
Teaching staff to respond effectively to cognitively impaired residents who display self-protective behaviors

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Abstract

A randomized controlled trial (RCT) was implemented to evaluate the effectiveness of a 7½ hour educational program designed to provide staff with the knowledge, skill, and confidence to manage physical self-protective behaviors of cognitively impaired long-term care residents. This RCT using a pretest/post-test design was conducted using consenting staff members (n = 40) who were randomly allocated to either a control or experimental group. The main outcome measure was a skills lab that evaluated participants' responses to simulated patients. Both groups participated in the skills lab prior

to training, and six weeks after the experimental group completed the program. Pre- and post-training and skills lab observational field notes were subjected to thematic content analysis. Twenty-eight staff members completed both pre- and post-training assessment measurements. Descriptive statistics and paired t-test analyses yielded statistically significant differences in change scores for performance indicators in three simulation scenarios. Analysis of the qualitative data support the finding that, once trained, staff felt better prepared to manage self-protective behaviors. The results suggest that an initiative to educate staff will enhance knowledge, improve performance, and provide the confidence necessary for staff to respond positively to overt physical behaviors in cognitively impaired elders.

Key words: cognitively impaired, long-term care, staff education, self-protective behaviors

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Introduction

Persons living with Alzheimer's disease and related dementias often respond to the environment in long-term care institutions with fear and frustration. Respectful care of the resident who is experiencing a catastrophic emotional and physical response to a bewildering and overwhelming environment has become an issue of great importance for clinical and program support staff in long-term care. The literature describing physically agitated behavior supports the finding that 10 percent to 50 percent of cognitively impaired elderly living in long-term care

facilities display some form of physical aggression.¹⁻⁴

It has been the experience of the clinician partners involved in the research team that front-line staff must respond to verbal and physical outbursts on a regular basis, particularly while performing direct care of a personal nature. Staff members have some basic knowledge regarding the antecedents of such behaviors and, in some cases, how to prevent them. However, they recognize that not all incidents of overt verbal and physical agitation can be easily de-escalated without entering the resident's personal space and touching them in some way. They express concern about their knowledge and skill to manage frank displays of anger once the resident has lost control. Staff consistently report feeling vulnerable and at high risk for injury if they have not been "formally" trained in respectful, nonviolent, self-protective techniques. Staff also report that they are unsure how to respond to physical expressions of anger in a manner that will not be injurious to vulnerable residents. Inappropriate response techniques can have a pervasive and profoundly negative impact on residents with cognitive impairment, leading to excess disability and a wounded spirit.⁵⁻⁷

Various programs or professional development educational workshops have been developed to help staff improve their skills in caring for residents. A certification program developed by the Crisis Prevention Institute (CPI) of Milwaukee, Wisconsin, is one such endeavor. The investigators made major modifications to the Nonviolent Crisis Intervention (NCI) training program so that it was adapted to specifically address the experience of residents with dementia who lived in long-term care facilities, the impact of cognitive impairment on dementia-related behaviors, and the specific body containment strategies that would be acceptable for use in a population of frail and vulnerable elderly adults. This program was given as a workshop at a long-term care residence in southern Ontario, Canada.

Review of the literature

The quality of the evaluation of educational programs specific to dementia care reported in the literature was determined using criteria developed by Kirkpatrick.⁸ This model suggests that educational evaluation ranges from simple to complex strategies within a sequential, hierarchical relationship. The four levels are: reaction, learning, behavior, and results. *Reaction*, the first level of evaluation, measures participant satisfaction. *Learning* evaluation measures the degrees to which knowledge has been acquired, skill has been increased, and/or attitudes have been changed as a result of attending an educational program. *Behavior* evaluation measures the extent to which there has been a change in practice or performance that can

be attributed to the education program. *Results* evaluation measures the degree to which practice change has impacted resident or organizational outcomes such as decreased costs, reduced frequency and/or severity of accidents, or improved quality. To be valid, educational evaluation should examine all four levels. Absence of behavioral change or organizational impact might be falsely attributed to an ineffective program if there has been no measurement of satisfaction or learning undertaken.

