Internet Training for Nurse Aides to Prevent Resident Aggression

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Abstract

Objectives—Evaluate Internet training to help Nurse Aides decrease resident aggression.

Design—Randomized treatment and control design; pre-post assessment.

Setting—The study was conducted entirely on the Internet.

Participants—Nurse Aides; N=62

Intervention—Internet based interactive training using video modeling and mastery learning instructional design.

Measurements—Video situations testing and assessment of psycho-social constructs associated with behavior change; follow-up interviews with a sample of treatment participants.

Results—MANCOVA analysis showed positive results (p=.001) for knowledge, attitudes, self efficacy, and behavioral intention, with large effect sizes; it was well received by the users.

Conclusions—Interactive training is an effective approach to shaping appropriate staff reactions to aggressive resident behaviors. The training can effectively be delivered on the Internet. In this research, it was both valued and well received by study participants.

Keywords

resident aggression; training; Internet; Nurse Aides; long term care; interactive

Violence and assaults by residents against staff or other residents in the long-term care system are a major public health concern[1-5]. Direct care workers in long-term care facilities (LTCs) are the workers at highest risk to suffer from workplace violence[6] (e.g., grabs, chokes, hair pulls, kicks, hits, bites, etc,) and injury due to interactions with residents. Aggressive behavior in the form of threats, harassment, and assaults by residents often occurs daily in LTCs and is widely accepted as part of the job by Nurse Aides (NAs) [4,7-10]. Aggressive resident behaviors can take a physical and emotional toll on both NAs and residents[8,11], impacting the quality of care provided[4], and potentially making workers more prone to aggressive responses towards residents[12,13]. The frequency of assaults has been poorly documented, but in a recent study, 138 NAs reported an average of 4.69 assaults during 80 hours of work with a range of 0-67 assaults[14]. Morgan, Stewart, D'Arcy, Forbes, and Lawson[15] reported that 73.4% of NAs in

LTCs reported having been physically assaulted in the previous 12 months. OSHA reports that almost two thirds of non-fatal assaults occur in service industries providing residential care[6], where the level of assaults is often grossly under-reported[16-19]. During one 6-month period in five Mid-western hospital emergency departments (N= 242 respondents), 100% of paramedics, 98% of physicians, and 96% of nurses reported verbal harassment, while 67% of nurses, 63% of NAs, and 51% of physicians reported being physically assaulted[1]. These health care providers are obviously at risk in their work settings.

The Occupational Outlook Handbook by the USBLS[19] reports that NAs are the principal day-to-day caregivers to residents in LTCs, and that this field is expected to experience strong job growth through 2014. USBLS[19] describes the position in negative terms: "Modest entry requirements, low pay, high physical and emotional demands, and lack of advancement opportunities characterize this occupation." In 2004 there were estimated to be about 2 million NA-type jobs in the US, including about 1.5 million NAs and 624,000 home health aides (HHAs) [19]. A majority of NAs are 18-44 years old, and 89% are female. About half of them are members of a minority group. The median wage in 2004 was $10.09 per hour for NAs and $8.81 for HHAs, and some may have a high school diploma or less. Often, little or no formal career training is required to begin working. A typical workload is 11 or 12 residents during the day and evening shifts, and 45 residents during the overnight shift[20,21]. Due to the unpredictable and often problematic behavior of some patients, caring for nursing home residents is frequently perceived to be an unrewarding career[22]. Surveys and focus groups of NAs reveal high job dissatisfaction and alarming annual staff turnover rates: >60% in 65% of states, >80% in 37% of states, and >100% in 20% of states[23-25]. Poor staff morale and high turnover result in significant absenteeism and chronic under-staffing[20,26]. Recent research suggests that organizational culture, job satisfaction, workload, and job training are important influences in determining staff commitment to their employer[25,26]. The end result is that staffing problems can lead to noncompliance with licensing regulations, not to mention obvious compromises to the patients' quality of care[25-27].

Since the enactment of OBRA 1987, nursing home administrators have been compelled to implement effective training programs for their staff. The required hours of mandatory NA education in caregiving skills were expanded from 30 to 75 hours, and training goals were explicitly defined. While there has been some progress, the results in terms of staff training remain unsatisfactory[27], particularly in the area of mental health services[28,29]. Teaching methods are often inadequate, and current in-service teaching practices may not meet federal requirements to address the weaknesses of individual NAs[27]. Many nursing homes are not providing NAs with adequate training in appropriate behavioral approaches for managing their cognitively impaired or mentally ill patients[20,30]. As a result, they often hold negative attitudes about the residents and their capabilities[31]. Although poor motivation of the NA is sometimes blamed, many LTCs have not instituted positive training and staff management systems to encourage non-custodial approaches[21,32]. When trained, NAs report receiving very little supervision and feedback about their performance, limiting the potentially positive effects of the training[33]. Training programs are frequently of poor quality, limited in content, and attended sporadically by overworked staff[34]. Factors such as format, duration, content, trainer expertise, staff education level, and staff attitudes toward residents all need to be addressed to improve the quality of training programs. Effective training positively impacts the knowledge, attitudes, and self-efficacy of mental health staff and can improve generalized caregiving skills as well [35-37]. Training can also help NAs feel that their jobs are more rewarding and less frustrating[38,39]. More effective training approaches are clearly needed.

