


Direct Care Worker Training to Respond to the Behavior of Individuals With Dementia: The CARES® Dementia-Related Behavior™ Online Program

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Abstract

Only a handful of online training programs are available for direct care workers (DCWs) to acquire the strategic skills needed to improve dementia care in instances of challenging or inappropriate behavior. Utilizing pre- and post-test data from a convenience sample of 40 DCWs, the present study sought to determine (a) whether DCWs' knowledge of responding to dementia-related behavior increased following participation in the CARES® Dementia-Related Behavior™ Online Training Program (or CARES® Behavior) and (b) if CARES® Behavior was acceptable and useful. The average number of correct scores on a dementia care knowledge measure was significantly higher among DCWs after viewing the online modules when compared with pre-test scores ($p < .01$). Descriptive empirical and open-ended data also suggested that the interactive, "real-world" content of CARES® Behavior was feasibly delivered online, acceptable, and may influence how DCWs deliver clinical care to individuals with dementia-related behavior.

Keywords

online, training, staff, nursing home, assisted living, Alzheimer's disease, dementia, behavior problems

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Introduction

"Inappropriate" or "challenging" behaviors (referred to here as "dementia-related behavior" [DRB]) can include aggression, agitation, and mood and sleep disturbances in those with Alzheimer's disease and related dementias (ADRDs). These behaviors continually confront direct care workers (DCWs) in various settings (McKenzie, Teri, Pike, LaFazia, & van Leynseele, 2012). DCWs refer to professionals who provide hands-on assistance to persons with chronic disabilities and include certified nurse assistants, personal care attendants, or similar health care providers. The current study aimed to determine whether knowledge to effectively respond to DRB increased among DCWs who participated in an online training program, and also examined the acceptability and utility of this training approach.

Background

DRB is seen in more than 80% to 90% of those with Alzheimer's disease and related dementias (ADRDs), and these types of behaviors can add to the stress of

DCWs (Black, Muralee, & Tampi, 2005; Desai & Grossberg, 2001; McKenzie et al., 2012). Individuals with ADRDs in residential care settings exhibit an array of DRBs; however, many DCWs involved in dementia care persist in their negative attitudes toward both behavior and the care recipients who express such behavior (Cohen-Mansfield, 2005). There is also a tendency in residential long-term care settings to prescribe medications to "treat" DRB in persons with ADRD, particularly in nursing homes (Tjia et al., 2010). The prescription of anti-psychotic medications to manage DRB is considered inappropriate in many cases and often results in an array of severe side effects (Kleijer et al., 2014). Such challenges suggest the need to consider

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non-pharmacological treatments to redress DRB (Herrmann & Gauthier, 2008). However, for these non-pharmacological approaches to reach their full potential they must be delivered by staff who are trained adequately in such strategies (Gaugler, Yu, Davila, & Shippee, 2014).

Staff training that highlights "specialized dementia knowledge and skills; communication issues; strategies for providing person-centered care; management of behavioral and psychiatric symptoms; understanding and managing the emotional needs of people with dementia and their family members; and specific aspects of care (for example, treating pain and providing food, fluid, and social engagement)" are all necessary to ensure proper response to DRB in persons with ADRD (Gaugler et al., 2014) (p. 653). In routine practice, DCWs often do not receive the training to acquire these strategic skills to improve ADRD care; a review of literature up to 2004 implied the potential of staff training interventions, but the methodology of studies available at the time was considered poor (Kuske et al., 2007). Similarly, a more recent review of staff training interventions to reduce behavioral and psychological symptoms of dementia (BPSD) from 1998 to 2010 found that 12 of 20 studies indicated that staff training resulted in significant reductions in BPSD, but few evaluations were of high methodological quality (Spector, Orrell, & Goyder, 2013).

Several recent and rigorous research studies have evaluated specialized training of nursing home care staff to improve dementia care. A randomized controlled trial (RCT) in Germany (a five-module, 3-month training program in dementia care compared with a relaxation group and a wait-list control for 96 staff members and 210 residents; restraint use was identified via chart abstraction; Kuske et al., 2009) and Norway (a 2-day educational seminar compared with usual care in four nursing homes and 145 residents; restraint in the prior 7 days was determined by interview and resident agitation was measured using the Cohen-Mansfield Agitation Inventory [CMAI]; Cohen-Mansfield, 1989; Testad, Ballard, Bronnick, & Aarsland, 2010) found that training and education for residential care staff resulted in statistically significant reductions in resident agitation and restraint use over a 6-month period. Testad and colleagues also found statistically significant reductions in restraint use over a 12-month evaluation period (Testad et al., 2010). Statistically significant reductions in restraint use and agitation over a 7-month evaluation period were also apparent in a recent RCT (a tailored 7-month training intervention called "Trust Before Restraint" compared with usual care in 24 residential facilities and 274 residents; restraint in the prior 7 days was determined by interview and resident agitation was measured using the CMAI; Testad et al., 2015), but these reductions were apparent in both the treatment and control conditions. The authors attributed this pattern of findings to national educational initiatives to implement