A search of the literature identified 19 studies reporting the results of evaluations of continuing education programs for front-line dementia care workers. These programs ranged in length from 40 minutes to five days and covered many topics related to broad dementia care skills, such as communication and behavioral management strategies.⁹⁻²⁷ Seven of these studies implemented and evaluated curriculum specific to staff management of aggressive behaviors associated with dementia.^{12,13,15,17,20,26,27} Two of the studies limited their evaluation to the levels of reaction and learning,^{12,20} and one study evaluated behavior and results strategies in combination with learning evaluation.¹⁵ Three studies included results evaluation either alone or in combination with reaction evaluation.^{13,26,27} Of significance is that only one study¹⁷ contained all four levels of evaluation strategies, but this study had methodological limitations.

The five studies that included the highest two levels of evaluation strategies—behavior and results evaluation—were subjected to critical review using guidelines developed by Polit et al.²⁸ All five studies were quasi-experimental, before/after designs that had no control groups.^{13,15,17,26,27} Evaluation of performance relied on self-reports or supervisors who were asked to give an account of any improvements in practice. The supervisors were not blind to the study protocol; therefore, the positive results may be explained by reporting bias.^{13,15,17} When resident outcomes were evaluated, the psychometric properties of measures were either not reported or the positive outcomes could not be attributed to the educational intervention because no determination of corresponding reaction and learning levels was conducted.^{15,26} Confounding variables were frequently not controlled; therefore, resident outcome improvements could not be attributed to the educational intervention alone.^{26,27}

Contradictory results were frequently reported. For example, while Maxfield et al.¹⁵ and Mentis and Ferrario¹⁷ reported an overall decrease in the numbers of aggressive episodes after training, Wilkinson²⁶ reported an overall increase in the numbers of episodes of aggression after training.

In summary, the studies evaluating continuing education programs aimed at teaching staff how to interpret

and respond to episodes of physical disinhibition and self-protective behaviors associated with dementia lacked control groups or true randomization procedures, relied on the accounts of the participants or biased supervisors to measure performance change, and reported conflicting results in terms of resident outcomes. It can generally be said, from a review of this literature, that research into the impact of dementia-specific continuing education programs on front-line worker performance and resident outcomes related to aggression in dementia is limited. Thus, an evaluation of this standardized 7½ hour workshop on respectful behavioral management techniques was carried out.

Research questions

The study proposed to answer the following: Does the implementation of a standardized certification program for clinical staff, in the prevention and care of emotional agitation and physical anger behaviors in cognitively impaired elderly, contribute to:

1. Enhanced knowledge of nonviolent, self-protective techniques as a response to emotional and physical outbursts?
2. Enhanced demonstration of skill in the response to simulated patients who are physically out of control, as measured by an Objective Structured Clinical Examination (OSCE) administered to training participants pre- and post-training?
3. Improved confidence about caring for residents with these behaviors?

Methodology

Setting

The site: This long-term care facility is a 60-bed, not-for-profit, teaching nursing home located in the central south region of Ontario, Canada. The facility consists of four 15-bed “houses.” A significant number of the residents in each house have a cognitive impairment with associated behavioral displays of agitation, emotional distress, and catastrophic behavior that can be acted out physically. This behavior may be directed toward objects, co-residents, staff, volunteers, or visitors.

Design

This was a randomized controlled trial comparing premeasures and postmeasures of staff receiving the

Table 1. Demographic characteristics of study participants (n = 40)

Characteristic	Number	Percentage
Gender		
Male	1	2.5
Female	39	97.5
Age group		
18 – 29	7	17.5
30 – 39	8	20.0
40 – 49	18	45.0
50 – 59	7	17.5
> 60	0	0.0
Education		
High school diploma	5	12.5
Care aide certificate	27	67.5
Bachelor’s degree	8	20.0
Master’s degree	0	0.0
Years of employment		
1 – 2	6	15.0
2 – 5	12	30.0
5 – 10	22	55.0
10 – 15	0	0.0
> 15	0	0.0

intervention or randomized to the wait list. In addition, focus groups of subjects in the intervention group were carried out, and an experienced investigator recorded discussion and developed themes related to the participants’ perceptions of the workshop and skills learned.