Two common, low cost, and convenient staff training formats, reading materials and videotapes, have some obvious limitations. Printed training materials may be ineffective because NAs' literacy levels and language proficiency hinder comprehension[37,40,41].

Videotapes for staff training are available from a variety of sources and can: (a) be viewed by an individual at convenient times, (b) present real-life training information, and (c) model recommended employee behaviors. This medium, however, also brings with it certain inefficiencies. For instance, the linear videotape approach cannot tailor information to a viewer's experience or training needs. Consequently, a videotape may present material that is already known or of little interest. Besides potentially boring the viewer and perhaps encouraging inattention, the unnecessary presentation of already known material is costly in terms of staff time. Additionally, videotape programs require staff support to document time spent on instruction and to administer and correct competency tests (if available).

An interactive multimedia (IMM) training approach that links video presentations with the interactive capabilities of computers has the potential to solve many of these problems[42,43]. IMM programs potentially can blend video modeling vignettes and testimonials, graphics and text, and test questions into a criterion-referenced mastery learning instructional design. With this approach, after content has been presented (e.g., in a video modeling vignette), users can be tested and then automatically re-routed to review content elements related to incorrect test responses. Research on adult learners suggests that use of behavior modeling training enhances learning and program effectiveness[44], which supports the instructional design used in this intervention.

The IMM format can be very simple to use, even for those who read poorly. Because the program is interactive, it is self-paced. Thus, NAs who are less educated or have poor language skills (e.g., recent immigrants) can learn the material at their own pace. Voice-over narration lets the user hear messages and assessment questions as they are displayed on the screen. Responses may be delivered via a single keystroke or the click of a mouse on graphic icons (answer buttons). Thus, reading skill or speed is not a prerequisite for success.

Use of IMM technology thus retains the advantages of video (e.g., modeling of desired behaviors), while messages that are tailored to the needs or interests of the user are perceived to be more personally relevant, and therefore engaging and motivational[45], resulting in high user satisfaction[46-48].

Previous research has shown IMM to be an educationally effective training tool in a basic communication skills training of NAs with residents with dementia[46], and in a 12-week general skills NA education program[48]. To date we are not aware of research on the use of an IMM Internet program to train NAs to de-escalate aggressive behaviors. With grant funding from the National Institute on Health (R43AG024675-01A1), the goal of this study was to develop a prototype training website. This study addressed the following research questions:

1) As demonstrated by responses to questions following video simulations, to what extent will users of an Internet IMM training program learn appropriate behavioral and communication techniques to prevent potentially aggressive behaviors from escalating?

2) To what extent will users' attitude, self-efficacy, and behavioral intentions regarding aggressive resident behaviors positively change as a result of program use?

3) How satisfied will users be with an Internet training approach?

Methods

The IMM program: *Professional Dementia Care: Managing Aggression*

The training program was developed after conducting a thorough literature review and telephone interviews with content experts, nurse trainers, and LTC administrators. Scripts were

written, and storyboarded, incorporating graphic images, video vignettes, and testimonials. A total of 155 Web pages, 11 video vignettes, 16 narrator video clips, 71 voice over clips, and 3 supportive NA video testimonials were produced into an interactive program that re-routed users to review content as part of the criterion referenced instructional design. After initial instruction by a video narrator, users moved between web pages by clicking "next" buttons, and answered questions by clicking on radio buttons. Proficiency in typing (or keyboarding) was not required to use the program. On screen text, in the form of short titles, bulleted phrases, questions, and explanations was written at 2nd- 6th grade reading level.

The program content provided skills for approaching an agitated resident exhibiting potentially dangerous behaviors and for safely de-escalating the situation. Video vignettes (e.g., NA reactions to a resident banging on a door with a water bottle) were supplemented by narration and by supportive testimonials. The NA models demonstrated fundamental techniques of an intervention strategy called the *A. I. D.* approach, which was developed by the research team. "A" stands for *Assess*; modeling sequences show how to assess a potentially dangerous situation from a safe distance (i.e., just out of arm's reach) before intervening. Pausing to assess a situation gives the NA time to develop an intervention strategy, plus it discourages the NA from stepping in too quickly, which can increase the danger to the NA in an aggressive situation. "I" stands for *Investigate;* this step includes approaching calmly from within the resident's field of vision (i.e., to avoid surprise), interrupting the behavior with a friendly greeting using the resident's name, and watching the resident's reaction. "D" stands for *Do Something;* which includes validating the resident's emotion, offering to help, and finding a solution in the form of an alternative positive activity.

