Original Article

International field test results of the Observable Indicators of Nursing Home Care Quality instrument

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Abstract
Researchers at the University of Missouri-Columbia developed the Observable Indicators of Nursing Home Care Quality instrument to measure the dimensions of nursing home care quality during a brief on-site visit to a nursing home. The instrument has been translated for use in Iceland and used in Canada. Results of the validity and reliability studies using the instrument in 12 nursing homes in Reykjavik, in a large Veterans Home in Ontario with 14 units tested separately, and in 20 nursing homes in Missouri, are promising. High-content validity was observed in all countries, together with excellent inter-rater reliability and coefficient alpha. Test–retest reliabilities in Iceland and Missouri were good. Results of the international field test of the Observable Indicators of Nursing Home Care Quality instrument points to the usefulness of such an instrument in measuring nursing home care quality following a quick on-site observation in a nursing facility. The instrument should be used as a facility-wide assessment of quality, rather than for individual units within a facility. We strongly recommend its use by practising nurses in nursing homes to assess quality of care and guide efforts to improve care. We recommend its use by researchers and consumers and further testing of the use of the instrument with regulators.

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Introduction

The issue of quality of care in nursing homes is one of international concern. Much public and private debate accompanies the decision to use nursing home services, and much energy and passion are expended by families, elders, public policy makers and health care providers in an attempt to ensure that care of at least adequate quality is provided. To better understand what quality of nursing home

care is, and to develop ways of measuring this multidimensional concept, a research team in the United States conducted extensive fieldwork with nursing home providers and staff, consumers and their families (Rantz et al. 1998, 1999). A theoretical model of nursing home care quality was developed using qualitative methods and proposed dimensions which have characteristics that can be directly observed (Rantz et al. 1998, 1999). Based on this theoretical model, the researchers constructed the Observable Indicators of Nursing Home Care Quality instrument with items to measure the dimensions during a brief on-site visit to a nursing home. This is a report of the international field test results of this new measure of nursing home care quality, and discusses the use of this instrument to guide nurses in nursing homes throughout the world to improve quality of care.

Background

Despite voluminous literature, it is clear that in the 1990s, when the research to better understand nursing home care quality was undertaken by our research team, quality of care in nursing homes had not been adequately defined (Davis 1991; Davis et al. 1997) and quality measures tended to encompass limited quality domains. For example, when Sainfort et al. 1995) compared 24 quality assessment models, they concluded that nursing home quality assessment tools measured only selected attributes of nursing home quality. They found that the models typically contained a greater number of elements of structural quality, such as attributes of physical plant, staffing, ownership, size, reimbursement rate and percentage private pay, rather than resident-level process or outcome measures.

Because quality is a multidimensional construct, instruments that accurately and reliably measure the quality of care in nursing homes have been difficult to contrive. Moreover, methods of evaluating quality of care are often labour and time-intensive, making them cumbersome to implement. One pilot study conducted in Wisconsin attempted to address this issue through the development of a facility-screening instrument for quality assurance purposes (Gustafson et al. 1980). This screening tool was devised to 'determine quickly and inexpensively whether a nursing home was delivering good quality care and to decide if changes should be made to improve quality'. Initially, about 2 h was needed for each two-person team to perform the facility screening using the following 11 criteria: philosophy; management; care management; resident–staff relationships; resident's condition; activities; safety of facility; staff; ties to community; resident population; and professional ties. Unfortunately, the instrument and its scoring became quite complex with further development. What began as a 2-h process in the pilot study became a procedure that required 1–2 days for a two-person team to administer in a 100-bed nursing home (Gustafson et al. 1990). Because the tool is time-consuming to use and complex, it is impractical as a tool for brief screening of nursing facilities to evaluate care quality.

The Multiphasic Environmental Assessment Procedure (MEAP) is a five-part procedure developed in the 1980s for evaluating the physical and social environments of residential settings for older people (Lemke & Moos 1986; Moos & Lemke 1996; Moos et al. 1979). Four of the five scales take about 6–7 h to complete, depending on the size of the facility. The residents of the facility complete the fifth scale, estimated to take about 30 min per resident (Moos & Lemke 1996). The authors report that they have combined subscales from the MEAP into eight indices of quality that cover physical setting, policies and services, and social climate. However, it should be noted that the purpose of the instrument is to evaluate environment, not quality of care.

