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“DEMENTIA-FRIENDLY HOSPITALS: CARE NOT CRISIS” AN EDUCATIONAL PROGRAM DESIGNED TO IMPROVE THE CARE OF THE HOSPITALIZED PATIENT WITH DEMENTIA

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Abstract

Background—Approximately 3.2 million hospital stays annually involve a person with dementia, leading to higher costs, longer lengths of stay and poorer outcomes. Older adults with dementia are vulnerable when hospitals are unable to meet their special needs.

Methods—We developed, implemented and evaluated a training program for 540 individuals at 4 community hospitals. Pre-test, post-test and a 120-day delayed post-test were collected to assess knowledge, confidence and practice parameters.

Results—The mean age of the sample was 46y; 83% were Caucasian, 90% were female and 60% were nurses. Upon completion, there were significant gains (p 's <.001) in knowledge and confidence in recognizing, assessing and managing dementia. Attendees reported gains in communication skills and strategies to improve the hospital environment, patient safety and behavioral management. At 120 days, 3 of 4 hospitals demonstrated maintenance of confidence. In the hospital that demonstrated lower knowledge and confidence scores, the sample was older and had more nurses and more years in practice.

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Conclusion—We demonstrate the feasibility of training hospital staff about dementia and its impact on patient outcomes. At baseline, there was low knowledge and confidence in the ability to care for dementia patients. Training had an immediate impact on knowledge, confidence and attitudes with lasting impact in 3 of 4 hospitals. We identified targets for intervention and the need for ongoing training and administrative reinforcement in order to sustain behavioral change. Community resources, such as local chapters of the Alzheimer's Association, may be key community partners in improving care outcomes for hospitalized persons with dementia.

Keywords

Dementia; Hospital Care; Education

INTRODUCTION

Alzheimer disease (AD), the most common cause of dementia affects over 5 million Americans.¹ In addition to cognitive and functional decline, AD and related dementias triple healthcare costs for individuals over age 65,^{2,3} and leading to increased morbidity and higher mortality.³ Studies suggest between 19–76% of patients with dementia are hospitalized 1.5–2 times per year.⁴ Using Medicare data, it is estimated that 3.2 million hospital stays involved a person with dementia in 2000, suggesting that up to a quarter of hospital stays of elderly persons were patients with dementia.⁴ In 2000, 9% of Medicare beneficiaries had at least one claim with a diagnostic code for AD (ICD-9: 331.0) or some other form of dementia, and these same individuals had three times more hospital stays than the average stays for all Medicare beneficiaries.⁵

The prevalence of dementia among persons discharged from acute care hospitals ranges from 4% to 27%.⁶ Current evidence reveals higher rates of hospitalization⁷ and levels of co-morbidity among patients with dementia than among cognitively intact patients,^{8–12} with falls and behavioral problems being frequent causes of admission.¹³ AD and related disorders may be poorly recognized in community settings and if unrecognized may serve as a trigger for a host of undesirable adverse events upon hospitalization, including falls, unintended injuries, deconditioning, malnutrition, incontinence, nosocomial infections, over- or under-medication, and adverse responses to medications, leading to poorer outcomes.^{6,14–17} Management of symptoms, particularly pain,¹⁸ is compromised, and disruptive, unsafe behaviors are common and often untreated.¹⁹ Thus, dementia appears to be associated with significant increases in functional disability, number of hospitalizations, lengths of hospital stay, rates of nursing home admission and death and health care costs.⁶

Given the aging population and the risks of dementia with increasing age, hospital staff can expect that the number of elderly persons presenting with memory problems in addition to medical and/or surgical problems when hospitalized will also increase. Dementia increases the burden of acute care systems and is associated with excessive use of nursing resources, higher complication rates, and longer stays.²⁴ Older adults, as well as their families and caregivers, are thus particularly vulnerable to systems of care that either do not recognize or are unable to meet their special needs.

