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A staff intervention targeting resident-to-resident elder mistreatment (R-REM) in long-term care increased staff knowledge, recognition and reporting: Results from a cluster randomized trial

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Abstract

Background—Elder abuse in long term care has received considerable attention; however, resident-to-resident elder mistreatment (R-REM) has not been well researched. Preliminary findings from studies of R-REM suggest that it is sufficiently widespread to merit concern, and is likely to have serious detrimental outcomes for residents. However, no evidence-based training, intervention and implementation strategies exist that address this issue.

Objectives—The objective was to evaluate the impact of a newly developed R-REM training intervention for nursing staff on knowledge, recognition and reporting of R-REM.

Design—The design was a prospective cluster randomized trial with randomization at the unit level.

Methods—A sample of 1405 residents (685 in the control and 720 in the intervention group) from 47 New York City nursing home units (23 experimental and 24 control) in 5 nursing homes was assessed. Data were collected at three waves: baseline, 6 and 12 months. Staff on the experimental units received the training and implementation protocols, while those on the comparison units did not. Evaluation of outcomes was conducted on an intent-to-treat basis using mixed (random and fixed effects) models for continuous knowledge variables and Poisson regressions for longitudinal count data measuring recognition and reporting.

Results—There was a significant increase in knowledge post-training, controlling for pre-training levels for the intervention group ($p < 0.001$), significantly increased recognition of R-REM

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($p < 0.001$), and longitudinal reporting in the intervention as contrasted with the control group ($p = 0.0058$).

Conclusions—A longitudinal evaluation demonstrated that the training intervention was effective in enhancing knowledge, recognition and reporting of R-REM. It is recommended that this training program be implemented in long term care facilities.

Keywords

Resident-to-resident elder mistreatment (R-REM); nursing homes; long term care; older people; elder abuse; staff education; staff training

Introduction

A major problem in long-term care residential settings that has received little attention is aggressive interactions between residents. Such incidents may affect negatively staff and residents' health and quality of life. Additionally, incidents of resident-to-resident aggression are potentially damaging to nursing facilities, which may incur state and federal sanctions, and also may become liable in civil lawsuits for failing to protect residents who are victims of resident-to-resident mistreatment (R-REM). Prior to this effort, no evidence-based reports of interventions to reduce or eliminate resident-to-resident mistreatment were identified.

There is evidence that such R-REM is sufficiently widespread to be of concern, and that it likely has serious physical and psychological consequences. One systematic study of resident-to-resident violent behaviors identified 294 cases of resident-to-resident abuse in Massachusetts nursing homes over a one year period through its official ombudsman program (Shinoda-Tagawa et al., 2004). Common injuries included lacerations, bruises, and fractures. A recent mail survey of R-REM as reported by nurse aides was conducted in 249 nursing homes in ten states (Castle, 2012). This study documented verbal, physical, material, psychological, and sexual abuse among residents, the most common type of which was verbal and some forms of physical abuse. Similarly, Pillemer and colleagues, using a qualitative event reconstruction methodology, identified the major typologies of resident-to-resident aggression that occur in nursing homes in New York City (Pillemer et al., 2011). The categories were: invasion of privacy or personal integrity, roommate issues, intentional verbal aggression, unprovoked actions, and inappropriate sexual behavior.

Although verbal abuse is more common, physical abuse is most likely to be reported externally. Lachs, Bachman, Williams and O'Leary (2007) studied a group of nursing home residents who had previously been involved in a community-dwelling crime victimization research project. During the research period, police were called with respect to 79 incidents, the majority of which were for assault (Lachs et al.). The United States National Ombudsman Reporting System receives annual reports of nursing home abuse, neglect and exploitation. During a five year period, physical abuse and resident-to-resident abuse were the most common types reported (Jogerst, Daly & Hartz, 2005). These findings suggest the need for person-centred and environmental interventions to reduce R-REM.

There have been several attempts to develop interventions and training programs to reduce elder mistreatment. One such Canadian project, based on interviews with registered nurses was an attempt to reduce resident abuse through the development of a taxonomy of five resident abuse action steps (Hirst, 2002). The steps are: acknowledge the resident's perception of hurt; differentiate the act into either commission or omission; identify the act as context bound or context free; review the reason behind the act and group the acts as intentional (offensive language, physical act, material act, failure to meet physical needs and

failure to meet psychological needs) or unintentional (inappropriate language, failure to meet physical needs and failure to meet psychosocial needs).