person-centered care in nursing homes in Norway. For multiple other outcomes such as staff burnout, the staff training interventions evaluated in these RCTs did not result in statistically significant changes (Kuske et al., 2009; Testad et al., 2010; Testad et al., 2015).

Taken together, these findings suggest that staff training to enhance dementia care has some benefits for residents, but due to the complexity of residential environments the sustenance of positive results for persons with ADRD is challenging. One particular barrier to providing effective staff training to enhance ADRD care in residential settings is that of time and resources, which could influence the translational potential of more promising training approaches (Coleman, Fanning, & Williams, 2015). A solution is the use of online, interactive training modules that overcome the temporal and resource barriers of in-person training delivery (Bluestone et al., 2013; Raza, Coomarasamy, & Khan, 2009). A handful of recent efforts have evaluated online approaches to staff training in nursing homes or other residential settings to improve ADRD care (Coleman et al., 2015), suggesting that the use of online training for home care staff improves staff satisfaction and appears to provide a less costly strategy when offering education to staff. Our prior work examining the feasibility and utility of online training modules for DCWs has also suggested the promise of these approaches to improve both DCWs' and family caregivers' confidence and awareness of various facets of dementia care (Gaugler, Hobday, Robbins, & Barclay, 2015; Hobday, Savik, & Gaugler, 2010; Hobday, Savik, Smith, & Gaugler, 2010), although it remains unclear whether online training approaches focusing on DRB show similar potential.

Research Focus

The goal of the current project was to demonstrate the feasibility of DCWs' utilization of an online health care training program that educates them in the knowledge and skills to respond to DRB: the CARES® Dementia-Related Behavior™ Online Training Program (or CARES® Behavior). In addition to the potential benefits of general online training summarized above, CARES® Behavior attempted to create modules that were specific and relevant by (a) focusing on DCW caregiving strategies to mediate DRB in persons with ADRD (in contrast to online training programs that may approach ADRD in more general fashion) and (b) featuring video footage in which all caregivers and care recipients filmed to illustrate the objectives of the educational intervention modules are real people with ADRD as well as actual DCWs and family members—not actors hired to perform on cue (thus increasing the personal relevance of CARES® Behavior for DCWs).

CARES® Behavior relied on a conceptual model derived from an extensive body of stress mediation literature (Aneshensel, Pearlin, Mullan, Zarit, & Whitlatch,

1995; Hadjistavropoulos, Taylor, Tuokko, & Beattie, 1994; Intrieri & Rapp, 1994; Lawton, Moss, Kleban, Glicksman, & Rovine, 1991; Pearlin, Mullan, Semple, & Skaff, 1990) (see Figure 1). This model provides a useful framework for caregiver education and illustrates the ways DRB and accompanying diminished cognition and function cause persistent caregiver stress (Gwyther, 2001). As caregiver stress lifts, a synergistic improvement occurs in coping strategies, resiliency reserve, and caregiving skills (Ostwald, Hepburn, Caron, Burns, & Mantell, 1999). CARES® Behavior therefore aims to improve conceptual knowledge, practical skills, and respectful attitudes in DCWs to help them better manage DRB and disease progression in the persons they help and assist on a daily basis.

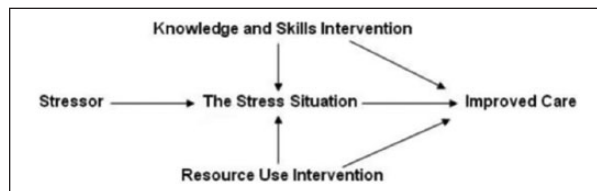


Figure 1. Conceptual model: The CARES® Dementia-Related Behavior™ Online Training Program.

