Internet Training for Nurse Aides to Prevent Resident Aggression

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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 psychosocial 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. (J Am Med Dir Assoc 2007; 8: 519–526)

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 violence6 (eg, grabs, chokes, hair pulls, kicks, hits, bites) and injury as a result of 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 affecting the quality of care provided,4 and potentially making workers more prone to aggressive responses toward 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 to 67 assaults.14 Morgan et al15 reported that 73.4% of NAs in LTCs reported having been physically assaulted in the previous 12 months. The Occupational Safety and Health Administration (OSHA) reports that almost two thirds of nonfatal assaults occur in service industries providing residential care,6 where the level of assaults is often grossly underreported.16–19 During one 6-month period in 5 Midwestern 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 US Bureau of Labor Statistics (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. USBLS19 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 United States, including about 1.5 million NAs and 624,000 home health aides (HHAs).19 A majority of NAs are 18 to 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 Because of the unpredictable and often problematic behavior of some patients, caring for nursing home residents is...
frequently perceived to be an unrewarding career. 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. Poor staff morale and high turnover result in significant absenteeism and chronic understaffing. Recent research suggests that organizational culture, job satisfaction, workload, and job training are important influences in determining staff commitment to their employer.

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. 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, particularly in the area of mental health services. Teaching methods are often inadequate, and current in-service teaching practices may not meet federal requirements to address the weaknesses of individual NAs. Many nursing homes are not providing NAs with adequate training in appropriate behavioral approaches for managing their cognitively impaired or mentally ill patients. As a result, they often hold negative attitudes about the residents and their capabilities. Although poor motivation of the NA is sometimes blamed, many LTCs have not instituted positive training and staff management systems to encourage noncustodial approaches. When trained, NAs report receiving very little supervision and feedback about their performance, limiting the potentially positive effects of the training. Training programs are frequently of poor quality, limited in content, and attended sporadically by overworked staff. 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. Training can also help NAs feel that their jobs are more rewarding and less frustrating.

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. Videotapes for staff training are available from a variety of sources and can (1) be viewed by an individual at convenient times, (2) present real-life training information, and (3) model recommended employee behaviors. This medium, however, also brings with it certain inefficiencies. For instance, the linear videotape approach cannot focus on learners’ needs or interests of the user are perceived to be more personally relevant, and therefore engaging and motivational, resulting in high user satisfaction.

Previous research has shown IMM to be an educationally effective training tool in basic communication skills training of NAs with residents with dementia, and in a 12-week general skills NA education program. 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 Institutes of Health (R43AG024675-01A1), the goal of this study was to develop a prototype training Web site. 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’ attitudes, 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 story-boarded, 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 rerouted 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- to 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 (eg, 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 (ie, 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 (ie, 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 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 the resident’s concern without condemnation, and to use knowledge of the resident as part of a positively oriented nonpunitive redirection strategy.

The introductory content was followed by the presentation of 3 different testing sets using video situations (ie, 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 an NA reacted to the aggressive resident behavior (eg, 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 retested 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 criteria included (1) verification that individuals worked with residents as professional caregivers (eg, NA, CNA), (2) that they were no more than somewhat confident about handling aggressive situations on a 5-point Likert scale (ie, 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 (ie, 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 (ie, Internet video-capable computer with broadband connection), and to have a valid e-mail address. If qualified and still willing to participate, they were asked to provide full contact information to permit e-mail communication and compensation by mail.

In our previous Internet research, a few applicants provided false information in an attempt to qualify for a study. Consequently, in this study the data provided by each potential participant were checked against our database of 1200 records of previous Internet study applicants to cross-check for individuals providing fraudulent information (ie, 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 to 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 a later telephone interview, for which they were paid $20.

Participants

After removing 4 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 most 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 to 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 interviews49,50 (also T.J. Dishion, B. Ramsey, G. Brown, et al, unpublished manuscript, 1993) 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,51,52 and the expanded theory of reasoned action,53 including attitudes, self-efficacy, and behavioral intentions. At posttest only, treatment group participants also responded to items assessing their satisfaction with the program and its design.

