Nursing Education and Improvement in Oral Care Delivery in Long-Term Care

Julie K. Gammack, MD, and Shailaja Pulisetty, MD

Objective: To determine if a facility-wide oral care educational program will improve the quality of routine oral care provided to nursing home residents.

Design: Single-blind, pre-post observational study of direct caregivers providing routine oral care to residents in 2 nursing homes.

Intervention: A 30-minute oral care program including lecture, demonstration, and hands-on skill training led by a research-trained dental hygienist.

Results: Twenty-eight subjects were observed during 110 pre- and 119 posteducation oral care encounters. One third of the subjects attended the facility-wide oral education program. Most facility residents were cooperative during oral care delivery. The average length of brushing to the teeth or dentures was 52 seconds and total time for oral care delivery was 2 minutes after the educational program. Approximately half of the residents received tooth or denture care with both toothbrush and paste, half had tongue cleansing performed and half received oral rinsing with water. One resident received flossing of the teeth. One third of the oral care encounters were performed without the use of gloves. There were no significant changes in any oral care activities after the educational intervention.

Conclusion: The oral care educational program did not result in improvement in the delivery of routine oral care to nursing home residents. **(J Am Med Dir Assoc 2009; 10: 658–661)**

Keywords: Oral care; dental; nursing home; long-term care; elderly

Oral care is a necessary but often underemphasized component of personal care provided to residents of long-term care facilities. According to the *State Operations Manual* for nursing home regulation, guideline 483.25(a)(3) states that, "a resident who is unable to carry out activities of daily living receives the necessary services to maintain good nutrition, grooming, and personal and oral hygiene." The guideline further states that the facility must assist residents in obtaining both routine and emergency dental services. No additional guidance is provided in the manual on the nature, frequency, or definition of "adequate" oral care.[1] The Minimum Data Set (MDS) 2.0 Section L, Oral/Dental Status includes a brief 6-question set regarding the status of the oral cavity. The MDS 3.0 Section L, to be published in the fall of 2009, is essentially unchanged from the previous version.[2]

Aging adults are living longer with their natural teeth but are experiencing more dental disease than in the past. The proportion of edentulous elders decreased from 71% to 43%, but tooth decay increased almost 50% over 15 years in one nursing home population.[3] A disease- and pain-free oral cavity is an important factor in the overall quality of life of older adults. In a survey of elderly subjects, one third rated their oral health as fair or poor and those with poor self-perceived oral health had lower morale, more life stress, and lower levels of life satisfaction.[4]

Because the oral cavity is colonized with bacteria, it is a potential source for oral, lung, and systemic infections. Improvements in oral hygiene have been associated with reduced rates of morbidity and mortality in institutionalized elders. Programs of oral care training for nursing staff have been shown to reduce the prevalence of gingival disease and oral inflammation in nursing home residents.[5,6] Research also indicates that those residents who received a dedicated oral care program had fewer episodes of pneumonia and lower mortality than those receiving routine oral care.[7,8]

Most oral care is provided by certified nursing assistants; however, little is known about the quality and quantity of care provided to the oral cavity in institutionalized adults. Most data on the provision of oral care are based on self-reports from direct care providers. In one of the first studies to directly observe oral care in the nursing home, a disturbing lack of time was spent on oral hygiene such as brushing the teeth and tongue with toothpaste, rinsing the mouth with water or mouthwash, flossing the teeth, assessing for mouth concerns, and wearing clean gloves during oral care.[9] The

Division of Geriatric Medicine, Saint Louis University School of Medicine, St. Louis, MO (J.K.G., S.P.).

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Address correspondence to Julie K. Gammack, MD, St. Louis University, 1402 S. Grand Boulevard, M238, St. Louis, MO 63108. E-mail: gammackj@slu.edu

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objective of our study was to assess the quality of oral care in a long-term care population and determine if an oral care educational program for staff would improve the overall quality of oral care for residents.

METHODS

Setting and Subjects

Using a prospective, pre-post single-blind observational model, 2 nursing homes (320 total beds) in St. Louis, affiliated with St. Louis University, providing both skilled and long-term care were invited to participate in an oral care education program. Permission for the study was granted by both the facility administrators, medical directors, and by the University Institutional Review Board. All direct-care staff providing daily oral care to residents were eligible to enroll as study subjects. Potential subjects were recruited by the researchers during a voluntary facility-wide oral care survey of direct caregivers. All staff who agreed to participate in the study signed an informed consent and were enrolled as study subjects. To maintain subject blinding to the study measures, participants were told that they would be observed on 2 separate occasions while, "performing usual oral care for the residents in order to better understand the difficulties faced when delivering this care." No further direction or instruction was provided regarding the method of delivering or observing oral care. Subjects completing both the pre- and postobservation sessions received a gift card for their participation.