Subjects

Forty staff members at the nursing home were randomized to either receive the 7½ hour training program (an adaptation of the NCI curriculum) or be placed on the wait list. Measures were given before training and six weeks after the training was complete. Twenty-eight staff members completed follow-up measures, of which 15 received the training. Twelve staff members did not complete the follow-up measures due to illness, scheduling conflicts, and a bus strike during the postmeasure time period.

Staff included all professional and nonprofessional personnel, including kitchen staff, housekeeping staff,

Table 2. Percent agreement and reliability (ICC) for skill OSCE stations with two observers

	Station 1 (n = 29) Percent agreement		Station 2 (n = 28) Percent agreement		Station 3 (n = 27) Percent agreement	
C1	93	.51	89	.73	93	.47
C2	100	–	89	.79	93	.63
3	97	.76	93	.84	96	–
4	97	.89	100	–	78	.11
5	93	.86	100	–	78	.57
6	90	.79			89	.70
7	76	.52			93	.79
8	76	.49			81	.43
9	72	.31			100	–
10	86	.52			100	–
	ICC	Paired	ICC	Paired	ICC	Paired
Total score	.79	t = .59 9 = .56	.93	t = .00 p = .99	.78	t = 0.61 p = .55
	Mean	SD	Mean	SD	Mean	SD
Observer 1	5.83	2.56	2.46	(1.73)	5.75	(1.76)
Observer 2	5.67	2.33	2.46	(1.60)	5.89	(1.55)

front-line dementia care workers, nursing staff, and front-line supervisory staff. All consenting staff members were included in the randomization. Staff was stratified for category of worker, so all categories were included in both groups.

Those assigned to the control group were given the workshop after the follow-up measures were completed. Although they may have worked with team members who had taken the workshop and heard anecdotal accounts, they did not attend the formal workshop. Staff members receiving the intervention were asked not to discuss their activities with their peers in the control group.

Training program

The training program consisted of a single 7½ hour workshop conducted for staff participants in groups of 10 to 12. The content included a component of the NCI curriculum, specifically those release techniques and containment holds deemed reasonable and prudent for the geriatric population living in the typical long-term care facility. It is important to note that a portion of the NCI curriculum was taught within the context of a larger dementia-specific curriculum, which included: communication techniques to

connect with the cognitively impaired, the impact of the disease process on behavior, monitoring the signs and symptoms that signal impending catastrophic behavior, and the appropriate level of response that staff should select to help de-escalate such behavior. A key component of this curriculum was the concept that physically agitated and aggressive behaviors are to be reframed and understood as self-protective behaviors representing an unmet need.^{29,30} In addition, the curriculum was embedded in the “at home,” relationship-centered approach that is part of the care culture at the nursing home. The curriculum included short lecture format, experiential exercises, dementia-specific videotapes, demonstration of appropriate techniques, and clinical application by the participants through supervised role play.

Measures

The instruments used included: a demographic profile sheet for participants; a standardized pretest/post-test for content of management of aggression principles, as set by the CPI; a personal performance evaluation; and an OSCE skills lab, including both Examiner and Marker stations. These measures were pretested with subjects

Table 3. Comparison of study groups at baseline

OSCE	Experimental (n = 15)		Control (n = 13)		Statistic	
	Mean	SD	Mean	SD	t	p
Station 1	4.80	(2.1)	4.77	(2.2)	.04	.97
Station 2	0.93	(0.3)	0.92	(0.3)	.07	.95
Station 3	5.07	(1.0)	5.31	(1.1)	.60	.56
Marker 1	4.33	(1.3)	4.15	(1.4)	.35	.73
Marker 2	3.60	(2.0)	3.77	(1.3)	.26	.80
Total OSCE	18.73	(3.9)	18.92	(3.84)	.13	.90
Knowledge	3.80	(2.27)	3.38	(2.22)	.49	.63
Confidence	30.90	(4.65)	29.50	(6.10)	.69	.50

who were not included in this proposed future study. The qualitative measures included pre- and post-training focus groups and nonparticipant observation of staff members' application of performance indicators during the OSCEs. These measures are described below.