The over-reaching philosophy of person-centered care[38,39] was emphasized in the modeling videos. That is, NA models were always calm and respectful of the aggressive resident, attempting to interpret the situation from the resident's perspective, to verbally empathize with resident's concern without condemnation, and to use knowledge of the resident as part of a positively oriented non-punitive redirection strategy.

The introductory content was followed by the presentation of three different testing sets using video-situations (i.e., during a meal, a resident stabs fork at food on another resident's plate, causing conflict between the two; agitated resident grabs another resident from behind; shouting resident swings cane overhead, endangering another resident). After watching a video vignette in which a NA reacted to the aggressive resident behavior (e.g., the swinging cane), the program user was asked to select the correct answer from a series of on-screen multiple choice questions about the appropriateness of the NA's response. Correct answers were reinforced, and incorrect answers were remediated with an explanation of why they were incorrect. The program user next saw correct modeling of how to deal with that aggressive situation. After viewing the testing vignette, users who responded incorrectly were re-tested on those vignettes until correct responses were elicited.

Procedures—After the protocol was approved by an Institutional Review Board, participants were recruited via e-mail announcements, e-newsletters, online message boards, Internet advertising, printed newsletter announcements, and newspaper ads in large cities. Potential participants responded to the advertising by visiting an informational Web site, and if still interested they were linked to an online screening instrument that determined eligibility and gathered contact information. Eligibility criterion included: 1) verification that they worked with residents as professional caregivers (e.g., NA, CNA), 2) that they were no more than somewhat confident about handling aggressive situations on a 5-point Likert Scale (i.e., not at all confident, not very confident, somewhat confident, very confident, or extremely confident), and 3) that they had scored 3 or less on a 5-point Likert Scale asking about their training (i.e., none, very little, some, a moderate amount, a lot). They were also required to enroll in the study

from a computer that could play video over the Internet (i.e., Internet-video capable computer with broadband connection), and to have a valid email address. If qualified and still willing to participate, they were asked to provide full contact information to permit email communication and compensation by mail.

In our previous Internet research, a few applicants have provided false information in an attempt to qualify for a study. Consequently, in this study the data provided by each potential participant was checked against our data base of 1200 records of previous Internet study applicants, to cross check for individuals providing fraudulent information (i.e., same name and mailing address provides inconsistent age, gender, or ethnicity in a previous study). Individuals providing suspicious or conflicting data were telephoned, and if the inconsistencies were not resolved, the individual was dropped from the study.

After participants were screened, and approved to participate, they were randomized into treatment or control conditions. Participants in each group were e-mailed a link to the online informed consent form, and if they agreed, they were then linked to the pretest online assessment (T1). This survey took 20-30 minutes to complete. After completing the assessment, treatment participants were linked immediately to the Internet training program. On the following business day, treatment participants who viewed the program, and control participants who had completed the T1 assessment, were e-mailed a link to the posttest online assessment (T2). Once participants completed both assessments, they were mailed a check for $50. Treatment group members were invited on the T2 assessment to participate in later telephone interview, for which they were paid $20.

Participants—After removing four individuals for providing suspicious information, a total of 72 participants qualified for the study. The treatment and control participants did not differ significantly on any of the pretest demographic variables. A total of 62 participants completed both T1 and T2 assessments. As shown in Table 1, the participants were predominantly female and a majority were under 35 years of age. More than half of the participants had a household income of less than $40,000 per year, and had not graduated from college.

Measures

The assessment included a total of 44 items and was expected to take 20-30 minutes to complete. Nine items measured changes in participants' responses to video depictions of aggressive situations (VSTs). Situational testing has been used with verbal interviews[49-51], and as VSTs to test NAs[46]. It approximates real-life behavior when *in vitro* observations are not practical. The other 35 items measured changes in constructs associated with behavior change from social cognitive theory[52,53], and the expanded theory of reasoned action[54], including attitudes, self efficacy, and behavioral intentions. At posttest only, treatment group participants also responded to items assessing their satisfaction with the program and it's design.

The VSTs comprised three short video vignettes depicting aggressive behaviors by a resident (i.e., agitated resident swings a cane over head; resident in wheel chair swings arms violently; resident grabs another resident forcefully). Each video vignette was followed by two self-efficacy items stating "If you were faced with the situation just shown, how confident are you that you… 1) Would know what to do?" and 2) Could successfully decrease the resident's agitation?" Participants used an on-screen 5-point Likert scale to rate their response to each question with options ranging from "Not at all confident" to "Extremely confident." Subjects then responded to a single multiple choice knowledge item testing knowledge of what action to take first for VST 1, what to say first for VST 2, and what to do to stop the aggressive behavior for VST 3.