This feasibility and utility study had two objectives:

1. To determine the potential influence of the online CARES® Behavior training program on DCWs' knowledge to effectively respond to DRB. We hypothesized that DCWs knowledge following completion of the CARES® Behavior training program would be significantly greater ($p < .05$) compared with pre-training knowledge.
2. To examine descriptive empirical and open-ended data on DCWs' satisfaction with CARES® Behavior and how this online training program may influence DCWs' perceptions of how they would deliver care to persons who express DRB.

Method

Study Design

This study received institutional review board approval from the University of Minnesota Institutional Review Board (#0902S59241). A convenience sample of DCWs was recruited, and a single group pre-post-test design was used. Directors of nursing homes and assisted living facilities were contacted in eight states (Delaware, Florida, New Hampshire, Illinois, Wisconsin, Mississippi, Texas, Ohio, and Minnesota) and 87 DCWs consented to participate in the study. Directors as well as DCWs themselves were recruited through personal and professional contacts of the second author, the Alzheimer's Association TrialMatch clinical trial website, and individual referrals from local Alzheimer's Association chapters. Forty DCWs completed this study

(20 from Minnesota, 12 from Wisconsin, four from Delaware, and one each from Florida, Mississippi, Texas, and Ohio). Inclusion criteria for DCWs were as follows: (a) working knowledge of English, (b) current employment at a nursing home or assisted living facility as a DCW, and (c) access to an Internet-connected computer at work, home, friend's house, or community location. Each DCW completed a pre- and post-test measure of knowledge related to managing DRB. Following the collection of consent and demographic information and completion of the pre-test measure of knowledge, each DCW received access to and utilized the online CARES® Behavior program (approximately 4 hr in length) for up to 1 month. Following the viewing CARES® Behavior, each DCW completed a post-test survey of knowledge; an open-ended questionnaire regarding technical issues and reaction to the prototype; and a series of close-ended items to determine degree of DCWs' satisfaction with CARES® Behavior.

Intervention: The CARES® Behavior

The current project began with the development of CARES® Behavior. Specifically, a structured instructional design methodology, Analysis, Design, Development, Implementation, and Evaluation (ADDIE), was employed to design CARES® Behavior (see <http://educationaltechnology.net/the-addie-model-instructional-design/>). Key project personnel members, consultants, two DCW team members, and a spouse and adult child of ADRD residents discussed and agreed upon the CARES® Behavior program outline and made content recommendations. A list of CARES® Behavior experts and consultants is available at <http://hcinteractive.com>. Preliminary interface design work then began where all content, video scripting, audio scripting, and other program design considerations were written and approved. Following development of two prototypes and the solicitation of additional feedback from two new DCWs and adult child caregivers of persons with ADRD, instructional content, audio, video, graphics, and programming were completed. The target of module content readability was at a sixth-grade reading level whenever possible. Actual individuals with ADRD, DCWs, family members of individuals with ADRD, and national experts were used in all CARES® Behavior videos. Additional details about CARES® Behavior modules (learning objectives, content, and length) are provided in Table 1.

The content of CARES® Behavior was guided by two key sources: (a) the Alzheimer's Association Evidence-Based Practice Recommendations for residential care settings (Alzheimer's Association National Office, 2006) and (b) Bowlby Sifton (2008). The Alzheimer's Association has formally incorporated the CARES® Behavior as well as other CARES training modules as part of its national training certification program in dementia care (<http://www.alz.org/essential/>).

CARES® Behavior participants could log on and off the online modules and return to their stopping point to

Table 1. CARES® Dementia-Related Behavior™: Learning Objectives, Content, and Video Duration.

Module	Learning objectives (after completing this module, you will be able to)	Module structure
Module 1: Introduction to dementia-related behavior	<ul style="list-style-type: none"> Describe and give examples of dementia-related behavior. Understand how dementia can affect a person's behavior. Explain why it is important to pay attention to the behavior of a person with dementia. List some common causes of dementia-related behavior. 	<ul style="list-style-type: none"> 10 screens 17 videos including four interactive video vignettes (total running time: 36:00 min) Six additional interactive activities
Module 2: Using the CARES® approach with dementia-related behavior	<ul style="list-style-type: none"> List two reasons why connecting with people with dementia can help minimize dementia-related behavior. Describe the positive physical approach. List two ways that using the CARES® Approach can improve the life of someone with dementia. List two ways that using the CARES Approach can improve your job and make it easier. 	<ul style="list-style-type: none"> 11 screens 11 videos including five interactive video vignettes (total running time: 20:31 min) Three additional interactive activities
Module 3: Breaking down the CARES® approach for dementia-related behavior	<ul style="list-style-type: none"> Discuss why it's important to connect with people who exhibit dementia-related behavior. Use the CARES® Approach to build connected relationships with people with dementia. Use the CARES Approach to assess dementia-related behavior, so that you can respond to the person in a caring, effective way. Explain why it is important to evaluate your approach, and how you can share what is and is not working with others. 	<ul style="list-style-type: none"> 11 screens 20 videos including five interactive video vignettes (total running time: 29:48 min) Seven additional interactive activities
Module 4: Key responses to dementia-related behavior	<ul style="list-style-type: none"> List common types of dementia-related behaviors. Describe practical strategies or "keys" for preventing and responding to different types of dementia-related behaviors. 	<ul style="list-style-type: none"> Three screens 35 videos (total running time: 44:08 min) One interactive activity