Similarly, the Therapeutic Environment Screening Scale (TESS) is an observational screening instrument designed to assess the quality of nursing home environments for residents with dementia (Davis et al. 2000; Sloan et al. 1998; Sloane & Matthew 1990). The Professional Environmental Assessment Protocol (PEAP) is also specifically focused on measuring the environment of special care units in nursing facilities (Lawton et al. 1997, 2000). While environmental assessment is part of quality, the TESS or PEAP measures are too narrow in focus for use as a broad measure of nursing home care quality.

Satisfaction with care from the resident's point of view is important to understanding quality of nursing home care. Currently, many experienced nursing home researchers are actively working on ways to effectively and reliably assess satisfaction among nursing home residents (Applebaum et al. 2000; Cohen-Mansfield et al. 2000; Simmons et al. 1997; Uman & Urman 1997; Uman et al. 1999). Residents' perceptions of quality of nursing home care are challenging to reliably solicit (Pearson et al. 1993). Others have had similar difficulties in soliciting reliable answers to health care and satisfaction in consumer survey questions of frail older adults (Bowers 2000; Bowers et al. 2001). Quality of nursing home care is more than satisfaction with care. The Observable Indicators of Nursing Home Care Quality instrument was not designed to be a resident satisfaction survey measure. However, by observing nursing home residents and staff, the instrument taps many of the underlying qualities that resident satisfaction surveys address by questioning residents. Importantly, the instrument can help nurses guide their observations to include the many dimensions of quality of care and target efforts to improve care.

Conceptual framework of the Observable Indicators of Nursing Home Care Quality instrument

To conceptually address the missing dimensions of quality of nursing home care, researchers at the University of Missouri-Columbia conducted two exploratory qualitative studies using focus groups with providers and consumers of nursing home care (Rantz et al. 1998, 1999). One underlying premise of our research undertaken to understand quality of care in nursing homes was that both experienced providers, as well as consumers, should make quality judgements about a facility within a few minutes of sensory experiences (sights, sounds, smells, feeling) in the facility. The research probed for descriptions of sensory experiences that form the basis for judgements about quality of care. Participant comments revealed seven dimensions of nursing home quality of care: care; communication; staff; environment; family involvement; home; and central focus (see Fig. 1). As illustrated in Fig. 1, each dimension of quality of nursing home care has descriptions that explain each dimension. For example, the dimension of 'care' is explained by participant comments of 'taking care of the basics; individualizing care; treating residents as people; good food and assist with eating; engage residents in activities'. The dimensions discovered in this research are similar to the findings of Kayser-Jones (1990; Kayser-Jones 1991; Kayser-Jones 1996; Kayser-Jones & Schell 1997), that sights, sounds, smells and features of the nursing home environment and staffing are related to quality of care in nursing homes. These findings are consistent with those reported by Kane et al. (1997) when interviewing nursing staff about the everyday life of nursing home residents, as well as the recent study completed by Bowers et al. (2000) with nursing assistants who state that their relationships with residents are central to quality of care.

To construct the Observable Indicators of Nursing Home Care Quality instrument, researchers in Missouri took statements from the focus-group participants, reworded them into measurable statements and added Likert scales to construct items for the measure. It was important that the statements were not only measurable but also observable while visiting a facility. Several items were constructed for each dimension of the quality conceptual model derived from the research. We were also mindful of our goal for the instrument: that it should be able to be scored following a 20–30-min walk-through observation of a nursing home. Instructions direct the observer to walk through the living spaces, hallways and areas of the nursing home that are generally available to the public during ordinary business hours. The observer is to pay attention to the general environment, noise level, presence of odours, how staff are talking or paying attention to residents, and note other observations.