Here we present the development, implementation and evaluation of a program entitled “Dementia-Friendly Hospitals: Care Not Crisis.” This program targeted nurses and other direct-care staff (social workers, pastoral care, discharge planners, physical therapists) working in hospital settings to provide them with information and resources to allow them to better care for patients with dementia from admission to discharge planning. The impetus for this program came out of the recognition that many of the Helpline calls received at the

Alzheimer's Association St. Louis Chapter dealt with the poor outcomes of hospital visits for patients with dementia.

METHODS

Study Participants

Five hundred forty staff members attended the 2 pilot and 8 training sessions. Two hospitals (Hospital A and B) were recruited via ongoing relationships with the Alzheimer Association to participate in the pilot program with 143 attendees. Following the pilot, 397 participants comprised of nurses, therapists, social workers, nurses' assistants, pastoral care and administrators signed consent to participate in research and attended one of two sessions held at 4 community hospitals in Missouri: Hospital A (N=68) located in suburban south St. Louis, Hospital B (N=66) located in southeast rural Missouri, Hospital C (N=97) in urban north St. Louis, and Hospital D (N=166) located in suburban St. Louis county. Each hospital was responsible for advertisement and registration via an online system. The Washington University Human Research Protection Office approved all procedures.

Program and Curriculum Development

The initial program content ideas developed from the John A. Hartford Institute for Geriatric Nursing and the National Alzheimer Association publications "Try this: Best Practices in Nursing Care for Persons with Dementia" (www.hartfordign.org/trythis). In 2006, the Alzheimer Association St. Louis Chapter and the Washington University Alzheimer Disease Research Center (ADRC) collaborated to conduct focus groups attended by staff from rural, urban and suburban acute care settings. Barriers to "dementia-friendly" hospital stays, staffing and training issues and unmet needs such as proactive training and hospital-wide system modifications were discussed. The focus group also made suggestions for better practices and improved outcomes. In 2007, the St. Louis Chapter of the Alzheimer's Association and the ADRC developed a pilot program for Hospitals A (suburban) and B (rural). In developing this program, it was important to establish relevance and validity of the program to urban and rural areas. Using feedback from these pilot programs, the curriculum was revised to incorporate group learning. Upon completion of these pilot programs, a national advisory panel was constituted to assist with curriculum development and program evaluation tools.

The curriculum consisted of 5 learning modules (Introduction, Medical Overview, Approaches to Communication and Behavior, Dementia Friendly Care, and Connecting the Caregiver). The curriculum contained both didactic information and incorporated group learning by asking groups to review case studies and generate care plans and discharge plans using forms specific to each institution. The Introduction module reviewed facts and figures associated with AD and introduced each of the accompanying modules. The Medical Overview module reviewed signs and symptoms of dementia, differential diagnosis and distinctions between dementia, delirium and depression. The module reviewed brief screening tools for assessing patients, both informant-based such as the AD8,²⁰ and performance measures such as the Mini-Cog.²¹ The Communication module reviewed language and comprehension difficulties associated with cognitive impairment and behavioral changes that accompany the different stages of dementia.²² The Dementia Friendly Care module reviewed topical issues such as safety interventions, falls, pain assessment, nutrition, use of restraints, wandering, agitation and diversion activities. The Connecting the Caregiver module reviewed the importance of early initiation of interdisciplinary discharge planning and referral to services such as those provided by the Alzheimer's Association.

The program lasted 7 hours and included ample breaks and lunch. Each module was delivered by a different specialist in that particular area; for example, a physician delivered the Medical Overview module, while a social worker from the Alzheimer's Association delivered the Connecting the Caregiver module. In addition, an associated Medical Grand Rounds at each hospital was offered to make physicians aware of the training made available to the staff.

Outcome Measurements

Participants completed the following evaluation materials: (1) a pre-test evaluating demographics, clinical practice characteristics, medical knowledge about dementia, confidence in providing care, and various practice behaviors; (2) a standard program quality rating form completed immediately after training; (3) an immediate post-test questionnaire similar to the pre-test to assess immediate gains in knowledge and confidence; and (4) a delayed post-test at 120 days to test maintenance of knowledge and confidence. Questions were investigator generated following input from focus groups, a review of the literature and comments from the advisory panel.