continue their online training; thus, DCWs were not required to complete an entire module in one sitting. Training progress or completion was not tracked by a software program for this study; time to completion was estimated from the time when participants were sent a hyperlink to complete the training to the submission of the post-test information. All participating DCWs could access CARES® Behavior via an emailed hyperlink; no software download was required.

Data Collection

Demographic/background data. Table 2 provides DCW sample demographic and professional background characteristics.

Dementia care knowledge. A 25-item, multiple-choice, and true–false measure was developed to test DCWs' knowledge of effective responses to DRB before and

after utilization of CARES® Behavior. The content validity of the measure was established based on suggestions by the CARES® Behavior developmental team (see above) and was refined following multiple iterations to result in a knowledge measure that reflected various dimensions of clinical responses to DRB. The reliability of the dementia care knowledge measure was moderate ($\alpha = .60$), if not questionable. Each item has a correct answer, and the number of correct responses was summed at pre-test and post-test. The measure is included in Table 3.

In a preliminary evaluation of another CARES training module, a validated Alzheimer's knowledge measure was utilized (the Alzheimer's Disease Knowledge Scale [ADKS]; Carpenter, Balsis, Otilingam, Hanson, & Gatz, 2009). Mean pre-test scores of DCWs on the ADKS suggested a potential ceiling effect, as the ADKS and other measures of Alzheimer's disease knowledge tend to focus on more generalized dementia content

Table 2. Descriptive Sample Information ($N = 40$).

Variable	
Gender is female	$n = 36$ (90.0%)
Age	$M = 36.35$ years ($SD = 11.91$)
Race	
White	$n = 24$ (60.0%)
Black or African American	$n = 13$ (32.5%)
Asian	$n = 2$ (5.0%)
Native Hawaiian/other Pacific Islander	$n = 1$ (2.5%)
Ethnicity: Non-Hispanic/Latino	$n = 38$ (95.0%)
Marital status	
Married	$n = 20$ (50.0%)
Never married	$n = 14$ (35.0%)
Divorced	$n = 3$ (7.5%)
Separated	$n = 2$ (5.0%)
Widowed	$n = 1$ (2.5%)
High school education or greater	$n = 38$ (95.0%)
Certified nurse assistants	$n = 30$ (75.0%)
Time working for current employer	$M = 4.36$ years ($SD = 3.97$)
Had used a computer before	$n = 38$ (95.0%)
Owned a computer	$n = 36$ (90.0%)
Had taken a training class by computer	$n = 27$ (67.5%)
Had regular access to high-speed Internet	$n = 37$ (92.5%)

(e.g., “What is the most common form of dementia?” A: Alzheimer’s disease). Such basic information appeared well known among DCWs in nursing homes/assisted living facilities. Moreover, validated dementia knowledge exams such as the ADKS are not specific to DRB, which is central to the content of CARES® Behavior. This necessitated the creation of a specific CARES® Behavior knowledge measure.

Satisfaction items. Thirteen Likert-type scale items were administered at post-test that examined various aspects of satisfaction with CARES® Behavior. Item responses ranged from “strongly agree” to “strongly disagree” and were used to describe DCWs’ perceptions of the quality, potential benefits, and challenges of utilizing CARES® Behavior ($\alpha = .93$). The items and their post-test results are included in Table 4.

Open-ended items. At post-test, four open-ended items were administered that examined the positive and negative aspects of CARES® Behavior. These items were as follows: “What did you like best about this training program?” “What did you like least about this training program?” “How will this program be helpful to you in caring for someone with dementia?” and “If you were recommending this program to someone else, what would you tell them about it?”