Although this taxonomy is useful from the management perspective, there is an expressed need by the front-line direct care nursing staff for further education and training in the areas of recognition of and interventions for both community and institutional elder abuse (Trevitt & Gallagher, 1996). Hagen and Sayers (1995) found that resident aggression was prevalent in nursing homes, particularly towards staff. An education program was implemented that aimed to reduce resident aggression. Documentation of aggressive incidents toward staff was carried out for 8 days before the education sessions and for 8 days following the 3 months long education session program. Reports of aggression decreased by 50% (from 182 incidents to 93 incidents), following the education sessions. Staff indicated that the education program had encouraged them to find different ways of approaching the aggressive residents. Such approaches have been demonstrated successful in ameliorating agitated behaviors manifested by individuals suffering from dementia (Jeon et al., 2012).

Objectives

This project addressed a problem of substantial empirical and practical significance: violence and aggression committed by nursing home residents that is directed toward other residents. However, to our knowledge no specific evidence-based training, intervention and implementation strategies exist that address this issue. Although reporting requirements for resident-to-resident mistreatment have been specified by state departments of health in the US, because of the lack of practice research, little information is available by way of guidelines for recognition and treatment of the problem.

The specific aims of this research project were to: develop a training program for staff that a) enhances identification and intervention with respect to episodes of R-REM in long term care facilities; b) increases staff knowledge related to recognition and treatment of R-REM; and c) increases staff recognition and reporting of R-REM.

For the purpose of this study, we defined resident-to-resident elder mistreatment as negative and aggressive physical, sexual, or verbal interactions between long term care residents, that (as in a community setting) would likely be construed as unwelcome and have high potential to cause physical or psychological distress in the recipient. We hypothesized that R-REM, although contextually different from community elder abuse in many ways, also encompassed a spectrum of clinical phenomena ranging from verbal altercation to physical violence.

Evaluation model

The evaluation model was based on that of Kirkpatrick (1998), and includes four levels: reaction, knowledge, performance and impact. For this study, level 1 outcomes were not assessed. Level 2 process outcomes are enhanced knowledge post training on each module, compared with pretest levels. Level 3 refers to increased recognition and reporting of R-REM after training and Level 4 are distal resident level outcomes such as decreased falls, accidents and injuries. This paper addresses levels 2 and 3 evaluation outcomes.

Research hypotheses

The following a priori hypotheses were posited and tested.

Primary level 2 proximal process outcome: Knowledge

1. Staff knowledge related to R-REM will increase after training.

Primary level 3 proximal and distal process outcome: R-REM recognition and reporting

- 2 The frequency of a) recognition and b) reported R-REM in the intervention group will increase, relative to the comparison group after training.

Methods

Study design

The basic design for this study is a cluster randomized trial with randomization of experimental (intervention) units and matched comparison (control) units within facilities. Data for knowledge were collected at baseline, pre and post training. Data for recognition and documentation of R-REM was ongoing, and collected on a weekly basis (see below). Interview data from residents and staff were collected at three waves: baseline, 6 and 12 months. Data were collected with rolling enrollment and follow-up between July 2008 and December 2011.

Staff on the experimental units received the training and implementation protocols, whereas individuals on the comparison units did not. However, staff on the comparison units did receive training on the reporting form used to collect recognition outcome data, described below. Prior to randomization, Case Mix Indices (CMI) and unit type data were collected. Units were randomly assigned to the experimental group, and the remainder to the control group. The control group was then examined in terms of CMI and type to ensure equivalence. In nearly all cases the experimental and control groups were equivalent on average CMI and type of unit; however, minor adjustments to the control group assignment were made if necessary. Those units that were solely rehabilitation or other short-stay units were excluded from these analyses because residents would not be available for longitudinal assessment and evaluation of the intervention. The study was conducted in five large (>250 bed) facilities.

Protection of human subjects

The study was approved by the following Institutional Review Boards: Weill Cornell Medical Center protocol #0803009718 (U.S. National Institute on Aging, NIA) and Research Division of the Hebrew Home at Riverdale protocol #0308I/P060 (U.S. NIA), #0307I/P050 (New York State Department of Health), #1209I/P066 (U.S. National Institute of Justice).

Description of the intervention

The intervention that involved training of certified nursing assistants (CNAs) on R-REM was conducted in three distinct sessions: 1) Recognition and Risk Factors, 2) Management, and 3) Implementation of Guidelines. Teaching methods were grounded in adult education theory, contributing to the contextualization of the information in the day-to-day work environment of the participants. All content was delivered at an appropriate literacy level. The trainers were experienced professionals with backgrounds in sociology, nursing and nursing home staff education, social work, public health and nursing home administration. The content of the three sessions is described briefly here.