All participants were asked 6 questions regarding current practices and attitudes when caring for hospitalized patients with dementia on a 1–5 Likert scale with anchors “Strongly Disagree” and “Strongly Agree.” Content included frequency of encountering and difficulty working with demented patients, time to provide comprehensive care, value of family member input, previous training, and opinion on admission procedures. Five questions addressed respondents’ confidence in assessing and recognizing dementia, managing demented patients, differentiating delirium from dementia, communication skills and discharge planning on a 1–5 Likert scale with anchors “Not at all” and “Extremely.” A 9-item multiple choice test was administered testing knowledge of basic facts about dementia prevalence, risk factors, signs and symptoms, risk of elopement and use of restraints.

In addition to quantitative data, a series of qualitative questions were asked. On the pre-test, respondents were asked to list challenges they face when working with demented patients and skills or resources that would enable them to provide better care. The post-test asked for changes attendees would make in assessment, care or management of dementia patients. The 120-day post-test queried whether attendees were involved in the care of dementia patients, use of referral to the Alzheimer Association, changes in clinical care and remaining barriers faced when working with patients with dementia.

Statistical Analysis

Analyses were performed using SPSS version 15 (SPSS Inc, Chicago, IL). Descriptive statistics were used to characterize and compare groups. An outcome variable for knowledge was created on a continuous scale ranging from 0 to 14 by adding up the number of correct answers. Another composite variable was calculated to assess participants’ confidence in dealing with dementia issues and care on a 0–5 continuous scale with very much or extremely = 1, and all other answers = 0.

Three points of time were used to assess the benefits the participants gained from the workshop in terms of improving their knowledge, confidence, practices and attitudes in dealing with a dementia patient: a pre-test prior to the program, a post-test at its conclusion and a delayed post-test at 120 days. Paired sample t-tests, Chi-square tests and one-way ANOVA were used to assess the success of the program in achieving its goals and objectives. Stepwise linear regression was performed to assess predictors of knowledge and confidence gain among the participants at the end of the program.

There was a pre-planned analysis of hospital data regarding falls, use of restraints and antipsychotic medications, length of stay and re-admission rates before and after the program to evaluate whether gains in knowledge and confidence or change in attitudes and practice altered patient care outcomes. Unfortunately, the participating hospitals declined to provide this data to the investigators.

RESULTS

Sample Characteristics

Table 1 depicts the characteristics of the study participants from each of the four medical centers: Hospital D (41.8%), Hospital C (24.4%), Hospital A (17.1%), and Hospital B (16.6%). The mean age of the study population was 46 years and most were females (90.4%). Participants' reported ethnicity was 83% Caucasian, 10% African American, 3% Asian, and 2% Hispanic, while 2% did not respond. The participants were mainly nurses (60%). Most participants worked the day shift (73.3%), and 35% reported working on a medical-surgical ward. Participants reported that 68% of their patients were 65 years and older and that 29% of them had some form of dementia. Most participants (78.6%) had received three hours or less of training on dementia related issues and care within the last two years.

Immediate Benefits on Knowledge and Confidence

On a test of knowledge about dementia, the participants' scores significantly improved at the end of the program (Table 2). Participants were asked to rate their level of confidence in dealing with the hospitalized patient with dementia before and after the program. Participants reported a significant improvement in their overall confidence (Table 2) as well as in each individual variable: assessment and recognition of dementia, managing dementia care, differentiating dementia from delirium, communicating with the patient and family and discharge planning.