Analysis

A paired t test was used to determine if the summed correct score on the knowledge measure at post-test was

significantly different from pre-test (i.e., $p < .05$). Item frequencies of satisfaction items were also analyzed to determine what aspects of the CARES® Behavior online training modules users deemed most beneficial at post-test. Written responses on the four open-ended items were reviewed to identify challenges and strengths of CARES® Behavior and the online education it provided.

Results

Pre–Post-Test Knowledge of Effective DRB Response

The average duration from pre-test to post-test procedures was 8.13 days ($SD = 7.63$). Among the 40 DCWs who completed the pre-test and post-test knowledge measure, 62.5% ($n = 29$) indicated a gain in DRB care knowledge, 17.5% ($n = 7$) showed no change, and 10% ($n = 4$) demonstrated a decrease in knowledge. At pre-test, dementia caregivers on average attained 15.4 ($SD = 3.30$) correct responses on the knowledge measure; at post-test, respondents attained 17.2 ($SD = 2.78$) correct responses. The results of the paired t test demonstrated that this increase in knowledge was statistically significant ($t = 4.79$, $df = 39$, $p < .001$).

A series of post hoc, bivariate analyses were conducted to determine if change in knowledge was associated with any of the demographic or professional background variables in Table 2. Correlation analyses did not indicate statistically significant associations between change in DRB care knowledge and

Table 3. The 25-Item CARES® Dementia-Related Behavior™ Knowledge Test.

Item	Response category
<p>1. What does the CARES® Approach stand for?</p> <ul style="list-style-type: none"> • Pre-test correct = 72.5% • Post-test correct = 82.5% 	<p>a. Connect with the person, anticipate problems, respond to the resident, evaluate what works, share with the doctor</p> <p>b. Contact with the person, answer questions about the resident, request help from the doctor, evaluate the environment, share with the nurse</p> <p>c. Connect with the person, assess behavior, respond appropriately, evaluate what works, share with others^a</p> <p>d. Contact the family, advocate for problem residents, request help from a nurse, evaluate the environment, share with the family</p>
<p>2. Which of the following is NOT one of the steps when using the positive physical approach?</p> <ul style="list-style-type: none"> • Pre-test correct = 10.0% • Post-test correct = 17.5% 	<p>a. Approach from the front</p> <p>b. Make eye contact^a</p> <p>c. Stand to the side</p> <p>d. Offer the person your hand</p>
<p>3. Which of the following is NOT a good example of dementia-related behavior?</p> <ul style="list-style-type: none"> • Pre-test correct = 70.0% • Post-test correct = 72.5% 	<p>a. Not wanting to get out of bed in the morning</p> <p>b. Resisting care</p> <p>c. Swearing at a caregiver</p> <p>d. Kissing another resident</p> <p>e. All except (a)</p> <p>f. All of the above are examples of dementia-related behavior^a</p>
<p>4. The following is a common cause of dementia-related behavior:</p> <ul style="list-style-type: none"> • Pre-test correct = 60.0% • Post-test correct = 67.5% 	<p>a. Pain</p> <p>b. Fear</p> <p>c. Too many people talking in a common area</p> <p>d. Involvement in group activities like bingo</p> <p>e. Only (a) and (b)</p> <p>f. All of the above^a</p>
<p>5. According to this program, when referring to resident behavior, it is OK to call it:</p> <ul style="list-style-type: none"> • pre-test correct = 20.0% • Post-test correct = 55.0% 	<p>a. Inappropriate behavior</p> <p>b. Challenging behavior</p> <p>c. Difficult behavior</p> <p>d. Only (b) and (c)</p> <p>e. All of the above</p> <p>f. None of the above^a</p>
<p>6. One of the easiest ways to reduce dementia-related behavior is just to slow down while providing care.</p> <ul style="list-style-type: none"> • Pre-test correct = 95.0% • Post-test correct = 100.0% 	<p>a. True^a</p> <p>b. False</p>
<p>7. To immediately reduce dementia-related behavior, some use of medication should be your first response.</p> <ul style="list-style-type: none"> • Pre-test correct = 70.0% • Post-test correct = 77.5% 	<p>a. True</p> <p>b. False^a</p>
<p>8. Dementia can affect a person's behavior because it affects the person's:</p> <ul style="list-style-type: none"> • Pre-test correct = 75.0% • Post-test correct = 80.0% 	<p>a. Memory</p> <p>b. Attention</p> <p>c. Reasoning</p> <p>d. Only (a)</p> <p>e. Only (a) and (c)</p> <p>f. All of the above^a</p>
<p>9. Changing your own behavior can prevent dementia-related behavior from happening.</p> <ul style="list-style-type: none"> • Pre-test correct = 82.5% • Post-test correct = 87.5% 	<p>a. True^a</p> <p>b. False</p>
<p>10. Some form of dementia-related behavior occurs in what percentage of nursing home residents with dementia?</p> <ul style="list-style-type: none"> • Pre-test correct = 37.5% • Post-test correct = 70.0% 	<p>a. 25%-35%</p> <p>b. 50%-60%</p> <p>c. 75%-90%^a</p> <p>d. 100%</p>

