe your present psychological well-being?" using a five-point scale ranging from 1 (very poor) to 5 (very good). Respondents were also asked about their admission to the nursing home and how satisfied they were with their stay: two items: "How was your experience with admission?" and "How satisfied are you with your stay here in the nursing home?", which were answered on five-point scales ranging from 1 (no, very bad) to 5 (yes, very good) and 1 (very dissatisfied) to 5 (very satisfied), respectively. Four items concerned their native language; whether they received an information pamphlet during admission, whether they were

informed about which physician was responsible for their treatment, and if they stayed in a single or a double room, or other design.

Respondents' SI was measured using 47 items from the QPP's four dimensions (Wilde Larsson and Larsson, 2002). The SI for each item described the importance ascribed by respondents to various aspects, as well as their preferences. Items were evaluated using sentences related to the statement: "This is how important it is to me [...]" (e.g. I have ample opportunity to get out of bed when I want to). A four-point response scale was used, ranging from 1 (little or no importance) to 4 (greatest importance). Each item also had a not applicable response. Each dimension's index was calculated by adding item scores and dividing the sum by items answered within that dimension. The SI Cronbach's α coefficients were: 0.79 for medical-technical competence, 0.85 for identity-oriented approach, 0.69 for physical-technical conditions and 0.69 for socio-cultural atmosphere.

The "Big Five personality traits" instrument (Woods and Hampson, 2005) measures respondent's personality on five dimensions: extraversion, agreeableness, emotional stability, conscientiousness and openness. Each dimension has one item presented as adjectives on nine-point bipolar scales. The instrument determines one score for each personality trait. A Big Five Norwegian version has been used in previous research (Grøndahl *et al.*, 2012) after being translated into Norwegian using back-translation (Brislin, 1970).

External objective care conditions

The variables describing external objective care conditions comprised three items: healthcare worker fulltime equivalents (FTEs), RN FTEs and bed numbers. Data were collected from ward statistics.

Ethical considerations

The study was approved by Norwegian Social Science Data Services (ref. 35916) and by the nursing head administrators taking part in the project. The head nurse in each ward assessed whether any resident's physical and mental health was such as to make it ethically justifiable to invite that resident to participate. The CRD scale was used if the head nurse was unsure of the resident's mental health. Residents received both oral and written information and they were required to give their written, informed consent to participate. Residents could withdraw from the project whenever they wanted without consequence. Confidentiality was ensured in accordance with the ICN's ethical guidelines for nursing research (International Council for Nurses, 2003).

Data analysis

Data were analysed using IBM SPSS version 22 (Field, 2013). Descriptive statistics: mean and standard deviations were used to describe the study sample and residents' care quality perceptions, both PR and SI. Cluster analysis was carried out using four dimensions: residents' PR (caregivers' medical-technical competence and identity-oriented approach; and the organisations' physical-technical conditions and socio-cultural atmosphere). Hierarchical cluster analysis on Z -standardisation, using Ward's method with squared Euclidean distance as the similarity measure, was used to identify clusters with high homogeneity within the clusters and high heterogeneity between the clusters on residents' care quality PR (Hair *et al.*, 2010; Everitt *et al.*, 2011). Robust and trustworthy classifications were obtained by choosing cluster solutions that produced the smallest possible increase in the error sum of squares (Aldenderfer and Blashfield, 1984). Two PR clusters were compared using independent samples t -test (Hair *et al.*, 2010; Pallant, 2013). χ^2 tests were run with categorical variables to compare clusters and one-way

Q3 between-groups ANOVA with the *post hoc* test (Tukey's test) was performed with continuous variables to compare the clusters (Hair *et al.*, 2010; Pallant, 2013). Statistical significance was set at $p < 0.05$.

Results

Respondent characteristics

In total, 103 (74.1 per cent) residents answered the questionnaire on which cluster analysis was performed. Table I shows the respondents' characteristics.

Cluster descriptions

Two unique respondent clusters with different care quality PR patterns were identified. There were only five respondents that did not fit in either cluster. Respondents scored poorly on medical-technical competence (mean 2.73), but higher on identity-oriented approach (mean 3.0) and physical-technical competence (mean 3.5). Non-applicable responses were given on the socio-cultural atmosphere. Respondents in the two clusters scored statistically significantly different on all four quality dimensions. Table II shows the cases and care quality perceptions in the two unique clusters.

Cluster 1: care quality – best perceptions

This cluster represents 28.2 per cent of the respondents and has the best care quality perceptions. Scores on all four care quality dimensions are statistically significantly higher than the scores in Cluster 2. The respondents are more likely to be women.