Immediate Benefits on Attitude and Practice

Participants were asked a series of questions regarding attitudes and practices towards the hospitalized patient with dementia (Table 3) rated as disagree, neutral or agree. The questions evaluated participants' perceptions in terms of the difficulties they face working with a dementia patient and providing enough time for comprehensive care, as well as their opinions about considering family members and caregivers in their health plans. They were also asked if they had received enough training to recognize and take care of patients with AD or other dementias, especially in terms of admission procedures. Following the program, there was a significant improvement in attitude with the exception of the respondents valuing help from family members and caregivers.

Program Evaluation

At the end of the education program, an evaluation was distributed among the participants to assess whether it achieved its objectives; 76.3% reported that the program was excellent and comprehensive; 92% found the handout material useful for future reference. Most participants (83%) agreed that the workshop covered ways to improve communication with patients with dementia and their family members or caregivers successfully. Attendees reported they had gained useful information regarding how to adjust the physical environment (e.g. light, noise) to suit the needs of a patient with dementia (83%), how to address disruptive behaviors or agitation (71%) and recognize safety issues to promote safer environments (81%). Participants also reported gains in pain assessment and medication effects (67%), strategies for providing nutrition and personal care for a patient with

dementia (72%), and usefulness of community referrals (i.e. Alzheimer Association) during discharge planning (81%).

Delayed Post-Test Results

Follow-up of the program participants was done 120 days after the date of the workshop to assess the maintenance and retention of knowledge and level of confidence, as well as their practices and attitudes towards hospitalized dementia patients. Incomplete contact information was provided by 142 attendees so that no post-test could be administered. Between the time of the immediate post-test and delayed post-test 4 months later, 17 participants had left their institutions (Hospital A = 4, Hospital B = 4, Hospital C = 5 and Hospital D = 4) and were lost to follow-up. Of the 238 participants who completed the immediate post-test and were still at their institution, 34 returned the delayed post-test (14.3% response rate). Characteristics of the delayed post-test sample are shown in Table 1. No differences in age, years of practice or experience with geriatric or demented patients were found. Respondents in the delayed post-test sample were more likely to be female ($p=.002$), white ($p=.03$), a therapist ($p<.001$) and work the day shift ($p<.001$). The delayed post-test sample was more likely to report no training in the care of dementia patients in the past 2 years ($p<.001$). When comparing post-test scores, three hospitals showed slight declines in knowledge at 120 days: Hospitals A, B and C (Table 4). However, there was a significant loss of both knowledge and confidence in the participants at Hospital A, while confidence in assessing and managing dementia patients remained stable at the other three hospitals.

The largest proportion of respondents to the delayed post-test was from 2 hospitals: Hospital A and Hospital D, which were also the hospitals with the highest retention of staff attending one of the training programs. Because of the differences between Hospital D (maintenance of knowledge and confidence) and Hospital A (loss of knowledge and confidence), we compared the characteristics of the original and delayed post-test samples between the two hospitals (Table 5). There were no differences in the original samples on any of the demographic variables, nor were there any differences in the immediate post-test scores for knowledge or confidence. When examining the demographic variables of the delayed post-test sample from Hospital A, the group who returned the delayed post-test was representative of the original group of participants in terms of their race, schedule, dementia training and experience with geriatric and demented patients. However, the delayed post-test sample was older ($p=.02$), contained more females ($p=.01$), had a higher proportion of nurses ($p<.001$) and had more years in practice ($p=.03$) when compared to the original sample. When examining the demographic variables of the retention sample from Hospital D, the delayed post-test sample contained more African Americans ($p<.001$), had a smaller proportion of nurses ($p<.001$) and had little to no dementia training in the past two years ($p<.001$).

Stepwise linear regression was performed to assess predictors of knowledge and confidence gain among the participants at the end of the program. Interestingly, those respondents who reported receiving dementia training for more than 3 hours in the past 2 years unexpectedly had a 1.3-fold decrease in knowledge after the program. None of the available characteristics seemed to be an indicator of confidence gain among the participants.