(continued)

Table 3. (continued)

Item	Response category
11. Often, dementia-related behavior is a reaction to something that is bothering the person. • Pre-test correct = 77.5% • Post-test correct = 92.5%	a. True ^a b. False
12. Pain can often be the cause of dementia-related behavior. • Pre-test correct = 87.5% • Post-test correct = 97.5%	a. True ^a b. False
13. It is OK to make up a story (or lie) to a person with dementia to help reduce dementia-related behavior. • Pre-test correct = 45.0% • Post-test correct = 72.5%	a. True ^a b. False
14. Boredom is a common cause of dementia-related behavior. • Pre-test correct = 65.0% • Post-test correct = 92.5%	a. True ^a b. False
15. Explaining a task in detail will help minimize dementia-related behavior. • Pre-test correct = 45.0% • Post-test correct = 30.0%	a. True b. False ^a
16. It should be an important part of your job to figure out why dementia-related behavior might be happening. • Pre-test correct = 95.0% • Post-test correct = 97.5%	a. True ^a b. False
17. The CARES® Approach can completely eliminate dementia-related behavior. • Pre-test correct = 35.0% • Post-test correct = 27.5%	a. True b. False ^a
18. One morning, a person with dementia screams at you that you stole his money. To reduce dementia-related behavior, it is very important to calmly explain that you did not steal his money. • Pre-test correct = 25.0% • Post-test correct = 17.5%	a. True b. False ^a
19. You should always try to stop dementia-related behavior even if it does not seem to be bothering any of the other residents. • Pre-test correct = 47.5% • Post-test correct = 47.5%	a. True b. False ^a
20. Swearing and insulting cannot be caused by a quiet group activity. Look for another cause. • Pre-test correct = 60.0% • Post-test correct = 70.0%	a. True b. False ^a
21. A good strategy to try with someone who is hitting, biting, scratching, or pinching is to play some soft, soothing music. • Pre-test correct = 75.0% • Post-test correct = 85.0%	a. True ^a b. False
22. If a person with dementia is urinating in public, he or she may simply need to be on a more frequent toileting schedule. • Pre-test correct = 95.0% • Post-test correct = 95.0%	a. True ^a b. False
23. If a person with dementia is kissing or touching other residents, it is usually a normal expression of the person's need to be sexual. • Pre-test correct = 42.5% • Post-test correct = 50.0%	a. True ^a b. False
24. Usually, family members should not be told about sexual behavior because it may be very upsetting for them. • Pre-test correct = 87.5% • Post-test correct = 90.0%	a. True b. False ^a
25. If someone with dementia is yelling at you and resisting because she does not want to get out of bed, you should just try to get them up for 10 to 15 min, and then you should stop trying for a while. • Pre-test correct = 60.0% • Post-test correct = 45.0%	a. True b. False ^a

^aDenotes correct response.

Table 4. Percentage of DCWs Who Strongly Agreed or Agreed on CARES® Dementia-Related Behavior™ Satisfaction Items.