Variable	n (%)
<i>Age</i>	
45-66	11 (10.7)
67-79	19 (18.4)
80-89	47 (45.6)
90+	26 (25.2)
<i>Gender</i>	
Men	40 (38.8)
Women	63 (61.2)
<i>Educational level</i>	
Compulsory school	46 (44.7)
Upper secondary school	37 (35.9)
University	20 (19.4)

Note: n = 103

Table I.
Respondents' characteristics

Cluster description n (%)	1	2	p
	Best perceptions of care quality 29 (28.2)	Worse perceptions of care quality 69 (67.0)	
Medical-technical competence (PR) ^a	3.79 (0.24)	3.20 (0.52)	0.001
Identity-oriented approach (PR) ^a	3.56 (0.35)	2.37 (0.45)	0.001
Physical-technical competence (PR) ^a	3.76 (0.29)	3.41 (0.44)	0.001
Socio-cultural atmosphere (PR) ^a	3.63 (0.33)	3.05 (0.64)	0.001

Notes: ^aScored from 1 (lowest quality rating) to 4 (highest quality rating). Level of significance < 0.05

Table II.
Cluster description

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They have higher scores on psychological well-being, better experience with admission to the nursing home and were also more satisfied with staying in the home. Their SI preferences on all four care quality dimensions are higher than respondents in Cluster 2. Respondents in this cluster score higher on emotional stability and agreeableness. They tend to stay in homes with more staff and with proportionally more RNs.

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Cluster 2: care quality – worst perceptions

This cluster represents 67 per cent of the respondents and has the worst care quality perceptions. They score lower on all four care quality dimensions. They are equally divided when it comes to gender, but more men are found in this cluster. Their self-reported psychological well-being, admission experience and satisfaction with their stay in the homes are statistically significantly lower than Cluster 1. The scores for the four dimensions: preferences, emotional stability and agreeableness are also lower than Cluster 1. They tend to stay in units with fewer staff and proportionally fewer RNs. Tables III and IV show the cluster comparisons with respect to the person-related conditions and the external objective care conditions.

Cluster descriptions <i>n</i> (%)	Best perceptions of care	Worse perceptions of	* <i>p</i>
	quality 29 (28.2) Mean (SD)	care quality 69 (67.0) Mean (SD)	
Self-reported physical health condition ^a	3.28 (1.2)	3.07 (1.1)	0.41
Self-reported psychological well-being ^a	3.97 (0.87)	3.48 (0.96)	0.02*
Experience of admission ^a	4.83 (0.38)	4.54 (8.82)	0.02*
Satisfaction with the stay in the nursing home ^b	4.79 (0.41)	3.90 (1.2)	0.001*
Extraversion ^c	5.25 (2.86)	5.08 (2.62)	0.78
Emotional stability ^c	6.63 (2.44)	5.02 (2.54)	0.006*
Openness ^c	4.88 (2.72)	4.92 (2.52)	0.95
Agreeableness ^c	7.04 (2.44)	5.17 (2.15)	0.001*
Conscientiousness ^c	6.22 (2.64)	6.56 (2.19)	0.53
Medical-technical competence (SI) ^d	3.48 (0.45)	3.12 (0.36)	0.001*
Identity-oriented approach (SI) ^d	3.27 (0.51)	2.92 (0.48)	0.002*
Physical-technical competence (SI) ^d	3.42 (0.41)	3.13 (0.33)	0.001*
Socio-cultural atmosphere (SI) ^d	3.33 (0.46)	3.07 (0.44)	0.01*
	<i>n</i> (%)	<i>n</i> (%)	<i>p</i>
<i>Age</i>			0.49
45-66	4 (4.1)	6 (6.1)	
67-79	7 (7.1)	11 (11.2)	
80-89	13 (13.3)	32 (32.7)	
90+	20 (20.4)	5 (5.1)	
<i>Gender</i>			0.05*
Men	7 (7.1)	31 (31.6)	
Women	22 (22.4)	38 (38.8)	
<i>Educational level</i>			0.36
Compulsory school	15 (15.3)	29 (29.6)	
Upper secondary school	7 (7.1)	27 (27.6)	
University	7 (7.1)	13 (13.3)	

Notes: ^aScored from 1 (very poor) to 5 (very good); ^bscored from 1 (very dissatisfied) to 5 (very satisfied); ^cscored from 1 to 9; ^dscored from 1 (little or no importance) to 4 (greatest importance). *Significance < 0.05