The assessment protocol next measured changes in attitude, self-efficacy, and behavioral intention. The 13 attitudinal items were program specific and were presented as agree-disagree statements with responses on a 7-point Likert scale (1 completely agree; 7 completely disagree). The items addressed attitudes about the importance of specific behavioral responses to different types of aggressive situations. Self-efficacy items were also answered on a 7-point Likert scale (1 not at all confident; 7 extremely confident). These 11 items addressed the subject's self-confidence to be able to perform specific behavioral responses when faced with an aggressive resident behavior by asking "If you wanted to, how confident are you in your ability to….?" Behavioral intention items were presented as questions about the participant's intention to perform specific behavior when dealing with an aggressive situation. The 11 items were rated on a 7-point Likert scale (1 not at all likely; 7 extremely likely), and the participant was asked: "If faced with aggressive resident behavior, how likely is it that you will…?"

Additionally, the treatment group assessment included 14 items to assess user acceptance. Four items ask users to rate the training program on a 7-point scale (1 not at all; 7 extremely positive) in terms of helpfulness, enjoy-ability, recommend-ability, and satisfaction. Nine items adapted from Internet evaluation instruments[55,56] were included to elicit responses about the program's functionality, credibility, and usability. On these items, users were asked to agree or disagree with statements by responding on a 5-point scale (1 strongly disagree; 5 strongly agree).

Finally, a convenience sample of 11 participants was interviewed by telephone after their submission of the T2 assessment. Participants were asked about their perceptions of the value of the training to them as they subsequently worked with residents. Specifically, they were asked about recent interactions with aggressive residents, and how they responded. They were asked about what they remembered about the training program, and for suggestions about what else might be included in it.

Results

Program Effects

Treatment versus control group comparisons—One of the goals of the evaluation was to examine the extent to which the treatment subjects ($n = 34$) showed gains compared to the control subjects ($n = 28$) on the targeted theoretical constructs following their use of the program. These constructs included: (a) VST knowledge (b) VST self-efficacy, (c) attitude , (d) self-efficacy, and (e) behavioral intentions.

Multivariate analysis of covariance (MANCOVA) comparing the two conditions was conducted on the posttest outcome measures with the pretest outcome measures included as covariates. The five dependent measures included (a) VST knowledge, (b) VST self-efficacy, (c) attitudes, (d) self-efficacy, and (e) behavioral intention. An overall multivariate model was tested followed by five univariate models. The multivariate test was significant; treatment participants were found to have large gains compared to the control participants, $F (5, 51) = 13.98$, $p < .001$, eta-square = .578. As can been seen in Table 2, the treatment group differed significantly from the control group across each of the posttest measures, and each of the effects was large (i.e., eta-square >.14)[57]. The greatest gains were obtained for attitudes about the importance of specific behavioral responses to different types of aggressive situations (eta-square = .403); followed by self-efficacy to be able to perform specific behavioral responses when faced with an aggressive resident behavior (eta-square = .356); VST self-efficacy regarding perceived self-confidence about taking appropriate action based on the video scenario presented (eta-square = .326); VST knowledge regarding appropriate action to take based on the video scenario presented (eta-square = .236;); and intention to perform specific behaviors when dealing with an aggressive situation (eta-square = .173). Thus, significant and

large effects were obtained on all five of the outcome measures providing strong support for the efficacy of the program.

Reactions to the program

Participants in the treatment group rated the Web site (7-point Likert scale) to be helpful ($M = 6.15$; SD 1.05) and enjoyable ($M = 6.03$; SD 1.22). Their scores also indicated that they were satisfied with it ($M = 6.18$; SD 1.43) and that they would recommend it ($M = 6.06$; SD 1.14) to others. Responses about the usability and credibility of the website were also very favorable (see Table 3). The lowest score on the 5-point Likert scales (M = 2.71; SD 1.22) was in response to an item about the amount of freedom of movement within the program. Apparently, the users were less enthusiastic about the program's tunnel design, which presented the training content in a linear sequence with remedial loops for content reviews. This is quite different from a browser interface as is commonly found on the Internet.