Description of module 1: Recognizing R-REM—Module 1 covers the extent of R-REM, including evidence about frequency; risk factors associated with the victims, perpetrators, and environment; and the putative role of cognitive impairment in R-REM. Different forms of mistreatment are covered, including physical, psychological, sexual, theft, exploitation, active and passive neglect. This module was delivered in the form of an

experiential half-hour in-service training, plus pre- and post-tests designed to be conducted on location in the long-term care setting.

The module begins with an examination of a definition of the phenomenon; the evidence that such resident-to-resident mistreatment is sufficiently widespread to be of concern; and the likelihood that it has serious physical and psychological consequences on residents. The impact of R-REM on nursing facilities and staff is also discussed.

Next, the module focuses on the prevalence, showing that disparate sources suggest that R-REM in long-term care facilities probably occurs with relative frequency. Direct research evidence of the phenomenon is presented, which established that most staff rated the events of R-REM as moderately or extremely disruptive to daily activities. Indirect evidence suggesting that disruptive behaviors in the nursing home are likely to be common is also discussed.

Finally, the module describes risk factors or cross-sectional attributes of aggressors, victims, and environments that may be important in R-REM, highlighting the special role dementia may play. The concluding section of the module sets the stage for learning to report on and intervene in R-REM, which is addressed in the modules to follow.

Description of module 2: Management of R-REM—Module 2 contains four main sections. These are: a) introduction and review of previous session and pretest; b) presentation of a film on management of elder mistreatment; c) presentation of the SEARCH (Support, Evaluate, Act, Report, Care Plan, Help to Avoid) approach to R-REM management; and d) review and lessons learned. A pre- and post-test is included.

A 25- minute film was designed by the research team and developed, directed and produced by the Director & Executive Producer of the New York University (NYU) Department of Media Production and her staff who addressed elements such as audience, thematic content, storytellers and narrator in the preparation of the film. Actors were used to illustrate the scenarios embodied in the short skits. The film was narrated by distinguished journalist, Charles Osgood, with commentaries by leading multidisciplinary experts in elder abuse. Prior to filming the expert commentary, speakers were provided with the film script and suggested topics for discussion.

This film includes a discussion of what might constitute putative evidence of serious abuse, such as bruises, cuts, or more serious injuries such as broken hips, other bones or cracked ribs; other forms of mistreatment such as verbal aggression and threats, sexual harassment and missing eyeglasses, clothing and personal items.

Skits 1: Most blatant form of elder mistreatment: physical assault;

Skits 2: Less blatant form of elder mistreatment: verbal insult;

Skits 3: Subtle form of elder mistreatment: psychological abuse, e.g. wandering uninvited into another's room and rummaging through another resident's property.

Each skit is followed by an example of what is considered a poor staff response to the event as well as a better practice, and by commentary by experts from four disciplines representing different perspectives: psychosocial, medical, nursing, administrative and legal.

Psycho-social perspective—This perspective encompasses ways to address elder mistreatment in the social environment of the nursing home. Questions addressed include,

“What are the likely precipitating circumstances? In what ways can these circumstances be circumvented to avoid R-REM, including redirection?”

Medical perspective—Recommendations include psychiatric and or medical consult; medication assessment. Questions addressed include, “Is the resident taking medication(s) which could be causing increased agitation? What degree of control does the resident have over his/her behavior? Is it the result of increased dementia, a psychiatric illness, personality disorder, depression or physical pain and discomfort?”

Nursing perspective—Care planning meetings are recommended to identify the best interdisciplinary approach. Specific strategies on how to deal with perpetrators of elder mistreatment are discussed. Ways in which to avoid and curb these instances of elder mistreatment, or precipitating behaviors are presented. Basic methods/ tools that nursing assistants can use in common daily situations that may arise are demonstrated. Behaviors that might be exhibited are discussed; e.g., a person appearing fearful or very nervous, withdrawn and unwilling to talk or depressed. Also discussed are cautions regarding treatment of residents after a physical injury and specific actions to avoid.

Administrator/legal perspective—The context of resident-to-resident mistreatment within the long term care setting and the implications of such for residents’ safety and quality of care are discussed.

Closing remarks by the narrator include a review of nine steps to manage and curb resident-to-resident mistreatment within the context of the SEARCH model.