Field testing of the Observable Indicators of Nursing Home Care Quality instrument

The Observable Indicators of Nursing Home Care Quality instrument has been field tested and revised several times, with validity and reliability studies

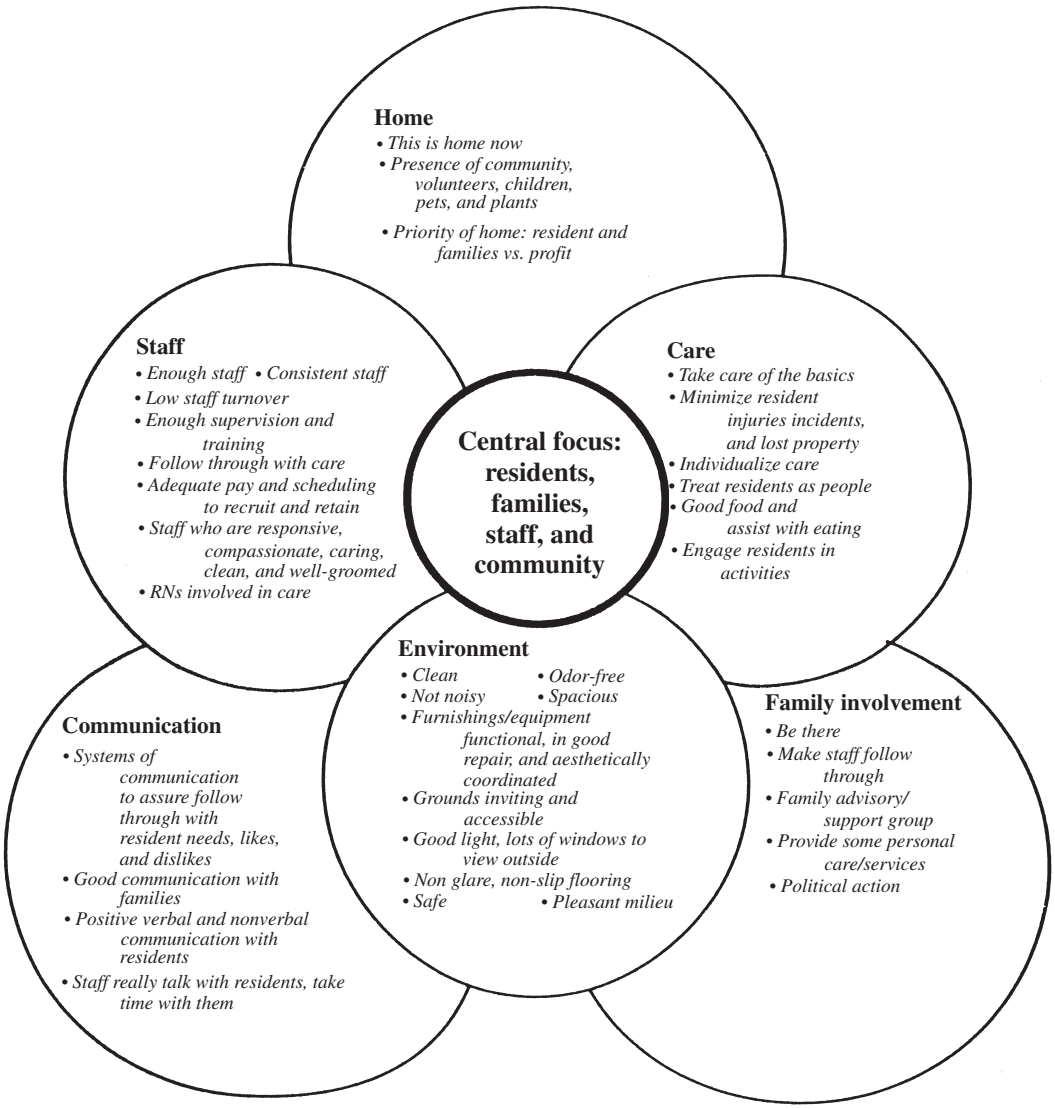

Fig. 1 Consumer and provider multidimensional model of quality in nursing homes.*

conducted for each version (Rantz et al. 2000, 2001). Revisions were made to achieve better clarity and precision of the items for improving reliability (both inter-rater and test–retest).