Table III.
Cluster comparisons:
person-related
conditions: socio-
demographic
characteristics, health-
related aspects,
subjective importance
(SI) and personality

Discussion

Care quality patterns

This study identified two resident clusters related to their care quality perceptions (PR) (actual care episodes). Cluster 1 residents had the best care quality perceptions on all four dimensions, but only 28.2 per cent were grouped in this cluster. Cluster 2 residents comprised 67 per cent and they had the worst care quality perceptions on all four dimensions. No previous research using cluster analysis in nursing homes was found, but clusters identified in this study are lower than in previous hospital-based research into patients experiences and satisfaction used as cluster variables (Grøndahl *et al.*, 2011). The current study identified one top-score and one low-score cluster, though a medium-score cluster was absent possibly owing to total respondents, which might be seen as low when performing cluster analysis (Hair *et al.*, 2010). However, the study's response rate is high despite the residents' frail health state. About two-thirds (Cluster 2) perceived care quality as low, with the lowest score for the caregivers' identity-oriented approach (mean 2.37). One review found that care quality for elderly patients was still relatively low (Askari *et al.*, 2011). However, results from a previous study indicated that most patients in Norwegian nursing homes received good basic care (Kirkeveld and Engedal, 2006). The differences in results may be seen as a changing healthcare system, with nursing home residents now having more complex medical and healthcare needs than was the case a few years ago (Luijben *et al.*, 2013; Syse and Pham, 2014), but without a sufficient increase in healthcare personnel to address these needs (Statistics Norway, 2015).

Person-related conditions: socio-demographic characteristics, health-related aspects, preferences (SI) and personality

Residents in the two clusters differed regarding gender, their nursing home admission experience, self-reported psychological well-being and their satisfaction with the stay. Cluster 1 contained more women. Previous studies are inconclusive regarding correlation between gender and care quality (Crow *et al.*, 2002). Cluster 1 residents with the best perceptions scored higher on admission experiences, psychological well-being and satisfaction with the stay than Cluster 2 residents. The scores on admission experiences for Cluster 1 residents indicate positive experiences, which also correlates with high scores for care quality. Previous research on elderly people's nursing home relocation experiences found that their admission experience seems to affect how well they settle into long-term care, how satisfied they are with their stay and how they perceive care quality (Fraher and Coffey, 2011). It is disturbing, however, that Cluster 2 results seem to indicate that most residents have a poor nursing home admission experience. It might therefore be an area for improvement.

Previous research into psychological well-being and satisfaction ratings shows that patients either rate both high or low (Grøndahl *et al.*, 2012). An Australian study found that residents were, to a great extent, satisfied with care quality, but felt that they were not able

Cluster descriptions <i>n</i> (%)	Best perceptions of care quality	Worse perceptions of care quality	<i>p</i>
	29 (28.2) Mean (SD)	69 (67.0) Mean (SD)	
Health personnel (FTE)	21.93 (4.17)	19.56 (3.78)	0.01*
RNs (FTE)	10.36 (3.40)	8.07 (3.15)	0.003*
Bed numbers	23.77 (3.85)	23.57 (4.74)	0.85

Note: *Significance < 0.05

Table IV.
Cluster comparisons:
external objective care
conditions: staffing,
RNs and bed numbers

to live to their full potential. Consequently, their life quality was less good (Hughes and Moore, 2012). Furthermore, one study showed that elderly people in nursing homes perceived the setting as their home, while at the same time not like a home. High-quality care was experienced when ambiguities were managed well and a home could be created within the institution (Nakrem *et al.*, 2013). Nursing home residents are found to score lower on health-related quality of life than the general population (Drageset *et al.*, 2008). In our study, six from ten residents rated their psychological well-being low (Cluster 2). It is possible that residents with low scores for psychological well-being also criticise healthcare provision and therefore rate care quality low (Crow *et al.*, 2002).

Cluster 2 residents also had lower scores for emotional stability and agreeableness (two Big Five personality traits) (Woods and Hampson, 2005) than Cluster 1 respondents. This indicates that Cluster 2 residents tend to be more sensitive, excitable and tense, and additionally more forthright, critical and ready to find fault with others (Woods and Hampson, 2005). Altogether, residents with these characteristics may be more critical when assessing the whole situation (Crow *et al.*, 2002). However, it might be possible that Cluster 2 residents receive lower quality healthcare. Results from one study examining nurses' relationship with patients they regarded as difficult, found that nurses kept an emotional distance and consequently some patients' health problems were not recognised (Michalesen, 2012), which might negatively affect residents' care quality perceptions.