Telephone Interviews

The telephone calls to 11 Treatment group interviewees ranged from 20 to 30 minutes in length, and occurred an average of 16.4 days ($SD = 3.8$) after use of the program. All interviewees made positive comments, such as "nice variety," "a good refresher," "very up to date," "I used to be scared to get their (residents) attention when they are mad, I am not anymore." Since their T2 assessment, interviewees reported experiencing a total of 8 aggressive physical encounters and 7 verbally aggressive encounters with residents. Two of the respondents specifically mentioned the A.I.D. intervention approach, indicating that they remembered what was taught. Both of these respondents mentioned having used the "assess" technique successfully subsequent to the training. This is important because during formative development our consultants indicated that NAs often endanger themselves by rushing into an aggressive situation without pausing to determine the best intervention strategy. Four respondents specifically mentioned that they lacked previous training on how to deal with aggressive behaviors. The interviewees suggested that future programs include greater diversity of modeling vignettes, how to deal with very angry residents, more education on dementia, and printouts for later reference.

Discussion

This project successfully developed and evaluated an Internet program to teach NAs fundamental skills to calm LTC residents exhibiting behaviors that were either already aggressive (e.g., grabbing another resident) or that might escalate into aggression or otherwise endanger that individual or other residents (e.g., swinging a cane over head). The program used video modeling vignettes to demonstrate a recommended care strategy, and then tested users on their comprehension with a mastery learning instructional design. Taken together, results from the randomized Internet trial suggest that the program had a substantial and clinically meaningful impact on the NAs. Eleven of the Treatment group participants subsequently interviewed on the telephone reported satisfaction with the program and its design, indicating that the training was well received by the intended audience. Two interviewees remembered the A.I.D. strategy recommended in the program, and reported using it at work during the interval between the training and the follow-up telephone call. They specifically mentioned using the "A" for "assess the situation" before moving in to deal with aggressive resident behaviors. This response, pausing to assess the situation, is a way to increase the NAs' safety while giving them time to prepare a plan before intervening to help an agitated or aggressive resident.

Taken together, these results suggest that an IMM program is an effective training tool, while previous work indicates that this technology can be very time efficient. For instance, in previous

research, the average use-time to acceptable comprehension for a CD-ROM training program for NAs was about 55 minutes[46]. The same training material[58] developed in a VHS format for inservices led by a nurse trainer, was designed as four sessions, each to last at least 45 minutes, a total of 180 minutes. Thus, even if the cost of a $500 computer was included, over time an IMM program would be more cost effective compared to a VHS program, because it does not require the presence of training staff to lead the group, and the usual necessity of scheduling multiple groups to fit different shift schedules. Since the computer system can store a record of each trainee's system use, an individual can return repeatedly to resume training at the point where the previous session ended. The assessment results and training time for each user can be stored by the computer automatically, which liberates supervisors and trainers from tracking and compiling individual training times.

Whether the LTC industry is best served by training programs delivered via Internet or CD-ROM or DVD remains to be seen. All three formats may be used with a projector for inservices, but only Internet and CD-ROMs provide interactive one-on-one training and data storage capabilities. Internet delivery offers the potential of external hosting and easy updating, plus automated record keeping and reporting. The bandwidth required to serve video over the Internet is greater than dial-up Internet connections provide, but cable TV package pricing often includes broadband Internet connections with cable TV access furnished to a LTC. Stand-alone CD-ROM applications can provide high quality video that is independent from a Internet connection and can be played on older computers that may not be fast enough to play video over the Internet. However, obsolescence over time, record keeping capability, and lack of privacy are potential problems with the use of CD-ROMs. Another option is "web -enabled" CD-ROMs which provide the video elements of a Internet program on the host computer, while the training program itself is controlled via the Internet using either a dial-up or broadband connection. We recently tested web-enabled CDs in a successful 12-week intervention to increase exercise by older adults[59], but this approach requires additional evaluation.

While the research presented here is promising, it has limitations. First, the research design without a follow-up assessment did not permit analysis of whether the training effects maintained over time. Subsequent telephone interviews suggest that the intervention had post-training behavioral effects on at least some of the program users. Longer term follow-up and in vivo observation would provide more rigorous evidence of training effects. Second, while participants were screened to qualify and then randomized, they participated on the Internet without direct contact with the research team, and we cannot verify that they met the screening criteria. Third, although research is lacking on this topic, we surmise that the participants may have included more sophisticated computer users than is representative of the NA population as a whole. NAs tend to be less educated and work for relatively low wages compared to the U.S. population (USBLS, 2005), and thus they might be less likely to own computers and perhaps to be facile on the Internet. The participants did roughly fit the age and gender characteristics of NAs nationally, but the sample of minority users was relatively small compared to NAs nationally. While a majority of the video actors were people of color, it is not known if the training will have similar effects on a more diverse population of research participants.

Conclusions

We believe that the results reported here and in previous IMM research[50, 52] demonstrate the efficacy of interactive training programs for NAs, and that this technology holds great potential as a training tool. It can be administered individually with minimal involvement by administrative staff or to groups of NAs led by a trainer. This approach gives an LTC the option of providing each new employee with focused training (e.g., dementia communication; dealing with aggressive behaviors), which should meet, if not exceed, expectations for best practice

standards of care. Thus, the employee's confidence and skills as well as resident quality of care, potentially would be enhanced.