Qualitative Results

Participants were asked at the time of pre-test to list challenges they face when working with persons with dementia. The most common challenges include dealing with patient safety issues, how best to communicate with the patient and how well the patient understood the instructions they received (especially at discharge). Staff also noted challenges dealing with the lack of time they had to spend with the patients, family denial of cognitive problems,

behavioral and mood changes, confusion and a lack of staff education to deal with each of these challenges. Respondents were also asked to list skills, tools, supplies or resources they believed would enable them to better care for the person with dementia. The greatest unmet need was in-service training to increase the staff's understanding of dementia and strategies to improve the hospital environment for the patient with dementia. This included reducing the patient to staff ratio. Attendees also requested appropriate supplies and activity items to keep the patients occupied and strategies for improving communication skills and patient safety. Other requests included strategies to improve communication with families and caregivers and intervention approaches and resources for discharge planning.

At the post-test, attendees were asked to list two changes they would make in their assessment, care and discharge of the patient with dementia. The greatest behavioral change was to involve the families to a greater extent and to include a family questionnaire such as the AD820 in their assessments. The staff also recognized the need for improved communication skills with the patient, such as sitting and talking clearly, using nonverbal clues, and asking permission to touch the patient in order to improve care. Strategies to improve the hospital environment, such as better lighting, activity kits, music, familiar pictures and warm blankets, were listed, as was the need to refer patients to the Alzheimer's Association and other community resources at the time of discharge.

Other Unanticipated Results

In addition to planned outcome evaluations of knowledge, confidence and practices, a number of changes in the culture at the institutions have occurred. Three of the trained hospitals have instituted activity kits for hospitalized persons with dementia. Hospital B created "Chris' ARK" (Alzheimer's Recreation Kits) named after a donor's husband. Each kit includes: Twiddle muff™ (<http://beaulily.com/>), a photo album for the family to fill with pictures, soft books, Tangle Toys, an Alzheimer's Association catalog, a copy of "The Forgetting: Alzheimer's: Portrait of an Epidemic" by David Shenk and a 4 CD box set of music. The kits are being distributed to patients in the hospital with a dementia diagnosis, patients seen on the mobile van, and through the Lutheran Family Services Alzheimer's group.

Hospital A created a team of volunteers (called the "A-Team") especially trained to assist in the care of the hospitalized person with dementia. The "A-Team" centers its activity on the geriatric unit of the hospital, where volunteers spend weekday afternoons with patients with Alzheimer's disease or other forms of cognitive impairment. They provide companionship, alert a nurse if the patient tries to do something unsafe, and provide activities. The A-Team was launched at the end of October 2008 and is a pilot program of specialized care for patients with dementia. In addition, Hospital A instituted a "Code Green" procedure that placed patients at risk for elopement in green gowns and trained staff on appropriate dementia-friendly responses and precautions.

DISCUSSION

We were able to successfully train over 500 individuals at 4 area hospitals on dementia-friendly care. Most participants had little to no prior training in dementia care within the last 2 years. Following completion of the training program, an improvement in knowledge about and confidence dealing with the hospitalized person with dementia was seen and was associated with a significant change in attitude toward dementia care. We were able to identify the staff's unmet needs and barriers to improving care. The program was well received by the attendees and several unanticipated benefits resulted, including the development of specialized care teams, hospital procedures and activity kits for dementia patients.

Delayed post-tests demonstrated maintenance of confidence in assessing and managing dementia patients in 3 of 4 hospitals trained. This was surprising given that the hospital that did not retain knowledge or confidence (Hospital A) was the most proactive of the 4 hospitals, participating in the pilot program and developing ancillary care teams, procedures and activities for dementia care. It was also interesting that the strongest predictor for the *lack* of a gain in knowledge was in the 15% of attendees who reported they had had more than 3 hours of dementia training in the past 2 years. This may explain, in part, the loss of maintenance at Hospital A since staff from this institution reported the highest percentage of dementia education prior to the training programs. Participants who received such training may have relied on previously learned information and had limited uptake of new knowledge from the sessions. Alternatively, the information the staff received during previous training may have been incorrect or misremembered.