- *Demographic profile sheet.* Staff participants provided the following information: age, sex, position, educational preparation, year of graduation, years of experience in geriatric care, years of experience in dementia care, years of employment at the institution, and special continuing education courses in management of aggression.
- *Standardized pretest/post-test.* A standardized test developed by the CPI was administered to the participants as a test of knowledge related to concepts integral to the interventions learned in training. This measure was administered to the experimental and control groups, at baseline and later at a six-week interval.
- *Personal performance evaluation.* This short eight-item questionnaire was administered to the participants to evaluate their individual performance and their emotional reactions and confidence levels in response to out-of-control behaviors displayed by their residents. This was administered immediately pretraining and again six weeks after training.
- *OSCE.* This measure was conducted as a pre/post-measure.³¹ Each OSCE was 60 minutes and was conducted using two Marker stations related to

knowledge and three Examiner stations related to demonstration of procedures of nonviolent self-protection techniques. The Marker stations focused on principles of nonviolent self-protection strategies, and the Examiner stations focused on demonstration of "two-handed grab release," "front choke release," and an "escort position." The Examiner stations were observed, and checklists were completed by two independent, trained skilled examiners. Examiners were tested for reliability and attended a training workshop prior to the OSCE. The OSCEs ran prior to training and again six weeks after training. Standardized patients were used to simulate real-life situations. The checklist for observed behaviors was developed by two clinicians familiar with the workshop skills. These stations and the checklist were pretested for content validity, face validity, and reliability.

- *Pre- and post-training focus groups.* This measure involved a trained facilitator experienced in conducting focus groups. A semi-structured guide was developed to cover a number of questions related to the experience of responding to episodes of high-end catastrophic behavior typically displayed by residents with dementia who live in long-term care facilities. An observer documented the comments and experiences of the participants in extensive field notes. These field notes were analyzed using thematic content analysis for emerging themes.
- *Nonparticipant observation.* This measure involved two trained observers who recorded extensive field notes of their observations of the

Table 4. Comparison of study groups at follow-up on mean change scores for knowledge, confidence, and OSCE						
	Experimental (n = 15)		Control (n = 13)		Statistic	
	Mean	SD	Mean	SD	t	p
Knowledge (n = 27)						
Baseline	3.80	(2.27)	3.38	(2.22)	0.49	.63
Follow-up	22.07	(2.60)	2.92	(2.64)	18.86	< .001
Change	18.27	(2.58)	-0.50	(1.0)	23.77	< .001
Confidence (n = 27)						
Baseline	30.90	(4.65)	29.50	(6.10)	0.69	.50
Follow-up	34.29	(6.28)	31.92	(7.80)	0.87	.39
Change	3.36	(5.79)	2.38	(6.40)	0.42	.68
OSCE						
Baseline	18.73	(3.90)	18.92	(3.84)	0.13	.63
Follow-up	28.07	(6.78)	18.54	(3.84)	4.61	< .001
Change	9.33	(6.68)	-0.38	(3.36)	4.74	< .001

clinical application of learned techniques during the OSCEs. One observer followed two or three participants throughout all three examiner stations. The second observer remained at the “interim” hold station and observed all subjects as they responded to the clinical situation at that particular examiner station. The field notes were analyzed using thematic content analysis for emerging themes.

Results

Demographic variables

Of the 40 consenting staff members at the nursing home, half were randomized to receive crisis prevention training immediately (experimental group) or at a later date. Of the 40 staff members, 28 completed the follow-up measures; of these, 15 received the training. Most of the 12 staff members who did not complete the follow-up measures were unable to schedule their work hours around the OSCE, either due to illness or a citywide bus strike that impacted their availability and/or childcare arrangements.

The gender, age groups, and education levels of the respondents are summarized in Table 1. The majority of participants were female. The greatest number of participants were between the ages of 40 and 49, held an associate degree, and had been employed by the facility for five to 10 years.