Intervention

A facility-wide 30-minute multimedia educational program on oral care in the nursing home was provided to all shifts at both study sites over the course of 2 days. All staff were invited to attend the program and study subjects were encouraged, but not required, to participate in this training. The program was delivered by a licensed clinical and research-trained dental hygienist and included a lecture, demonstration, and hands-on skills training in oral care techniques. Participants received educational materials and oral care supplies at the completion of the program.

Measurements

Study subjects were observed while delivering routine daytime or nighttime oral care to facility residents before (up to 2 weeks) and after (4 to 6 weeks) the oral care training program. During the pre- and postobservations, each subject was observed for at least 2 oral care encounters during a single shift. Oral care was delivered by the subjects to his or her regularly assigned facility residents and in a routine manner without interruption or feedback by the researcher. Initial study subjects were observed simultaneously by both researchers until data collection techniques yielded reproducible interrater measurements. During the remainder of the study, subjects were observed by a single researcher and for the entirety of oral care delivery. A stopwatch was used to measure the duration of care activities and a checklist (Table 1) was used to document oral care activities.

Data analysis was performed using chi-square and Wilcoxon related sample calculations with the Statistical Package for the Social Sciences version 13.0 (SPSS Inc., Chicago IL).

RESULTS

Twenty-eight staff from the 2 facilities (N = 10, N = 18) participated in the study. All were nurses or certified nursing assistants. Eighty-six percent of the subjects were female and 75% were African American. Most subjects worked day or evening shifts and most oral care observations took place on these 2 shifts (Table 2). Before the oral care training, 110 observations took place, with an average of 3.9 oral care observations per subject.

A total of 68 staff at the 2 facilities participated in the facility-wide oral care educational program. Thirty-two percent (n = 9) of the study subjects attended this training program. After the oral care training, 119 observations were made with an average of 4.2 observations per subject.

Table 3 summarizes the characteristics of the resident encounters during the oral care observations. During oral care delivery, most residents were cooperative, but few were fully independent in their oral care. Most residents received oral care to either the teeth or gums. For those with dentures, only half received cleaning of both the oral cavity and the dentures. There were no statistically significant differences between the pre- and posteducation observations in these characteristics.

The characteristics of oral care delivered by the study subjects are listed in Table 4. There were no significant changes in any oral care measurement after the educational intervention. The average length of oral care delivery was 2.4 minutes per resident encounter before the intervention and

Table 1. *Oral Care Checklist*

Oral Activity Observed	Result
Resident oral care dependence	Independent Partially dependent Fully dependent
Resident cooperation	Cooperative Uncooperative
Oral surfaces cleaned	Teeth Dentures Tongue
Cleaning time	No. seconds
Oral supplies used	Swab Brush Paste Other
Denture care	Brushed Rinsed Soaked
Teeth flossed	Yes No
Mouth rinsing	Water Mouthwash
Mouth problems noted	Yes No
Clean gloves worn	Entire time Partial time None
Total time for oral care	No. minutes

Table 2. *Oral Care Subject Observations*

	Pretraining	Post-Training
Study subjects, n	28	28
Oral care observations, n	110	119
Average observations/subject	3.9	4.2
Subject primary shift, %		
Day	36	46.5
Evening	53	46.5
Night	11	7
Observations/shift, %		
Day	29	48
Evening	63	49
Night	8	3
Inservice participation, %	0	32

2.0 minutes afterward. Brushing to the teeth, gums, and/or dentures was 58 seconds in duration in the pretraining group and 52 seconds in the post-training group. Roughly half of the residents received this care with both a tooth brush and toothpaste. Fewer than 20% of residents had tongue care performed with a brush and paste and the average duration of brushing was 10 seconds or less. During the study observations, only 1 resident was observed to have flossing of teeth performed. Neither of the 2 facilities routinely stocked dental floss on the nursing care units.

The mouth was rinsed with water in half of the oral care encounters and with mouthwash in one third of encounters. Study subjects made note of mouth problems in fewer than 10% of residents during oral care activities and these problems were rarely reported to a supervisor. In one third of oral care encounters, subjects did not wear gloves at any time during mouth care.

DISCUSSION

There is little description in the literature or by professional societies on appropriate oral care techniques for long-term care residents. Coleman and Watson[9] described 8 oral care standards established by a consensus panel of experts. These standards were used to measure actual oral care delivered by certified nursing assistants in long-term care facilities. This study revealed a disturbing lack of attention to oral health. Of 67 residents observed receiving oral care, only 16% had teeth brushed with brush and paste, and 16% had the mouth rinsed with water. No residents received flossing, mouthwash, brushing longer than 2 minutes, or assessment for oral concerns. Only 1 resident had the tongue brushed, and clean gloves were never worn for the 19 residents who received assistance with brushing.