1. *Know* your institution’s resident-to-resident mistreatment policies and procedures. These may be different from policies for other forms of abuse.
2. *Recognize* that residents’ actions have the potential to be abusive. Certain medical conditions, like dementia and depression, may be linked to aggressive behaviors.
3. *Review* best practices for immediate interventions that can be used during the most common mistreatment incidents.
4. *Seek help* from other staff and supervisors if necessary.
5. *Document* all resident-to-resident mistreatment.
6. Make sure any victim of resident-to-resident mistreatment gets the *support* that he or she needs. Unresolved mistreatment can severely decrease one’s quality-of- life.
7. *Discuss* resident-to-resident mistreatment behaviors in a team meeting in order to develop a treatment approach that would become part of a resident’s care plan. This allows for ongoing oversight and monitoring. Repeated instances that are not resolved through care planning may require formal, external reporting.
8. Care of the resident is the top priority. *Report* all injuries to the supervising nurse to insure appropriate follow-up care.
9. In cases of physical harm, it is required that you report the resident’s act immediately. The director of nursing services and the administrator must be informed. Some forms of abuse may require formal reporting as outlined in state regulations, and families may need to be notified. Staff is responsible for following their facility’s abuse protocols in order to *promote the safety* and well-being of all residents.

Description of module 3: Implementation of best practices related to R-REM—

Module 3 includes: a) an introduction and review of previous session; b) presentation of implementation methods and forms (The Resident-to-Resident Elder Mistreatment Behavior Recognition and Documentation Sheets (R-REM-BRDS); c) discussion of methods for completion; d) presentation of filmed vignettes for practice in the completion of the R-REM-BRDS; e) review practice sheets and lessons learned; and f) a review of implementation guidelines. The comparison group staff also received training on the R-REM-BRDS at the study outset (see procedures below).

The focus of this session is on the fidelity measures, and on the implementation of reporting guidelines. The training includes video vignettes that are rated and reviewed in order to confirm skills. Ways to enhance positive group relationships and the use of community to counteract individual acts of mistreatment are also discussed. How can staff work together to structure the social and physical environment to mitigate R-REM? The importance and rules for reporting R-REM are reviewed. The focus is not on retribution, but on alleviation. The formal implementation documentation, the R-REM-BRDS, is described in the section on instruments. It is noted that in order to test whether the intervention group increased recognition and reporting relative to the control group, control group staff were also trained on the BRDS, but did not receive any of the module training.

Facility sample

Selection of facilities—Using the SPSS pseudo random number generator (Statistical Package for the Social Sciences, version 18) procedure, six nursing homes were selected from among the population of 21 nursing homes with 250 or more beds in two metropolitan New York regions. The nursing homes were selected from among this list to represent equally the two regions. Large facilities were selected in order to ensure a sufficient number of units to permit randomization within facilities. Facilities with severe survey deficiencies were excluded. Agreement to participate was obtained from five of the six facilities, yielding a facility response rate of 83%. Given the final bed sizes obtained from the participating facility administrators, and the final power calculations, it was determined that five facilities would be sufficient to yield the requisite sample sizes to detect moderate effects.

Representativeness of selected facilities and generalizability—The final sample represented 24% of large facilities (250+ beds) in the regions. In order to determine the level of generalizability, comparison data were obtained from a number of sources; current rates were obtained from the Medicare website of the U.S. Department of Health and Human Services (2012). Data for quality measures, inspection reports and staffing for the sample sites selected were compared to New York State at large and national current data. The reported number of pressure sores for high risk long-term stay residents ranged from 7% to 31%, with an average of 17% for the sample of facilities, compared with 11% for New York State, and 10% nationally. The range of long-stay residents reported to have lost weight ranged from 4% to 10%; the New York State and national averages were 7% and 8%, respectively. Reported urinary tract infections ranged from 5% to 9% in the selected facilities, with an average of 7.4, somewhat below those of New York State (9%) and the United States (9%). The total number of deficiencies in the last report available publicly ranged from 0 to 8, with an average of 3.4, compared to a New York and national average of 6 and 8, respectively. The mean certified bed size for the sample is 444, somewhat larger than the mean of 226 for all metropolitan New York facilities. While the breakdown of ownership for sampled facilities (80% non-profit) is quite different from the national average (27% non-profit), it is consistent with the local averages for large nursing homes (68% non-profit). In summary, the data reviewed above indicated that based on these indicators, the generalizability is most likely beyond local or regional.

Selection of units within facilities—There are a total of 54 units (47 long- and 7 short-stay) at the five sites sampled. Short-stay units were excluded from these analyses; thus the number of units was 47 (23 in the experimental and 24 in the control). The mean (SD) cluster size was 29.89 (6.50), with a range from 12-45.