Cognitive impairment of any cause poses challenges to the healthcare providers in the hospital setting; such challenges include recognizing symptoms, making diagnoses, and dealing with potentially serious sequelae such as adverse effects of medications and procedures.^{23–28} Dementia in all its various forms, particularly at its earliest stages, may be overlooked by providers, leading to underdiagnosis and undertreatment.²⁹ Furthermore, symptoms of dementia, especially in the hospital setting, may be attributed to other causes such as delirium, depression, medication, infection or metabolic derangements.³⁰ This program originally was designed to evaluate whether educating the hospital staff most directly involved in patient care could improve these outcomes; however, at the completion of the programs, the hospitals decided not to share outcome data.

Care of the dementia patient while in the hospital may also be compromised. Dementia-related behavioral phenomenon may interfere with accustomed staff policies, placing more emphasis on individual needs of the dementia patient.³¹ Additional challenges include communicating with the demented patient, issues with managing nutrition and rehabilitation, and appropriate disposition at the time of discharge. Knowledge of dementia may not be enough to overcome these challenges;³² rather, changes in care practices may alleviate staff burden and improve patient outcomes. Results from this and other studies point to the burgeoning recognition by hospitals and acute care health professionals of poor outcomes and high costs associated with dementia care and the need to develop a solution.

There have been attempts to improve care of the hospitalized patient with dementia. One such project was initiated by the Providence Milwaukie Hospital (PMH) System in Portland, Oregon. PMH implemented a project to improve delivery of care with 5 goals, including improving recognition of dementia on admission, identifying special needs and risks, emphasizing the use of nonpharmacological interventions for behavior, involving family in discharge planning, and providing dementia information and education.³³ While staff more frequently expressed awareness of dementia screening tools such as the Mini-mental State Exam, there was little evidence for increased use of such instruments either on admission or in care planning. Diagnosis of dementia increased by 34% and depression by 22%; however, management of such problems led to an 8% increased use of antipsychotics and a 22% increased use of benzodiazepines without any increase in the use of antidepressants.³³

Other attempts at improving patient outcomes through education programs alone have had mixed results. Hospital staff come from a variety of disciplines and have a diverse range of practice patterns and educational needs.³⁴ Interventions limited in scope to select units may not reach desired impact. For example, programs directed at infection control that have focused on single nursing units did not significantly improve patient outcomes.³⁵ Organizations with frequent changes in personnel and leadership such as occur in most hospital units may not have the stable infrastructure necessary to attain and sustain change.

Instead hospital-wide programs associated with protocols for care and management, national guidelines, and evidence-based practice may be the best approach to improving patient outcomes.^{34–36} Our study supports that maintenance of knowledge and practice changes may not be long-lasting without continued in-service training and hospital-wide systematic change. The Dementia-friendly hospital program described here is one such example of a hospital-wide program that can lead to hospital wide guidelines, practice change and improved discharge planning including referral to community resources such as the Alzheimer's Association.³⁷ It remains to be seen if these guidelines ultimately lead to improved outcomes.

Our study has limitations. In addition to the post-test results, other planned analyses of outcomes included reviewing data on falls, restraint use, elopement incidences, length of stay and re-admission to determine whether the training had tangible benefits to the hospitals. Unfortunately, the participating institutions were unwilling to share this data. The hospitals and staff appeared to be more committed to the practical issues of training rather than participating in the research component. The 120-day post-test was difficult to collect. No incentives were offered for completing the post-test, which may have lowered the response rate. In several instances, contact information on the pre-test was incomplete, illegible or incorrect, making it difficult to reach participants for the delayed post-test. The low response rate (14%) for the 120-day delayed post-test limits generalizability of the findings, especially because non-response bias is difficult to assess.³⁸ Reported response rates for mailed surveys to the general population approach 60%, while response rates for health professionals vary from 11–90%.³⁸ An alternative interpretation of the low response rate could be that those who did not respond to the survey had an inherently poor view of research in general or of this particular topic and simply chose not to respond. Additionally, given the low response rate, the actual responses may be driven by the demographic characteristics of the respondents rather than the educational program they attended. While there is no way to test this hypothesis, it is informative to note that those with the least prior training and experience gained knowledge and confidence and maintained it, while those with the most prior training and experience did not show maintenance.