The VSTs comprised 3 short video vignettes depicting aggressive behaviors by a resident (ie, 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 2 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?” 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 atti-
tudinal 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 behaviors 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 positive; 7 extremely positive) in terms of helpfulness, enjoyability, recommendability, and satisfaction. Nine items adapted from Internet evaluation instruments 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 with the control subjects (n = 28) on the targeted theoretical constructs following their use of the program. These constructs included (1) VST knowledge, (2) VST self-efficacy, (3) attitude, (4) self-efficacy, and (5) behavioral intentions. Multivariate analysis of covariance (MANCOVA) comparing the 2 conditions was conducted on the posttest outcome measures with the pretest outcome measures included as covariates. The 5 dependent measures included (1) VST knowledge, (2) VST self-efficacy, (3) attitudes, (4) self-efficacy, and (5) behavioral intentions. An overall multivariate model was tested followed by 5 univariate models. The multivariate test was significant; treatment participants were found to have large gains compared with the control participants, $F(5, 51) = 13.98, P < .001$, $eta^2 = 0.578$. Univariate F-test $df = 1, 55$. Eta-squared $> 0.14$ is considered a large effect size.41

<table>
<thead>
<tr>
<th>Outcome Measure</th>
<th>Pretest</th>
<th>Posttest</th>
<th>Condition Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>F</td>
</tr>
<tr>
<td>VST knowledge</td>
<td>Treatment</td>
<td>1.62</td>
<td>0.82</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>1.71</td>
<td>1.05</td>
</tr>
<tr>
<td>VST self-efficacy</td>
<td>Treatment</td>
<td>3.15</td>
<td>0.80</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>2.95</td>
<td>0.77</td>
</tr>
<tr>
<td>Attitudes</td>
<td>Treatment</td>
<td>4.64</td>
<td>0.46</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>4.61</td>
<td>0.42</td>
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<tr>
<td>Self-efficacy</td>
<td>Treatment</td>
<td>4.92</td>
<td>1.13</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>4.68</td>
<td>1.19</td>
</tr>
<tr>
<td>Behavioral intention</td>
<td>Treatment</td>
<td>5.31</td>
<td>1.15</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>5.13</td>
<td>1.07</td>
</tr>
</tbody>
</table>

Note. N = 62; 34 Treatment and 28 Control participants. Multivariate $F(5, 51) = 13.98, P < .001$, $eta^2 = 0.578$. Univariate F-test $df = 1, 55$. Eta-squared $> 0.14$ is considered a large effect size.41

ANCOVA, analysis of covariance; VST, video depiction of aggressive situations.
appropriate action to take based on the video scenario presented (eta-square = 0.236); and intention to perform specific behaviors when dealing with an aggressive situation (eta-square = 0.173). Thus, significant and large effects were obtained on all 5 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 Web site 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.

Table 3. Responses from Treatment Group Participants to Questions about the Web Site Design on a 5-point Likert Scale

<table>
<thead>
<tr>
<th>Item</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>“The Web site has much that is of interest to me.”</td>
<td>4.32</td>
<td>0.84</td>
</tr>
<tr>
<td>“Using the Web site was a waste of my time.” [reverse scoring]</td>
<td>1.29</td>
<td>0.68</td>
</tr>
<tr>
<td>“I would imagine that most people would learn to use the Web site quickly.”</td>
<td>4.44</td>
<td>0.70</td>
</tr>
<tr>
<td>“The Web site needs more introductory explanation.” [reverse scoring]</td>
<td>1.73</td>
<td>0.72</td>
</tr>
<tr>
<td>“I like how the Web site guided me through each page.”</td>
<td>4.41</td>
<td>0.74</td>
</tr>
<tr>
<td>“I wish I could move to different sections of the Web site more freely.”</td>
<td>2.71</td>
<td>1.22</td>
</tr>
<tr>
<td>“The video situations in the Web site are believable.”</td>
<td>4.41</td>
<td>0.61</td>
</tr>
<tr>
<td>“The Web site is attractive and appealing.”</td>
<td>4.24</td>
<td>0.78</td>
</tr>
</tbody>
</table>

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 (eg, grabbing another resident) or that might escalate into aggression or otherwise endanger that individual or other residents (eg, 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.6 The same training material57 developed in a VHS format for in-services led by a nurse trainer, was designed as 4 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. Because 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 3 formats may be used with a projector for in-services, but only Internet and CD-ROMs provide inter-
active 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 an 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, 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 postraining 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 US population, and thus they might be less likely to own computers and perhaps to be less 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 with NAs nationally. Although most 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 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 (eg, 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.

ACKNOWLEDGMENTS

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REFERENCES