References

1. Gates DM, Ross CS, McQueen L. Violence against emergency department workers. Jo Emerg Med 2006;31:331–337.

2. Gates DM, Fitzwater E, Succop P. Reducing assaults against nursing home caregivers. Nurs Res 2005;54:119–127. [PubMed: 15778653]

3. Nelson HW, Cox DM. The causes and consequences of conflict and violence in nursing home: Working toward a collaborative work culture. Health Care Manag 2004;23:85–86.

4. Occupational Safety and Health Administration. Guidelines for preventing workplace violence for health-care and social-service workers (Rev. Ed.). U.S. Department of Labor; 2003.

5. Shinoda-Tagawa T, Leonard R, Pontikas J, McDonough JE, Allen D, Dreyer PI. Resident-to-resident violent incidents in nursing homes. Jo Am Med Assoc 2004;291:591–598.

6. Bachman, Ronet. National Crime Victimization Survey: Violence and Theft in the Workplace. Washington, D.C.: Bureau of Justice Statistics, U.S. Department of Justice; Jul1994 [Accessed April 4, 2007]. Cited in Occupational Safety and Health Administration OSHA. Workplace violence awareness and prevention: Facts and information. http://www.osha.gov/workplace_violence/wrkplaceViolence.PartI.html

7. Fitzwater EL, Gates DM. Testing an intervention to reduce assaults on nursing assistants in nursing homes: A pilot study. Ger Nurs 2002;23:8–23.

8. Gates DM, Fitzwater E, Meyer U. Violence against caregivers in nursing homes: Expected, tolerated and accepted. Jo Gero Nurs 1999;25:12–22.

9. Gates DM, Fitzwater E, Telintelo S, Succop P, Sommers L. Preventing assaults by nursing home residents: Nursing assistants' knowledge and confidence. Jo Am Med Dir Assoc 2002;3:366–370.

10. Levin PF, Hewitt JB, Misner ST, Reynolds S. Assault of long-term care personnel. Jo Gero Nurs 2003;29:28–35.

11. Leonard R, Tinetti ME, Allore HG, Drickamer MA. Potentially modifiable resident characteristics that are associated with physical or verbal aggression among nursing home residents with dementia. Arch Int Med 2006;166:1295–1300. [PubMed: 16801512]

12. Pillemer K, Hudson MA. A model abuse program for nursing assistants. Gero 1993;33:128–131.

13. Pillemer K, Moore D. Abuse of residents in nursing homes: Findings from a survey of staff. Gero 1989;29:314–320.

14. Gates D, Fitzwater E, Deets C. Testing the reliability and validity of the assault log and violence prevention checklist. Jo Gero Nurs 2003;29:18–23.

15. Morgan DG, Stewart NJ, D'Arcy C, Forbes D, Lawson J. Work stress and physical assault of nursing aides in rural nursing homes with and without dementia special care units. Jo Psychi Men Health Nurs 2005;12:347–358.

16. Gates, D. Violence against caregivers in nursing homes in the U.S.A.. In: Haberman, M., editor. Violence in Nursing: An International Perspective. Hamburg, Germany: J. Lang; 2002.

17. Hewitt JB, Levin PF. Violence in the workplace. Ann Rev Nurs Res 1997;15:81–99. [PubMed: 9262788]

18. Gates DM, Fitzwater E, Deets C. Development of instruments to assess assaultive behavior in nursing homes. Jo Gero Nurs 2003;29:37–45.

19. U.S. Bureau of Labor Statistics, U.S. Department of Labor. Occupational Outlook Handbook, 2006-07 Edition. Nursing, Psychiatric, and Home Health Aides; [Accessed March 23, 2007]. http://www.bls.gov/oco/ocos165.htm

20. Beck C, Ortigara A, Mercer S, Shue V. Enabling and empowering certified nursing assistants for quality dementia care. Internat Jo Ger Psychi 1998;14:197–212.

21. Burgio LD, Scilley K. Caregiver performance in the nursing home: The use of staff training and management procedures. Sem Speech Lang 1994;15:313–322.

22. Glasspoole L, Aman M. Knowledge, attitudes, and happiness of nurses working with gerontological patients. Jo Gero Nurs 1990;16:11–14.

23. American Health Care Association. Results of the 2001 AHCA nursing position vacancy and turnover survey. [Accessed April 23, 2007]. http://www.ahca.org/research/vacancysurvey_020207.htm

24. McCallion P, Toseland RW, Lacey D, Banks S. Educating nursing assistants to communicate more effectively with nursing home residents with dementia. Gero 1999;39:546–558.

25. Castle NG, Engberg J. Organizational characteristics associated with staff turnover in nursing homes. Gero 2006;46:62–73.