Using a similar checklist of oral care standards, our research demonstrated better use of brushing with paste, rinsing with water, and use of mouthwash, but had similarly poor reporting of oral concerns and irregular use of clean gloves during oral care. Despite a program of oral education provided to the facilities, there was no improvement in the provision of any oral hygiene activities to the facility residents by the study subjects.

Although inservice (brief skill-based didactic training) sessions are frequently used for staff development in long-term care, the impact on care delivery and retention of knowledge is in question.[10,11] Research does not consistently demonstrate the benefit in resident oral hygiene through staff education programs.

Sweeney et al[5] were successful in improving and sustaining the oral health of nursing facility residents using a 90-minute inservice-type oral care training program. Compared with baseline, the frequency of residents receiving "zero" oral care dropped from 44% to 10% at 18 months post-training. In another study, 130 subjects received either periodic oral care from a dental professional, daily oral care from a trained facility staff, or

Table 3. *Characteristics of Facility Residents During Oral Care Encounters*

Results	Pre (n=110)	Post* (n=119)
Cooperation, %		
Cooperative	88	92
Uncooperative	7	6
Refused	5	2
Oral self-care, %		
Independent	13	23
Set-up assistance	29	26
Dependent	58	51
Structures cleaned, %		
Teeth or gums	64	74
Dentures alone	18	17
Dentures and teeth/gums	9	8
None	9	1

* $P > .05$ for all values.

Table 4. *Characteristics of the Oral Care Delivery*

Results	Pre (n=110)	Post* (n=119)
Tooth or denture care, %		
Brush and paste	48	54
Brush only	39	41
Swab	13	3
None	0	2
Tooth/gum/denture brushing, sec	58	52
Tongue care, %		
Brush and paste	15	18
Brush only	6	2
Swab	32	28
None	46	51
Tongue brushing, sec	10	5
Flossed, n	0	1
Oral water rinse, %		
Yes	49	52
No	51	48
Oral mouthwash rinse, %		
Yes	23	20
No	77	80
Mouth problems noted, %	7	8
Reported to supervisor, %	0	11
Clean glove use, %		
Entire	66	60
Partial	1	4
None	33	36
Total oral care, min	2.4	2.0

* $P > .05$ for all values.

usual care. The group cared for by trained staff achieved the greatest improvement in denture and dental hygiene at 11 months compared with baseline.[12] In a third study, nursing homes were randomly assigned to oral health care education for direct caregivers versus usual care. Outcomes of plaque buildup, stomatitis, and gingivitis were measured at 1 and 6 months posteducation. Those facilities receiving the training had a significant reduction in the prevalence of resident oral disease at both 1- and 6-month observations.[13]

In contrast, 2 studies of oral health education did not show such positive results. MacEntee and colleagues[14] randomized 14 nursing facilities to either receive oral health staff training versus usual staff training in oral care. After 3 months, resident oral hygiene was not different from baseline and was not improved in the education group. Other researchers implemented a similar oral health training program for staff, but were not able to demonstrate a benefit in resident oral hygiene at 12 months or resident-reported improvement in oral care techniques provided by the staff.[15]

Our data demonstrated no improvement in the provision of standard oral hygiene techniques after an oral health inservice educational program. Lack of improvement may have been a result of insufficient subject exposure to the intervention, as only one third of subjects attended the oral care program. Lack of improvement may also be a result of unmeasured barriers in the delivery of oral care to our nursing home residents. Such barriers could include the level of facility staffing, time constraints from competing personal care duties, or inadequate training in the delivery of proper oral care.

Past data have suggested that oral hygiene may be difficult to provide because of resident resistance or lack of available oral care supplies. Neither our study nor the work by Coleman and Watson[9] indicated that resident resistance was a significant impediment when providing mouth care. The lack of appropriate oral supplies was a significant barrier for most residents studied by Coleman and Watson,[9] and this factor was noted in our facilities as well.

Unlike commonly studied quality measures such as fall rates and restraint use, "adequate" oral hygiene outcomes in the long-term care setting have not been well-defined. Before quality improvement initiatives can be implemented, appropriate standards of care must be established and methods of measuring and monitoring these activities must be developed. Guidance in this area would best be provided by national dental associations or long-term care societies rather than being proscribed by regulatory bodies. Future research in oral care must first focus on defining oral health standards so that performance improvement programs can be established and system barriers identified.

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