The greatest value of the program was the demonstration of feasibility of gaining the confidence of the hospital and staff to recognize the unmet need of dementia training and to dedicate time and resources to host an educational program. The greatest weakness of the program was the inability to collect the pre-planned outcome. The future of the program will depend on the ability to demonstrate that the educational initiatives translate into tangible patient outcomes. One approach we have taken is to partner with two academic institutions traditionally more amenable to research data collection.

With these caveats in mind, these data highlight the feasibility and interest at both the hospital and staff level in increasing awareness about dementia and its impact on poorer outcomes and higher costs during hospitalization. The serious need for dementia training among acute care staff was identified in the pre-training survey. This was associated with low confidence in knowledge or ability to care for dementia patients who often present with co-morbidities. Training had an immediate impact on knowledge, confidence and attitudes, and confidence was maintained in 3 of 4 hospitals trained. Unanticipated benefits were the development of specialized care teams and activity kits. We were able to identify potential targets for intervention and the need for ongoing training and the administrative reinforcement necessary in order to sustain behavioral change. In moving forward with the program, we need to include tangible benefits to the participating hospitals, including aspects of cost-benefit analyses. Community resources, such as local chapters of the Alzheimer's Association, may be key community partners in improving care outcomes for hospitalized persons with dementia.

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Table 1

Descriptive Statistics of Study Participants.

Variable	Original Sample		Delayed Post-test Sample		P-Value
	Mean	SD	Mean	SD	
Age, y	45.7	12.7	48.3	11.5	ns
Years of Practice	17.6	12.3	18.3	13.4	ns
% Patients > 65 years	66.9	25.5	65.9	25.9	ns
% Patient with Dementia	32.4	25.1	29.2	26.1	ns
	N	%	N	%	P-Value
Hospital	<0.001				
Hospital A (suburban)	68	17.1	13	38.2	
Hospital B (rural)	66	16.6	5	14.7	
Hospital C (urban)	97	24.4	7	20.6	
Hospital D (suburban)	166	41.8	9	26.5	
Gender	0.002				
Male	27	6.8	2	5.9	
Female	359	90.4	32	94.1	
Race/ Ethnicity	0.03				
Caucasians	329	82.9	33	91.1	
Other	56	14.6	1	8.8	
Profession	<0.001				
Nurse	238	61.6	19	55.9	
OT/PT (any therapy)	57	14.8	9	26.5	
Other	91	23.6	6	17.6	
Schedule	<0.001				
Day Shift	291	79.7	29	87.8	
Evening & Night Shift	74	20.3	4	12.1	
Training on Dementia-related care in the last 2 yrs	<0.001				
None	176	44.3	16	47.1	
<= 3 hrs	136	34.3	12	35.3	

Variable	Original Sample		Delayed Post-test Sample		P-Value
	Mean	SD	Mean	SD	
> 3 hrs	58	14.6	4	11.8	

ns = not significant

Table 2
Knowledge and Confidence Level Among Participants Before and at the End of the Workshop.

	Pre-Test		Post-Test		P-Value*
	Mean	SD	Mean	SD	
Knowledge	9.97	2.9	12.90	1.5	<0.001
Level of Confidence	0.86	1.4	2.42	1.9	<0.001
	N	%	N	%	
Assess and Recognize					<0.001
Not at all - Reasonably	290	73	196	49.4	
Very Much - Extremely	78	19.6	155	39	
Manage Care					<0.001
Not at all - Reasonably	284	71.5	182	45.8	
Very Much - Extremely	84	21.2	168	42.3	
Differentiate from Delirium					<0.001
Not at all - Reasonably	326	82.1	199	50.1	
Very Much - Extremely	40	10.1	150	37.8	
Discharge Planning					<0.001
Not at all - Reasonably	315	79.3	194	48.9	
Very Much - Extremely	39	9.8	147	37	
Communicate with Patient and Family					<0.001
Not at all - Reasonably	278	70	138	34.8	
Very Much - Extremely	90	22.7	212	53.4	

Significant values in bold.