26. Sikorska-Simmons E. Predictors of organizational commitment among staff in assisted living. Gero 2005;45:196–205.

27. U.S. Department of Health and Human Services. Nurse Aide Training [OEI-05-01-00030]. Office of the Inspector General; 2002.

28. Moak G, Borson S. Mental health services in long-term care: Still an unmet need. Am Jo Ger Psychi 2000;8:96–100.

29. Styron TH, Shaw M, McDuffie E, Hoage MA. Curriculum resources for training direct care providers in public sector mental health. Admin Pol Men Health 2004;32:633–649.

30. Feldt KS, Ryden MB. Aggressive behavior: Educating nursing assistants. Jo Gero Nurs 1992 May;: 3–12.

31. Solomon K, Vickers R. Attitudes of health care workers toward old people. JoAm Ger Soc 1979;27:186–191.

32. Burgio LD, Burgio KL. Institutional staff training and management: A review of the literature and a model for geriatric, long-term-care facilities. Inter Jo Aging Hum Devel 1990;30:287–302.

33. Short-Monahan R, McCarthy S. Nursing home employment: The nurse's aide's perspective. Jo Gero Nurs 1992;18:13–16.

34. Monahan DJ. Staff perceptions of behavioral problems in nursing home residents with dementia: The role of training. Edu Gero 1993;19:683–694.

35. Payne F, Harvey K, Jessopp L, Plummer S, Tylee A, Gournay K. Knowledge, confidence and attitudes towards mental health of nurses working in NHS Direct and the effects of training. Jo Adv Nurs 2002;40:549–59.

36. Bourgeois MS, Dijkstra K, Burgio LD, Allen RS. Communication skills training for nursing aides of residents with dementia: The impact of measuring performance. Clin Gero 2004;27:119–138.

37. White HK. Promoting quality care in the nursing home. Ann Long-Term Care 2005;13:26–33.

38. Brooker D. What is person centered care for people with dementia? Rev clin gero 2004;13:215–222.

39. Brooker, D. Person Centred Dementia Care. Jessica Kingsley Publications; 2006.

40. Andresen, A. Caring for people with Alzheimer's disease: A training manual for direct care providers. Baltimore, MD: Health Professions Press; 1995.

41. Cohn, MD.; Smyer, MA.; Horgas, AL. The ABCs of behavior change: Skills for working with behavior problems in nursing homes. State College, PA: Venture Publishing; 1994.

42. Keckan M. Computer-based staff training: Can you afford not to? Nur Homes 1997 June;:101–102.

43. MacDonald C, Stodel E, Casimiro L. Online dementia care training for healthcare teams in continuing and long-term care homes: A viable solution for improving quality of care and quality of life for residents. Internat Jo E-Learn 2006;5:373–399.

44. Taylor PJ, Russ-Eft D, Chan DWL. A meta-analytic Review of Behavior Modeling Training. Jo Appl Psyc 2005;90:692–709.

45. Brug J, Campbell M, van Assema P. The application and impact of computer-generated personalized nutrition education: A review of the literature. Pat Ed Coun 1999;36:145–156.

46. Irvine AB, Bourgeois M, Ary DV. An interactive multi-media program to train professional caregivers. Jo Appl Gero 2003;22:269–288.

47. Kobb R, Hoffman N, Lodge R, Kline S. Enhancing elder chronic care through technology and care coordination: Report from a pilot. Telemed Jo e-Health 2003;9:189–195.

48. Rosen J, Mulsant BH, Kollar M, Kastango KB, Mazundar S, Fox D. Mental health training for nursing home staff using computer-based interactive video: A 6-month randomized trial. Jo Am Med Assoc 2002;3:291–296.

49. Dishion TJ, Ramsey B, Brown G, Kavanagh K, Evitt J, Moore K, Prescott A. Adolescent transitions parent role play assessment of family management skills. 1983Unpublished manuscript

50. Hops H, Weissman W, Biglan A, Thompson R, Faller C, Severson HH. A taped situations test of cigarette refusal skills among adolescents. Behav Assess 1986;8:145–154.

51. Irvine AB, Biglan A, Metzler CW, Ary DV, Smolkowski K. The effectiveness of a parenting skills program for parents of middle school students in small communities. Jo Con Clin Psyc 1999;67:811–825.

52. Bandura, A. Principles of behavior modification. New York: Holt, Rinehart, and Winston; 1969.

53. Bandura A. Self-efficacy: Toward a unifying theory of behavioral change. Psych Rev 1977;84:191–215.

54. Fishbein M. The role of theory in HIV prevention. AIDS Care 2000;12(93):273–278. [PubMed: 10928203]

55. Chambers M, Phil D, Conner S, Diver B, McGonigle M. Usability of multimedia technology to help caregivers prepare for a crisis. Telemed Jo e-Health 2002 November 3;8:343–347.