Resident sample

Exclusion/ Inclusion criteria—Because of the longitudinal nature of the study, it was desirable to screen out those who were short-stay and those receiving hospice care. For residents who were unable to complete the consent process (due to e.g., cognitive impairment, language barrier, health impairment), consent was sought by designated proxies (families or legal guardians). Residents unable to respond (due to language other than English or Spanish, or impairment) were excluded from resident level measures; chart review, staff informant, and observational measures were performed on those whose families provided proxy consent. Demographic characteristics are presented in Table 1.

Intervention implementation

Certified Nursing Assistant Sample—All CNAs and available nursing staff on all shifts were targeted for training. A total of 325 CNAs were trained on Module 1; 317 CNAs attended the sessions on Module 2 and 322 CNAs were trained on the implementation and use of the R-REM BRDS (incident tracking sheets) (Module 3). Given that the average unit size was about 30 residents, and about 14 staff members per unit, on average, were trained, it is concluded that the majority of CNA staff was trained.

Procedures

Because the BRDS was used as one of the outcome measures, CNAs in both the control and the intervention group were instructed about how to use it, which included rating vignettes for illustration and practice purposes. These meetings (and make-up meetings), were not referred to as training sessions. They were part of the “opening of the research site” routine, before unit randomization or the initiation of data collection. These meetings were segregated by units, and conducted in each of the facilities with the purpose of accommodating the attendance of all CNAs. Module 3, which essentially consisted of a review of the prior two modules and a refresher on the use of the BRDS, was then offered as part of the training for the intervention group exclusively after the two previous modules were delivered.

The training intervention is designed as a train-the-trainer program; however, for the purpose of this project, research staff performed the training. Re-training or make-up sessions were conducted in order to ensure that all nursing staff had the necessary information to implement best practices. Each session was scheduled twice for all the nursing shifts, including the night staff. (In addition, make-up sessions were held.) The provision of multiple time periods ensured that almost all nursing assistants were able to attend. Staff who provided care while others attended the first session could attend the later session while those who had received training covered for them. The same procedure was applied with the weekend staff in order to guarantee that the R-REM training program was available to all nursing staff in the facility. Staff ID numbers were assigned such that pre-and post-tests could be matched for evaluation. Each session used a pre- and post-test format except for the third which contains a Behavior Recognition and Documentation Sheet review (comparing the CNAs answers to the correct ones).

Evaluation interviewers were primarily nursing or pre-medical students or post BA/BS and graduate school students. They were trained extensively in formal sessions, with training films and materials as well as practice sessions with the Computerized Assisted Personal

Interview electronic data capture system. The training occurred over a one week period, with an additional three weeks of hands-on supervised interviewing and interrater reliability checks before certification.

All project staff except the project director and statistical staff responsible for randomization were blinded regarding the intervention. This was possible because all baseline interviews were collected prior to the trainers delivering the intervention.

Instruments

Primary process level 2 evaluation of staff knowledge outcomes: CNAs knowledge tests—Ten question pre-post knowledge tests were developed for each of the first two R-REM training modules, i.e., Recognition and Risk Factors, and Management (the SEARCH approach) based on its respective content (see Table 2). An additional (optional) knowledge test was developed for the third module: Implementation Guidelines, in order to assess implementation of the BRDS to document R-REM events. The latter test compares the CNAs answers to the gold standard ratings. The Cronbach's alpha estimate for the first module test was 0.461, with an explained common variance (ECV) of 0.214 (the first eigenvalue was 2.14, and the second, 1.58). When item 9 was removed the standardized alpha was 0.566. The second module Cronbach's alpha estimate was 0.335; the ECV was 0.167, and the first and second eigenvalues were 1.67 and 1.40. If item 10 is removed, the standardized alpha is 0.399. The low internal consistency estimates were due in part to the measure construction as a simple count of symptoms which could be regarded as an index, and to the relatively low variation for some items.

Primary process level 3 evaluation of implementation outcomes: Recognition and reporting using the Resident-to-Resident Elder Mistreatment Measures—The R-REM instruments used to examine R-REM recognition and reporting respectively were the R-REM-BRDS and the R-REM Staff Interview.