Nurses collaborating on research to improve quality of care internationally, volunteered to test Version 4 in a sample of 11 Icelandic nursing homes. The Observable Indicators of Nursing Home Care Quality instrument was translated into Icelandic and then back-translated for accuracy. The index of content validity, using the method of Waltz et al. (1984), was calculated for the Icelandic Version 4, and reliability testing was calculated using Spearman rank-based correlations. An index of content validity of 0.94 (four raters) was found, together with an overall test–retest reliability of 0.71 ($P = 0.01$, $n = 11$), but an inter-rater reliability of only 0.46 ($P = 0.46$, $n = 6$). Coefficient alpha was 0.87 ($n = 28$) for the total scale. Alpha reflects the internal consistency of the instrument. In discus-

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Facility_____
Date_____ Time_____
Observer 1____ 2____
Observation 1____ 2____

Did staff and residents have friendly conversations? (Communication)

1	2	3	4	5
Most did not	A few did	Some did	Many did	Most did

2. When staff talked to residents, did they call them by name? (Communication)

1	2	3	4	5
Most did not	A few did	Some did	Many did	Most did

3. Did residents and staff acknowledge each other and seem comfortable with each other (for example, smile, eye contact, touch, etc.)? (Communication)

1	2	3	4	5
Most did not	A few did	Some did	Many did	Most did

4. Did residents and staff interact with each other in positive ways (for example, conversation, humor, touch, eye contact, etc.)? (Communication)

1	2	3	4	5
Most did not	A few did	Some did	Many did	Most did

5. Other than at naptime or bedtime, were residents up and out of bed? (Care)

1	2	3	4	5
Most were not	A few were	Some were	Many were	Most were

6. Were residents dressed and clean? (Care)

1	2	3	4	5
Most were not	A few were	Some were	Many were	Most were

7. Were residents well groomed (shaved, hair combed, nails clean and trimmed)? (Care)

1	2	3	4	5
Most were not	A few were	Some were	Many were	Most were

8. Were staff visible? (For example, there should be enough staff on duty that as you tour you see them working about the nursing home.) (Staff)

1	2	3	4	5
Rarely seen	Occasionally	Sometimes	Often	Very Often

9. Were staff seen actively caring for residents? (Staff) (For example, staff should seem busy working with residents as you tour the nursing home.)

1	2	3	4	5
Rarely seen	Occasionally	Sometimes	Often	Very Often

10. Were registered nurses (RNs) visible? (Staff) (Look at name badges of staff to identify RNs) (This is important because registered nurses are needed to evaluate each resident and see that they get the care they need.)

1	2	3	4	5
Rarely seen	Occasionally	Sometimes	Often	Very Often

Fig. 2 Selected items from the Observable Indicators of Nursing Home Care Quality instrument.

sion with the international nurses who used the instrument and other international nurses, we identified cultural discrepancies that probably affected the instrument's performance.

Revisions in Version 5 of the instrument resulted from discussion with the international nurses and item analysis of Version 4. Additional items were incorporated and adjustments made to improve the instrument's cultural sensitivity internationally and in the United States. Version 5 was then field tested in Iceland, Ontario and Missouri as a collaborative research effort among the international nurses. Figure 2 presents selected items from the Observable Indicators of Nursing Home Care Quality instrument, Version 5, and Fig. 3 presents selected items from a quality improvement audit tool based on the instrument that was designed to help nursing home staff routinely evaluate their facility's care quality. The complete instrument and the quality improvement audit tool are available for health care professional and researcher use by contacting the authors.

Sample and data analysis

First, four content-raters were selected in each country and an index of content validity was calculated (Waltz et al. 1984). Raters in each country were advised to read carefully the instructions for observation and completion of the instrument.

Questions about completion of the instrument were answered (by e-mail and telephone) by the researcher in Missouri who developed the instrument. Twelve nursing homes agreed to participate in test–retest and inter-rater observations in the greater Reykjavik area in Iceland. A large Veterans home in Ontario, Canada, also agreed to participate. The Observable Indicators of Nursing Home Care Quality instrument was designed to be used throughout a single nursing home and had not been tested to score individual units. The staff of the Canadian Veterans home were interested in testing whether the instrument could be used on individual units with residents of diverse levels of care. They planned test–retest and inter-rater observa-

tions on their 14 different care units. In Missouri, 20 nursing facilities agreed to participate as sites for the reliability studies. Inter-rater and test–retest reliability using Spearman rank-based correlations were calculated for each sample, as well as internal consistency.

