

*Nurs Admin Q*

Vol. 30, No. 2, pp. 178-181

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## Research Abstracts

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***Editor***

### **A New Reliable Tool for Nurse Administrators, Nursing Staff, Regulators, Consumers, and Researchers for Measuring Quality of Care in Nursing Homes**

#### **BACKGROUND**

Improving quality of care in nursing homes has been an ongoing challenge since publication of the 1986 Institute of Medicine's report, *Improving the Quality of Care in Nursing Homes*.<sup>1</sup> Finding ways to measure quality in nursing home care is a major issue in addressing this challenge. Researchers need new ways of measuring quality of nursing home care as they study the costs of nursing home care and outcomes of the residents served in nursing homes. Consumers need a guide to help them understand and measure quality of care as they choose a nursing home. State and federal regulators need new ways to examine and measure quality of nursing home care as they attempt to focus inspections on problem facilities. Despite advances in resident outcome-linked measures such as the federal minimum data set (MDS)-derived quality indicators and publicly reported quality measures, a huge gap remains in the absence of a valid and reliable instrument that can be readily available to quickly evaluate the multiple dimensions of quality of nursing home care.

Funding from the National Institute for Nursing Research (NINR) enabled large-scale field testing of an instrument to measure the observable multidimensional components of the concept of nursing home care quality. Field testing in 3 states was directed by re-

search teams at the University of Missouri - Columbia (MU) Sinclair School of Nursing (SSON) and the University of Wisconsin - Eau Claire College of Nursing. The instrument development was sparked by a cooperative venture between the Missouri Department of Health and Senior Services and the MUSSON to improve the quality of care in Missouri nursing homes. The Observable Indicators of Nursing Home Care Quality Instrument (OIQ) has been under development by the MU MDS and Nursing Home Quality Research Team for more than 10 years and has undergone numerous changes on the basis of qualitative and quantitative multidisciplinary research projects.<sup>2-6</sup> As the instrument name implies, each item refers to some directly observable aspect of quality of care in any nursing home. The instrument is designed to guide researchers, healthcare professionals, and consumers or regulators in appraising specific indicators of quality care during an approximate 30-minute inspection of a nursing home.

#### **PURPOSE**

The *primary purpose* in this study was to complete the refinement and field testing of the OIQ, so that it can be used by other researchers. The *secondary purpose* was to assess the potential use by consumers and regulators.

#### **METHODS AND RESULTS**

The study began in 2003, using Version 7 of the OIQ in 407 randomly selected nursing homes in 3 states (Missouri, Wisconsin, and

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Minnesota). Version 7 consisted of 47 questions accompanied by a user's guide. Responses to the OIQ questions were rated using a 5-point rating scale, with anchoring descriptors for each point. Three groups of observers (registered nurses, consumers, and retired regulators) visited the nursing homes and some observers made visits in pairs, with one member returning 1 week later for interrater ( $n = 114$ ) and test-retest ( $n = 108$ ) observations.

Four methods of data analysis were performed on the data: exploratory factor analysis, confirmatory factor analysis, Classical Test Theory, and Generalizability Theory. These analyses resulted in a final instrument of 30 valid and reliable items with a coherent 7-factor structure: care delivery; grooming; interpersonal communication; environment—access; environment—basics; environment—homelike; and odors. Two higher order factors were identified and defined as *process* and *structure* and a third-order factor as *quality*. An important finding is that reliability of the instrument is improved by increasing the numbers of visits from 1 to 2 or by increasing the numbers of raters from 1 to 2. Results of the psychometrics analyses are in press now.<sup>7</sup>

Six content experts were asked to rate the relevance of each item on a scale ranging from 1 = not relevant to 4 = very relevant. The Content Validity Index (CVI) for Version 7 was 3.49; the final 30-item instrument at the end of field testing had a CVI of 3.58.<sup>7</sup>

The final 30-item instrument was analyzed using interrater and test-retest observations for all rater types (registered nurse, consumer, and regulator) for all facilities in the reliability study ( $n = 114$ ). Coefficient  $\alpha$ 's were calculated using all first registered nurse visits to all facilities in the study ( $N = 407$ ). Interrater and test-retest coefficients were all significant ( $P < .0001$ ) and ranged from .50 to .77 for all subscales, and the total scale was .76 for interrater and .77 for test-retest coefficients. Coefficient  $\alpha$  results ranged from .72 to .91 for all subscales, and the total scale was .91. Results indicate that the Observable Indicators Instrument has acceptable interrater and test-

retest reliability evidence, as well as strong internal consistency for all subscales and the total instrument.<sup>7</sup>