Evaluations of Attitudes and Practices Towards Hospitalized Dementia Patients Before and at the End of the Workshop.

Table 3

	Disagree		Neutral		Agree		P-Value*
	N	%	N	%	N	%	
Is it difficult to work with dementia patients?							<0.001
Pre-Test	54	13.6	94	23.7	226	56.9	
Post-Test	106	26.7	82	20.7	174	43.8	
I do not have enough time to provide comprehensive care							<0.001
Pre-Test	122	30.7	102	25.7	148	37.3	
Post-Test	162	40.8	90	22.7	107	27.0	
I believe in help from family members and caregivers							ns
Pre-Test	10	2.5	8	2.0	358	90.2	
Post-Test	14	3.5	0	0.0	347	87.4	
I have received sufficient training to take care of dementia patients							0.02
Pre-Test	170	42.8	113	28.5	91	22.9	
Post-Test	21	5.3	43	10.8	295	74.3	
Admission procedures should be no different than for patients without dementia							<0.001
Pre-Test	296	74.6	35	8.8	45	11.3	
Post-Test	307	77.3	17	4.3	36	9.1	
I rarely see a diagnosis of a dementia disorder upon hospital admission							<0.001
Pre-Test	224	56.4	62	15.6	84	21.2	
Post-Test	202	50.9	67	16.9	86	21.7	

ns = not significant; Significant values in bold

Table 4

Evaluations of Knowledge and Confidence Levels at the End of the Program and 120 Days.

	Knowledge			Confidence		
	Post-Test	Delayed Post-Test		Post-Test	Delayed Post-Test	
	Mean (SD)	Mean (SD)	P-value	Mean (SD)	Mean (SD)	P-value
Hospital A (suburban)	12.9 (1.5)	11.2 (2.2)	0.01	2.9 (1.8)	0.9 (1.4)	0.02
Hospital B (rural)	12.8 (1.5)	11.6 (1.5)	0.03	2.8 (1.9)	2.2 (1.8)	ns
Hospital C (urban)	12.4 (1.8)	9.8 (2.4)	0.02	2.6 (1.8)	2.1 (1.9)	ns
Hospital D (suburban)	12.8 (1.4)	12.1 (2.1)	ns	2.3 (2.1)	1.6 (2.1)	ns

ns= not significant; Significant values in bold

Table 5
Comparison of Characteristics of the Original and Delayed Post-test Sample from 2 Hospitals.

Variable	Hospital A			Hospital D		
	Original	Delayed Post-test	p-value	Original	Delayed Post-test	p-value
Age, y	44.4 (13.2)	53.0 (7.3)	.02	45.4 (11.9)	44.6 (11.8)	ns
Gender, % Female	92.5	100	.01	95.1	88.9	ns
Race, % White	95.5	76.9	ns	87.9	100	<.001
Profession, % Nurses	53.7	69.2	<.001	66.9	30.8	<.001
Years of practice	17.7 (18.6)	23.9 (13.6)	.03	17.7 (12.9)	11.3 (13.2)	ns
Schedule, % Days	77.9	75.0	ns	79.9	88.9	ns
Patients > 65, %	72.5	71.5	ns	71.7	76.7	ns
Patients with dementia, %	34.8	34.1	ns	25.2	29.2	ns
Dementia Training > 3hrs, %	20.9	25.0	ns	12.5	0	<.001

ns=not significant

Pearson's Chi square or Fisher Exact test was used to calculate p-value for categorical variables and t-tests for the continuous variable