56. Vandelanotte C, De Bourdeaudhuij I. Efficacy of sequential or simultaneous interactive computer-tailored interventions for increasing physical activity and decreasing fat intake. Annals of Behavl Med 2005;29:138–146.

57. Cohen, J. Statistical power analysis for the behavioral sciences. Hillsdale, NJ: Erlbaum & Associates; 1988.

58. Irvine, AB.; Bourgeois, M.; Andress, S.; Boutin, G. Strategies for dementia: Communication skills for professional caregivers. Eugene, OR: Oregon Center for Applied Science; 2000. [4 videos; instructor's guidebook]

59. Glenzer-Gelatt V, Irvine AB, McFarland P, Seeley J. An Internet Intervention to Increase Exercise by Sedentary Older Adults. *Manuscript in preparation*

Table 1

Demographic Information for Study Participants

Variable	Enrolled (n=62)		Treatment (n=34)		Control (n=28)	
	N	%	N	%	N	%
Age						
18-25	15	24.2	9	14.5	6	9.7
26-35	25	40.3	14	22.6	11	17.7
36-45	16	25.8	8	12.9	8	12.9
46-55	4	6.5	2	3.2	2	3.2
Over 55	2	3.2	1	1.6	1	1.6
Gender						
Male	9	14.5	4	6.5	5	8.1
Female	53	85.5	30	48.4	23	37.1
Race						
African American	5	8.1	4	6.5	1	1.6
Asian American	3	4.8	3	4.8	-	-
Caucasian	49	79.0	25	40.3	24	38.7
Latino/Hispanic	3	4.8	-	-	3	4.8
Native American	1	1.6	1	1.6	-	-
Mixed Race	1	1.6	1	1.6	-	-
Education						
Some High School	2	3.2	-	-	2	3.2
High School	12	19.4	8	12.9	4	6.5
Some College	25	40.3	14	22.6	11	17.7
College Graduate	17	27.4	9	14.5	8	12.9
Graduate/Professional	2	3.2	2	3.2	2	3.2
Trade School	2	3.2	1	1.6	1	1.6
Income						
Less than $10,000	1	1.6	1	1.6	-	-
$10,000 - $20,000	12	19.4	6	9.7	6	9.7
$20,000 - $40,000	22	35.5	10	16.1	12	19.4
$40,000 - $60,000	14	22.6	7	11.3	7	11.3
More than $60,000	13	21.0	10	16.1	3	4.8
Experience as a Nurse Aide						
0-1 month	2	3.2	1	1.6	1	1.6
2-6 months	10	16.1	6	9.7	4	6.5
7-12 months	13	21.0	6	9.7	7	11.3
1-3 years	15	24.2	8	12.9	7	11.3
4-10 years	15	24.2	8	12.9	7	11.3
More than 10 years	7	11.3	5	8.1	2	3.2

Table 2

Pre-Post Descriptive Statistics and ANCOVA Results for the Five Outcome Measures.

Outcome measure	Pre-Test		Post Test		F	Condition Effect	Eta^2
	M	SD	M	SD		p	
VST knowledge							.236
Treatment	1.62	0.82	2.62	0.78	17.02	.001	
Control	1.71	1.05	1.93	0.94			
VST self-efficacy							.326
Treatment	3.15	0.80	4.10	0.78	26.55	.001	
Control	2.95	0.77	3.25	0.86			
Attitudes							.403
Treatment	4.64	0.46	5.08	0.44	37.15	.001	
Control	4.61	0.42	4.53	0.32			
Self-efficacy							.356
Treatment	4.92	1.13	6.07	0.92	30.37	.001	
Control	4.68	1.19	4.97	1.26			
Behavioral intention							.173
Treatment	5.31	1.15	6.17	0.96	11.54	.001	
Control	5.13	1.07	5.39	1.19			

Note. $N = 62$; 34 Treatment and 28 Control participants. Multivariate F 5, 51 = 13.98, $p < .001$, eta-square = .578. Univariate F-test $df = 1$, 55. Eta-squared $> .14$ is considered a large effect size[41].

Table 3

Responses from Treatment Group participants to questions about the website design on a 5-point Likert scale.

Item	M	SD
"The website has much that is of interest to me."	4.32	.84
"Using the website was a waste of my time." [reverse scoring]	1.29	.68
"I would imagine that most people would learn to use the website quickly."	4.44	.70
"The website needs more introductory explanation." [reverse scoring]	1.73	.72
"I like how the website guided me through each page."	4.41	.74
"I wish I could move to different sections of the website more freely."	2.71	1.22
"The video situations in the website are believable."	4.41	.61
"The website is attractive and appealing."	4.24	.78