The *Observable Indicators of Nursing Home Care Quality* audit is designed to measure the many dimensions of nursing home quality. To use this audit walk through general living spaces, hallways, and areas of the nursing home or residential care facility generally available to the public. Answer the questions after the walk through has been completed. Total the number of yes answers and divide by the number of questions for the percentage of criteria in the audit met.

Audit Objectives:

1. To evaluate quality of care using criteria that is readily observed.
2. To identify areas that may benefit from more in depth review.

Resident Sample: All female and male residents, and staff of the facility.

Date of evaluation_____Time of evaluation_____

Audit Criteria:

Do staff and residents converse in a friendly manner?	Yes No
Do staff call residents by their name?	Yes No
Do staff and residents acknowledge each other in a friendly, caring manner (i.e. smile, eye contact, touch)?	Yes No
Other than naptime or bedtime, are residents up and out of bed?	Yes No
Are residents dressed and clean?	Yes No
Are residents well groomed?	Yes No
Can you readily see staff working with residents?	Yes No
Are staff well-groomed and clean?	Yes No
Do staff treat residents with respect and dignity?	Yes No
Are there a variety of recreational activities available for residents with different capabilities?	Yes No

Fig. 3 Selected items from the quality improvement audit tool for the Observable Indicators of Nursing Home Care Quality instrument.

Results

The reliability results improved with the revised Version 5 of the *Observable Indicators* instrument tested in the sample of 12 Icelandic nursing homes by nurse raters. An overall test–retest reliability of 0.90 ($P = 0.04$, $n = 5$) was observed, together with an inter-rater reliability of 0.92 ($P = 0.0001$, $n = 12$). Coefficient alpha was 0.80 ($n = 29$) for the total scale. The index of content validity remained high, at 0.96 (four raters). Subscale results are presented in Table 1.

In the Canadian sample, the 14 units of the Veterans home were observed and scored by three different nurses and two other experienced long-term care staff who were not nurses. Overall test–retest reliability of observations completed on each unit was 0.36 ($P = 0.12$, $n = 21$), and an inter-rater reliability of 0.83 ($P = 0.0001$, $n = 19$) was achieved for the total scale. The coefficient alpha was 0.94 ($n = 53$) for the total scale. The index of content validity was high, at 0.91 (four raters) (see Table 1 for subscale results).

In Missouri, 20 nursing homes were observed by research nurses (Rantz & Mehr 2001). Test–retest reliability for the total scale remained high, at 0.76 ($P = 0.0001$, $n = 20$), and inter-rater reliability was 0.85 ($P = 0.0001$, $n = 20$). Coefficient alpha for each subscale was high: 0.72–0.93 for the subscales and 0.94 for the total scale ($n = 20$) (See Table 1). Weighted Kappa coefficients for individual items

Table 1 Subscale and total scale results of the Version 5 international field test of the Observable Indicators of Nursing Home Care Quality instrument

Dimension	*Items*	*Test–retest reliability*			*Inter-rater*			*Alpha*		
		Missouri n = *40*	*Iceland* n = *5*	*Canada* n = *19*	*Missouri* n = *40*	*Iceland* n = *12*	*Canada* n = *21*	*Missouri* n = *74*	*Iceland* n = *29*	*Canada* n = *53*
Communication	5	0.78	0.44	0.26	0.82	0.46	0.27	0.93	0.47	0.94
Care	9	0.67	0.63	0.30	0.79	0.69	0.71	0.86	0.64	0.82
Environment	16	0.74	0.90	0.77	0.85	0.67	0.82	0.83	0.60	0.85
Staff	6	0.62	0.30	0.21	0.68	0.67	0.74	0.79	0.55	0.87
Home/family	6	0.62	0.26	0.71	0.73	0.73	0.78	0.85	0.62	0.86
Total scale	42	0.80	0.90	0.36	0.85	0.92	0.83	0.94	0.80	0.94

revealed that 91% of the items achieved fair, moderate or substantial agreement between raters, 7% achieved slight agreement, and 2% achieved almost perfect agreement, using the strength of agreement interpretation criteria of Landis & Koch 1997) .