Item	% strongly agreed/agreed
1. This Internet-based training program was an interesting way to learn compared with learning in a classroom or by reading.	85.0
2. The information presented in this training program was easy to understand and follow.	95.0
3. The graphics, sound, and video in this presentation made the training more interesting than other training programs I have participated in.	80.0
4. I am more confident about my skills in helping and caring for people with dementia after completing this training program.	95.0
5. I would recommend this program to other DCWs.	92.5
6. I would recommend this program to other professional caregivers (nurses, social workers, home health aides, etc.)	95.0
7. I would recommend this program to the families of people with dementia.	92.5
8. The videos gave me new ideas on how to interact with someone with dementia.	87.5
9. It was easy for me to fit the training program into my schedule.	70.0
10. As I completed this program, it was important to be able to go back and review sections of the program as often as I wanted.	82.5
11. I preferred learning with this Internet-based training program as opposed to sitting in a classroom.	77.5
12. I have a better understanding of the behavior that is associated with dementia after completing the training program.	87.5
13. I am more confident and comfortable in communicating with someone with dementia-related behavior after completing this training program.	97.5
14. The information provided in the training program will help me better communicate with family members and other professional caregivers.	95.0

Note. DRW = direct care workers.

demographic or professional background characteristics of DCWs. In addition, duration of time from pre-test to post-test was not significantly associated with change in DRB knowledge scores ($r = .03, p = .87$).

Satisfaction Items

Table 4 provides descriptive data on the CARES® Behavior satisfaction measure items. Eighty-five percent or more of respondents indicated that they strongly agreed or agreed that the online training program was an interesting way to learn when compared with classroom or reading methods; that the information presented was easy to understand and follow; that the training program increased DCWs’ confidence regarding their dementia care and communication skills; that participants would recommend this program to DCWs, other professionals, and family caregivers; that the online videos offered new ideas on how to care for someone with dementia; and that participants’ understanding of DRB increased.

Open-Ended Item Analysis

As suggested above, DCWs’ knowledge about responding to DRB significantly increased, and additional closed-ended items demonstrated broad satisfaction with multiple facets of the program. A series of open-ended questions provided more in-depth information as to what

DCWs liked best about the online training program and how it could potentially influence DRB knowledge and care practices:

- The best part of this training was I could do it at home and concentrate better than I would be able to at work. I found this training very informative and detailed. The videos were interesting, showing different ways of approaching dementia residents.
- I liked that the videos had (DCWs), RNs and also some professionals to talk about their experience with dementia.

DCWs also suggested several areas where the online training modules could have been improved or were less helpful:

- It seemed long compared to the program we have now. I have heard all these suggestions before but for a new DCW, it is full of all the essentials of good care giving.
- Nothing particular that I [*sic*] would thing [*sic*] of, some videos were somehow a repetition that i [*sic*] would think rather necessary and important for a better understanding of the training program.

DCWs also indicated how the online program specifically could help them when providing care to someone expressing DRB:

- I learned the positive approach and have implemented it in my approach of residents. I didn't [sic] realize that what seemed so unimportant before actually could affect the outcome of my interaction with my residents. I have noticed a change in demeanor for one resident since I started using the positive physical approach. I've also learned to say Dementia related behavior verses difficult behavior.
- This training program has helped me a lot in broadening [sic] my knowledge on Dementia [sic] and this will help me on improving my skills on how to deal and approach someone with Dementia, especially [sic] with the CARES Approach.

As summarized in the satisfaction items earlier, most DCWs were very likely to recommend the online training program to others. Open-ended questions helped explain what DCWs would say to someone who they would recommend the online training modules to:

- . . . the program teaches and actually demonstrates what to do so you can take appropriate [sic] actions in a manner that will not hurt neither the caregiver nor the resident.
- I would tell them that it was an amazing learning experience and it is really helpful to someone who is a (DCW) or looking to become a (DCW).

Discussion

The findings illustrate CARES® Behavior's feasibility and potential to provide DCWs with the clinical knowledge to effectively respond to DRB among persons with ADRD. DCWs indicated statistically significant increases in knowledge of appropriate responses to DRB following completion of the interactive, asynchronous training modules. For several items the percentage of correct responses in the DCW sample increased by 15% or more, including, "According to this program, when referring to resident behavior, it is OK to call it" (35% increase in correct responses); "Some form of dementia-related behavior occurs in what percentage of nursing home residents with dementia?" (22.5% increase in correct responses); "Often, dementia-related behavior is a reaction to something that is bothering the person" (15% increase in correct responses); "It is OK to make up a story (or lie) to a person with dementia to help reduce dementia-related behavior" (27.5% increase in correct responses); and "Boredom is a common cause of dementia-related behavior" (27.5% increase in correct responses; see Table 3). Prior research and clinical insights emphasize the increasing need for education and skills training to address DRB among persons with ADRD (Gaugler et al., 2014; Kuske et al., 2007), and CARES® Behavior is well positioned to fill this gap due to its portability and flexible design.