Reliability of examiner OSCE stations

Reliability was determined for the three skills-oriented OSCE stations by calculating the percent agreement for each question and the intraclass correlation coefficient for the total score of each station. Two blind observers rated each staff member who completed the station. The raters did not know if the subject was from the experimental or control group and did not compare ratings. Station 1 examined the “wrist grab release” (10 competencies), station 2 the “front choke hold release” (five competencies), and station 3 the “disengagement and escort technique” (10 competencies).

As shown in Table 2, all stations were reliable for total scores (ICC = .79, .93, and .78) and only one question had < 75 percent agreement (Competency 9 in station 1).

Comparability of groups

Study groups were comparable on all measures at baseline (Table 3), indicating that participants were comparable on knowledge, skill, and attitudes before training began.

Effectiveness of training

There were clinically important differences in change scores for all measures of knowledge, confidence, and

Table 5. Comparison of OSCE station scores at baseline follow-up

OSCE station	Experimental (n = 15)		Control (n = 13)		Statistic	
	Mean	SD	Mean	SD	t	p
Station 1 (wrist grab) (n = 29)						
Baseline	4.80	(2.10)	4.77	(2.22)	0.04	.97
Follow-up	7.00	(2.37)	4.38	(2.06)	3.13	.004
Change	2.25	(3.15)	-0.38	(2.26)	2.53	.02
Station 2 (front choke) (n = 28)						
Baseline	0.93	(0.33)	0.92	(0.32)	0.07	.95
Follow-up	3.47	(1.55)	1.31	(0.48)	4.81	< .001
Change	2.67	(1.72)	0.23	(0.60)	4.85	< .001
Station 3 (escort hold) (n = 28)						
Baseline	5.07	(1.01)	5.31	(1.10)	0.60	.56
Follow-up	6.40	(1.99)	5.00	(1.08)	-2.26	.03
Change	1.33	(1.88)	0.31	(1.11)	2.76	.01
Station 4 (written) (n = 28)						
Baseline	4.33	(1.35)	4.15	(1.41)	0.35	.73
Follow-up	6.73	(1.91)	4.62	(1.66)	3.11	.005
Change	2.40	(1.96)	0.46	(1.20)	3.10	.005
Station 5 (written) (n = 29)						
Baseline	3.60	(2.03)	3.77	(1.30)	0.26	.80
Follow-up	4.33	(2.16)	3.38	(1.19)	1.41	.17
Change	0.73	(1.33)	-0.38	(1.12)	2.38	.03
Total OSCE score (n = 28)						
Baseline	18.73	(3.92)	18.92	(3.84)	0.13	.90
Follow-up	28.07	(6.77)	18.54	(3.31)	4.61	< .001
Change	9.33	(6.68)	-0.38	(3.36)	4.74	< .001

total OSCE score. Statistically, all were significantly different, except for confidence scores (Table 4). It is important to note that improvement in knowledge and skill was greater for all OSCE stations for the staff receiving the workshop. Table 5 shows the differences between groups on individual stations. Tables 4 and 5 both demonstrate that this educational initiative provided staff with the knowledge and skill to help them manage emotional and physical outbursts in a safe and prudent fashion.

Pretraining focus groups and OSCE observations

During the pretraining focus groups, staff reported feeling vulnerable and afraid when faced with extreme emotional and physical behavior. In addition, they were uncertain if their attempts to manage physical behavior would result in injury or be perceived by others as unnecessary or "rough." The staff did not blame the residents for lack of control or impulsivity, but showed tolerance and understanding of

behavioral displays. Observational field notes recorded by trained observers during pretraining OSCE stations revealed staff from both experimental and control groups using release or containment techniques that were potentially unsafe and ineffective.

Post-training focus groups and OSCE observations

During post-training focus groups, participants reported that the training helped them understand that some behavioral displays did not require direct touching of the resident. Training helped them identify when direct handling was appropriate and how to use proper technique. The training affirmed the positive verbal skills participants already used on a daily basis. Other positive findings from the education program, as stated by participants, were that they received clarification of certain principles. For example, several staff reported that they were now not afraid to touch the resident in an appropriate manner to de-escalate an episode of aggression. Prior to the teaching, they simply “got out of the way” because they did not know how to respectfully enter the resident’s personal space. In addition, during the post-training OSCE skill scenarios, participants demonstrated a decrease in responses that were ineffective or unsafe to themselves or the resident. These findings support the quantitative evidence from the OSCE skill demonstrations posteducation that they had learned new skills.