Discussion

The current Version 5 of the Observable Indicators of Nursing Home Care Quality instrument represents considerable developmental work based on a solid theoretical foundation. International collaboration assisted in revision of the instrument (from Version 4 to Version 5) to improve cultural sensitivity and reliability in the Missouri and Icelandic samples. The results from Canada were disappointing; however, the objective of the Canadian field test was to determine the usefulness of the instrument to detect differences across diverse units. The apparent answer to that question is that the instrument test–retest reliability is not sufficient when used as a measure for specific diverse units. That result is not particularly surprising, given that the instrument was intentionally designed as a broad measure of nursing home care quality to be used and scored after walking through an entire facility.

We believe that the Observable Indicators of Nursing Home Care Quality instrument can be very useful to nurses practising in nursing facilities throughout the world to help them examine the quality of care in their facilities and to focus efforts to improve the quality of care. For example, a nurse or other staff member could walk through their facility and score the instrument or the quality-improvement audit tool at regular monthly intervals. The scores can be compared to monitor changes of improvement or problems. Staff can be praised for the high quality of care detected by some items, and if problems are detected by other items, quality-improvement projects can be designed to help.

Because the instrument has several items for each of the dimensions of nursing home care quality, it can help guide quality improvement teams to consider areas for improvement projects. Such projects could include examining communication between residents and staff; watching staff respond to resident's requests for specific care or services; critically evaluating the home-like features of resident rooms and common spaces; paying careful attention to odours and their source; or examining resident grooming and hygiene. The many dimensions defined in the Consumer and Provider Model of Nursing Home Care Quality in Fig. 1 can provide direction to nurses about what topics to consider for quality-improvement projects.

The field tests in this international collaboration are small, so interpretations need to be cautious. However, based on the results of Version 5 and previous versions, we believe that the instrument has the potential to be both valid and reliable in providing a broad view of nursing home quality that goes beyond existing measures. We believe that the instrument has potential for use by consumers as they are making quality of care decisions when selecting nursing home care for loved ones. A version for consumers has been published in a consumer guide to assist in their decision-making process (Rantz et al. 2001), and a website (http://www.nursinghomebook.com) is available for consumer use. We encourage nurses to offer the consumer guide to people faced with making a choice for long-term care services. Additionally, the guide can also help nurses examine their facility in a new light, from the viewpoint of consumers. Much can be learned from how nursing homes look and function, from the perspectives of residents and their families.

Regulators are interested in using the Observable Indicators of Nursing Home Care Quality instrument. Plans are underway for field testing and evaluation of the instrument for use by regulators as a method for quickly assessing the general quality of care in a nursing home. Regulators need ways of targeting scarce resources to facilities with quality of care problems as well as ways of quickly identifying facilities with excellent quality of care. Resources can be shifted from oversight of facilities delivering excellent quality of care to those struggling to attain minimum standards.

We envisage use of the instrument by researchers in combination with other quality measures, such as Minimum Data Set (MDS) quality indicators, regulator survey results, complaints by consumers, or

consumer satisfaction survey results. Research about quality of care in nursing homes needs to measure multiple dimensions of quality. Using multiple approaches that include the use of the Observable Indicators of Nursing Home Care Quality instrument can significantly enhance research.

In summary, the results of the international Version 5 field test of the Observable Indicators of Nursing Home Care Quality instrument points to the usefulness of such an instrument for measuring nursing home care quality following a quick on-site observation in a nursing facility. We recommend its use by practising nurses in nursing homes throughout the world to focus efforts to improve quality of care. Using an instrument that measures the many dimensions of quality of care has the potential to better detect areas in need of improvement and to reinforce areas where care is excellent. We recommend the use of the instrument by consumers. Although additional testing will probably improve it for consumer use, many consumers who have used the Observable Indicators of Nursing Home Care Quality instrument in its current form, found it extremely helpful when assessing facilities for a loved one in need of care. We recommend its use by researchers and, with additional use and refinement, we are optimistic that there will be more evidence for the validity, utility, and reliability of the instrument for use by researchers. We recommend further testing of the instrument with regulators before widespread use. With additional research, we are optimistic that regulators will find it useful, valid and reliable for their purposes.

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