High-scoring emotional stability and agreeableness Cluster 1 residents, can be characterised as relaxed, rarely becoming irritated and seldom feeling in low spirits. They are also generally trusting and forgiving, interested in people and liable to find it difficult to say "no" (Woods and Hampson, 2005). Research into the relationship between personality and nursing home care experiences is scarce. One hospital study found that high scores for agreeableness correlated with high scores for care quality (Grøndahl *et al.*, 2012). Previous studies are inconclusive regarding relationships between personality and hospital satisfaction (Hendriks *et al.*, 2006; Larsson and Wilde-Larsson, 2010). More research is needed in this area. Cluster 1 residents had higher scores on all four preference (SI) dimensions than Cluster 2, which means that their perceptions were in line with their preferences, which is how they wanted it to be. It is possible that wards with more fulltime staff, including more RNs have a positive effect on residents' preferences. Patients' preferences (SI) for care quality are found to correlate positively with patient satisfaction in hospitals (Grøndahl *et al.*, 2012). Greater nurse numbers are also found to be important for patient satisfaction (Kutney-Lee *et al.*, 2009).

External objective care conditions: health personnel, RNs and bed numbers

Staff FTEs seem to affect residents' care quality perception positively. Cluster 1 residents stayed in wards with more staff and with proportionally more RNs than Cluster 2 residents. The wards for both clusters were equal in size. Previous studies are inconclusive regarding the correlation between staffing and patient care quality perceptions. Some studies find that staffing ratios influence care quality (Kirkevold and Engedal, 2006, 2008) and that RN staffing has a large and significant impact on care quality (Akinci and Krolkowski, 2005; Lin, 2014), although there is no significant association between nurse aid staffing and care quality (Lin, 2014). Backhaus *et al.* (2014) found no consistent relationship between nurse staffing and care quality in nursing homes. Higher staffing levels, irrespective of formal education, were associated with both better and lower care quality indicators. Nursing home staff with no formal expertise are also found to be associated with an increased psychosomatic health problem risks and lower job satisfaction, and lower perceived care quality from the residents' perspective (Engstrom *et al.*, 2011). Our results confirm these findings, with Cluster 2 having the worst care perceptions and fewer RNs than Cluster 1. An educational

intervention study was carried out to improve nursing skills, aiming to improving elderly patient care quality, though without this significantly changing care quality ratings (Hasson and Arnetz, 2008).

Study limitations

Residents were assessed by the head nurse as having minimal or no cognitive impairments and able to express themselves verbally. Although the head nurse had good knowledge of the residents, this assessment may constitute a weakness insofar as it excluded the largest nursing home resident group; i.e., those with varying diagnoses. Up to 80 per cent of nursing home residents have a dementia or Alzheimer's diagnoses (Ministry of Health and Care Services, 2007), which is expected to increase (Strand *et al.*, 2014). Choosing different questionnaire designs and structured interviews might increase resident numbers able to participate despite frail health. However, more than 100 completed questionnaires were collected with sufficient resident numbers in two clusters (Hair *et al.*, 2010). Another weakness that could threaten validity and reliability was that two RNs conducted the resident interviews. An attempt was made to keep to a minimum any potential disparities in their approach and understanding; i.e., authors arranged a joint meeting at which the questionnaire and interview, as a method, were reviewed. The two RNs were experienced in working with elderly people with various CDR ratings. Cronbach' α for the scales that determined the care quality perception dimension in the questionnaire ranged between 0.51 and 0.87. Three from four Cronbach's values were comparable to those found in previous studies. One exception was α for the physical-technical conditions dimension, which at 0.51 was lower than found in previous studies (Wilde Larsson and Larsson, 2002; Grøndahl *et al.*, 2012). Dimension scales comprising fewer items result in lower Cronbach' α values (Streiner and Norman, 2008), which may explain the low physical-technical conditions dimension values. Results from this dimension should be interpreted with care. The questionnaire is, however, both widely known and used (Rahmqvist and Bara, 2010; Fröjd *et al.*, 2011).

Practice implications

Our study identified one top- and one low-scoring cluster regarding residents' care quality perceptions, with the largest cluster comprising residents who experienced the worst quality. It is important to develop strategies to target specific resident groups, aiming to increase their quality healthcare perceptions, without overlooking residents' individual needs. The caregiving workforce needs to be strengthened, and there is a need for developing and implementing nursing homes guidelines to improve care. Lastly, there is a need for studies to improve information systems for quality monitoring and to include the largest nursing home resident group; i.e., those with dementia or Alzheimer's diagnoses.

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