Construct validity was examined using survey citations and known groups analysis using MDS-derived quality indicators and quality measures. Survey citations are the results of regulator visits to facilities to determine compliance with state and federal nursing home regulations. Most important, survey citations were significantly correlated with the OIQ total quality score, the higher level subscales (process and structure), and all subscales. Next, a significant relationship was identified between groups of facilities (good, average, or poor) constructed on the basis of their quality indicator scores and the OIQ communication subscale; box plots revealed trends of better OIQ scores for facilities classified in the good group than in the poor group for most subscales (care, environment—homelike, environment—basic, odor, communication, grooming), the summative subscales (process, structure), and the total OIQ score. Quality measures were obtained from the Web site\* and used to aggregate the facilities into 3 groups on the basis of average percentile rank of the facility scores for 5 measures: activity of daily living, pressure ulcer, pain, restraints, and infection. No statistical differences between the 3 percentile groups and the OIQ score were found.<sup>7</sup>

As a final step, scoring guidelines for each subscale and the total score of the OIQ were developed on the basis of the distribution of scores from all observations ( $N = 694$ ). The OIQ scores above the 80th percentile were chosen as suggestive of a quality facility; scores below the 20th percentile were viewed as suggestive of quality problems.

## IMPLICATIONS

The possibilities for using such an instrument for researchers interested in measuring

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\*nursinghomecompare.gov.

quality of care in nursing homes as they approach numerous questions in nursing home research are obvious, as are the possibilities for helping consumers make better choices when selecting a facility for a loved one. A particularly important possibility for the OIQ is for it to serve as a valuable proxy for a full, resource-intensive team of regulators that is routinely needed for the nursing home state and federal survey process. It would be possible to conduct an abbreviated survey process, given an adequate score using the OIQ, and focus scarce regulatory resources to facilities in need of closer scrutiny. If used in this way, it would be important for regulators to be sure that two observers do a simultaneous walk-through and independently score instruments or that one observer makes two visits, independently scoring two instruments and averaging scores to maximize the OIQ dependability.

For nurse administrators responsible for a nursing home, there are possibilities for routinely using the OIQ to evaluate the overall quality of care. On the basis of our findings, we suggest two observers tour a facility on the same day, at the same time, not discuss their observations, and then each independently score an instrument. Their scores are averaged for each item, and subscale scores and total scores are calculated (directions are provided on the instrument). Using two raters and averaging their scores improves the reliability of the instrument. An alternative is for one rater to tour on two occasions, such as touring on one day and scoring a first instrument and then touring the next day or later in the week and scoring a second instrument (not referring to the first). Then, the two instruments are averaged for each item, and subscale scores and total scores are calculated.

The use of the OIQ could be routine and the observer could be a board member, community member, or particular staff to team up each month to complete the instruments and report results to a quality improvement team in the facility. Another idea is, have members of a facility quality improvement team tour the facility and score the instrument monthly;

in this case, it would be important for the staff member to approach the facility after being away from the building or outside for some time so that odors can be detected more readily.

For facility staff having access to a valid and reliable instrument that measures nursing home care quality can be a huge help to facilities as they approach quality improvement. Fresh perspectives and challenges to the quality improvement team are necessary to help them continuously identify issues to improve and also have ways to measure their improvement. Displaying monthly results of the OIQ using line graphs of results from prior months for each subscale (care delivery; grooming; interpersonal communication; environment—access; environment—basics; environment—homelike; and odors) can illustrate areas in need of attention as well as improvements; graphs of the summative subscales (process, structure) and the total OIQ score can illustrate overall progress.

The extensive work performed on the OIQ over the last several years and the psychometric evidence from the recent NINR-funded large-scale study indicate that the OIQ is a brief instrument that evaluates the multidimensional concept of nursing home quality of care in a reliable and valid manner.<sup>7</sup> Copies of the instrument and a user's guide have been mailed to nursing homes in the 3 states that participated in the research project and are available from the authors upon request. The instrument can be ordered at no charge via the Internet at a Web site\* maintained by the MU MDS and Nursing Home Quality Research Team for providers, consumers, regulators, and other researchers.<sup>†</sup> A residential care version is under development<sup>9</sup> with additional field testing planned.

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\*[www.nursinghomehelp.org](http://www.nursinghomehelp.org).

†A consumer version of the OIQ and guide for selecting a nursing home for a loved one, *The New Nursing Homes: A 20 Minute Way to Find Great Long Term Care*,<sup>8</sup> is available from Fairview Press at 1-800-544-8207 or [www.fairviewpress.org](http://www.fairviewpress.org) and online book stores.

## ACKNOWLEDGMENTS

The authors acknowledge the contributions of other MU MDS and Nursing Home Quality Research Team, and gratefully acknowledge the ongoing support of the Missouri Department of Health and Senior Services staff, the Missouri Healthcare Association, and the Missouri Association of Homes and Services for the Aged; they are truly committed to helping nursing homes embrace quality improvement. Research activities were supported by the NINR grant

1R01NR/AG05287-01A2. Opinions are those of the authors and do not represent the NINR.

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