Participants also stated that they still lacked confidence in their ability to manage aggressive residents. By the six-week postintervention point, they stated that they had not had enough opportunity to use their knowledge and skill in direct clinical application. Several said they would need a few successful intervention episodes to feel fully confident in their abilities, which is not surprising.

Some other findings, however, were unexpected. Whereas participants in previous workshops conducted in other facilities displayed an attitude of anger, frustration, or blame towards the aggressive resident, participants in this study rarely mentioned these sentiments. Instead, they displayed a “culture of tolerance,” an acknowledgment of understanding that a cognitively impaired resident cannot always control their behavior or emotional response. This is, in fact, an important and productive attitude to foster in those who care for these individuals. Whether these attitudes are found in other, similar long-term care facilities remains to be determined.

Discussion

The quantitative results of this study to determine the effects of an education program on the reaction, knowledge, confidence, and behavior of staff were, for the most part, conclusive and anticipated. Both knowledge

and performance improved with respect to the specific principles taught.

The interesting result was the statistically insignificant change in the confidence measure. There are a number of possible explanations for this. The change in confidence of the staff was determined by a self-reported questionnaire given immediately before the education program was initiated, and again six weeks after training. One possible explanation for the lack of change in this measure is that confidence requires more than six weeks to change significantly. Knowledge and skill are variables that can change almost instantly once they are learned. Whether they are changed permanently or for an extended length of time is another matter, one worth pursuing. Confidence, however, is a more subjective concept, rooted in personal perspective. Changing a person’s confidence about a subject usually involves the person’s experience with that subject as well as their knowledge. Hence, the six-week time frame may not have allowed the study participants enough time to use the newly learned principles and experience their advantage. In addition, the sample size was not large enough to demonstrate a statistically significant difference in confidence scores.

Conclusion

Six weeks after receiving training on care for persons with emotional and physical agitation, staff in a long-term care facility demonstrated increased knowledge and higher skill in response techniques than staff not trained. Although the self-reported confidence improved more for the experimental group, there was not a statistically significant difference. Longer follow-up and a larger sample are required to determine the effect of training on staff confidence.

Analysis of qualitative data (focus groups and participant observation field notes) suggests an organizational culture of tolerance and respect for residents who display physical behaviors. The formal training program did much to relieve concerns about handling residents in ways feared to be inappropriate and unsafe. Training also gave staff new skills that made them feel more prepared to handle physical displays, while at the same time affirming the importance of good verbal communication skills. Staff thought they would become more confident over time as the opportunity to apply techniques in clinical practice arises.

Implications for education and research

Monthly skills clinics to support formal training and review techniques have been initiated. The organization has made a commitment to formally recertify staff annually to ensure that skills continue to be correctly applied. In addition, specific protective skills and techniques are discussed in the context of individual case situations where behavioral disinhibition may require protective strategies to prevent

injuries to the resident or others in the environment. These techniques are incorporated into the resident's "Living Plan" to ensure the proper techniques are documented. Strategies from the training program that are identified as successful responses to each resident's behavioral profile are disseminated in interdisciplinary team meetings and during coaching. The educational program has been further adapted as part of the training program for volunteers working with residents who have a propensity to experience catastrophic reactions and for students who enter the nursing home as part of their clinical experience.

The positive results of this study are intermediate outcomes. Of critical importance is the longitudinal impact of similar educational interventions on resident well-being and behavior. Therefore, to determine the full significance, research initiatives are needed that measure long-term impact by including results evaluation of staff performance and resident outcomes in the clinical setting.⁸ It would also be important to determine the extent to which training in self-protective techniques at other organizations affects workplace quality of life, for example, to reduce staff injury, sick time, and turnover.

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