Closed-ended satisfaction items provided some reasons why CARES® Behavior resulted in increased knowledge. The clarity, ease, and flexibility of the CARES® Behavior online training modules were

evident among DCWs who completed the program. Perhaps more importantly, DCWs noted that CARES® Behavior content may have enhanced the confidence of DCWs to change their current practices as it is related to DRB response and provided new ideas and tools to do so. This implies that DCWs may be more likely to modify their clinical approach when helping persons with ADRD with behavioral expressions after viewing the CARES® Behavior interactive online training modules.

One aspect of the CARES® Behavior program that was recognized positively by DCWs in the open-ended items was the use of actual DCWs in its video vignettes; the CARES® Behavior video also features actual family caregivers and persons with dementia. The use of "real-world" participants appeared to make the content more relevant to the clinical contexts of DCW users. This "how to" learning experience may have broadened DCWs' knowledge of responding to DRB, as suggested in the open-ended feedback and empirical analysis. Although a few participants perceived the repetitive nature of CARES® Behavior as well as its length as drawbacks, the overwhelming sentiments of DCW users were that the online modules were a valuable training tool and one that they would be willing to share with other care professionals (particularly those more junior in their careers).

Several limitations of this study were apparent. The knowledge measure was developed specifically for this study, and although the measure was refined via iterative feedback from scientific experts as well as DCWs and caregivers of persons with ADRD, it did not undergo formal psychometric testing (e.g., construct validity). This concern extends to the reliability of the measure, which was below currently accepted thresholds for Cronbach's alpha values (i.e., $\alpha = .70$ or greater). The location of module completion (e.g., work, home) was not collected. The open-ended questions were structured in ways that were potentially leading (e.g., "How will this program be helpful to you in caring for someone with dementia?") and may not have allowed for more balanced or negative assessments of the CARES® Behavior online modules' feasibility and utility. The smaller sample size as well as the lack of a control group limited any conclusions of training efficacy, and also precluded an analysis of confounding factors that may have influenced change in knowledge over time (a common limitation of single group, pre-post-test designs, although post-hoc bivariate analyses did not indicate variations in DRB care knowledge among participants of varying background; see above). There was a large discrepancy in the number of DCWs who consented to participate ($N = 87$) and the number who completed the pre-post-test evaluation. A possible reason for the discrepancy was the open-ended nature of access to the CARES® Behavior modules. In current evaluations of CARES training modules, participants are offered three 2-week periods from which to choose to complete a

pre-test, access, view the CARES modules, and then complete a post-test survey. In the evaluation of CARES® Behavior, these time limits were not in effect, which led to long periods when DCWs did not complete the evaluation. In addition, the pre-post-test design did not allow for a determination of whether use of the CARES® Behavior training directly affected quality of care for persons with ADRD. More specifically, as this is a feasibility and utility study of the CARES® Behavior online modules, it remains unclear whether the change in knowledge indicated was clinically significant or would have altered actual clinical care delivery. The open-ended responses indicate that the potential changes in awareness that occurred following viewing of the modules may lead to improved care, but this particular study was not designed to ascertain whether this occurred.

Conclusion

DRB requires effective, non-pharmacological therapies (Herrmann & Gauthier, 2008; Small et al., 1997). In many clinical situations, pharmacological therapies that have severe adverse side effects on older adults with ADRD are often selected as the treatment of choice (e.g., see Gaugler et al., 2014). Such care processes can have damaging implications for the quality of life of persons with ADRD who express DRB.

The skills required to respond appropriately to DRB are not readily available in the geriatric care workforce due to the lack of dementia-specific training (Kuske et al., 2007). Although a number of recent research studies have examined the efficacy of staff training to enhance dementia care (Kuske et al., 2009; Spector et al., 2013; Testad et al., 2010; Testad et al., 2015), questions remain as to the translational potential of such approaches in settings that operate under severe time and fiscal constraints which prevent the delivery of intensive in-person training programs. Providing in-depth, online, asynchronous education to DCWs on how to respond to behavioral expressions could help address these clinical gaps in dementia care and better position non-pharmacological approaches as appropriate, frontline treatment protocols for clients with dementia (Coleman et al., 2015; Elliott & Dillon, 2012). The results of this study offer additional support of the feasibility and utility of online training for DCWs to improve knowledge of appropriate responses to DRB. Future research that determines whether the deployment of the CARES® Behavior program can actually influence quality of care and quality of life for persons with ADRD will offer additional evidence that effective online training can facilitate optimal dementia care in residential settings.

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