R-REM behavior recognition and documentation sheet: This measure was based on the Shift Coupon, a form originally designed by nursing staff to provide a “quick, easy, anonymous, and non-threatening method to report adverse events” (Kellog & Havens, 2005) and was in the form of a small note pad. BRDSs were intended to measure recognition and capture real time R-REM events that occur during practice. These forms were designed as prescription pads to be carried in the pockets of nursing staff. They were distributed at the training sessions (module 3 for intervention units and during the opening of the unit for control staff); additional pads were available at the nursing station. Sheets could be torn off after documenting R-REM. Items include: residents involved, identity of the perpetrator, actions involved, location, potential cause, and what did you (staff) do about it. Boxes for completed forms were placed in a designated location at the nursing station on each unit.

R-REM staff interview: R-REM is operationalized as *staff* endorsing (or incident reports of) any of 22 items on the R-REM Interview. A list of all potential R-REM behaviors is provided (via a handout) and the number of distinct incidents involving these behaviors is requested. For each incident (up to five), the behaviors involved (see below), and where (e.g., dining area, hallway, resident's room) and when (e.g., morning, noon meal, afternoon) it occurred is recorded. In addition, the identity of the person who started the incident and a description of other participant(s) (sex and relationship) are recorded. The staff member reports whether s/he witnessed the incident, and if so, what s/he did about this (e.g., separated residents, redirected residents).

The following instructions were given to staff.

“We are trying to find out about things residents have done to other residents. I’d like you to think about incidents involving (resident) and one or more people living here. We’ll focus on different forms of resident-to-resident mistreatment. This can include verbal incidents like: residents saying mean things to each other, insulting each other’s race or ethnic group, and/or screaming at each other. Physical incidents can include: hitting, pushing, and/or grabbing. Sexual incidents may include touching, or saying or doing sexual things that made other residents feel uncomfortable. We are also interested in incidents involving other residents going into rooms without being asked, touching personal things, or throwing things. We are referring to both serious reportable and minor incidents that would not necessarily be formally reported. Remember we are talking about incidents in the past two weeks that involved (resident).”

Following in the tradition of elder mistreatment reporting in community studies wherein both a global prevalence of the phenomenon is estimated as well as subtypes (e.g., physical, verbal, etc.), sub-categories of R-REM were calculated. The four major categories in this regard were verbal (5 items, e.g., cursing, intimidation, ethnic slurs), physical (7 items, e.g., hitting, kicking, scratching), sexual (3 items, e.g., saying sexual things, inappropriate touching), and other (7 items, e.g., unwanted help, threatening gestures, wandering into rooms uninvited). For the purpose of these analyses, the global scale was used; the Cronbach’s alpha estimate for the R-REM scale was 0.90 for the entire scale. However, these items have been subjected to factor analysis and advanced item response theory, which is discussed elsewhere. The ECV from the confirmatory factor analysis is given in Table 2.

Covariate used in analyses

Only one covariate was used in the analyses because the groups were balanced on nearly all variables (see below). The cognitive screening measure used in this study is part of the INCARE, the Care Diagnostic Scale (CAREDIAG). The CAREDIAG has been studied using several advanced psychometric models, including analyses of its relationship to dementia diagnosis (Gurland, Wilder, Cross, Teresi, & Barrett, 1992; Teresi et al., 2000). This scale was used to assess cognitive status because it has been found to more culturally fair than others (Ramirez, Teresi, Holmes, Gurland, & Lantigua, 2006; Teresi, 2007). The Cronbach’s alpha estimate coefficient for this sample was 0.875 at baseline, 0.886 at 6- and 0.878 at 12-month follow-up; it was scored in the deviant direction. A score of 7 and above is indicative of definite and more severe cognitive impairment.

Analysis of staff process outcomes

The primary analyses were intention-to-treat (ITT), including all cases as randomized at baseline. Two-tailed tests of significance were performed. Binomial tests were conducted on dichotomous, and Poisson tests on non-binomial (e.g., count) data.

Hypothesis 1, regarding enhanced staff knowledge was examined for individual knowledge items using paired t-tests, comparing pre-post knowledge scores between groups, adjusting standard errors for clustered data within facilities. Group differences in total scores were examined using a linear mixed (fixed and random effects) model for effect estimation. Clustering within units was modeled as a random effect.

Hypothesis 2, regarding enhanced R-REM recognition was examined with a Chi-square analysis comparing counts of BRDS reports from experimental and comparison units captured over time, and treated as binary incidents. Reporting implementation was examined by evaluating the differences between experimental and comparison group staff reports of R-REM, collected over three waves. Individual R-REM reporting was determined by counting whether any of the staff-reported R-REM indicators were positive. The object of

this analysis was not to identify individuals and perpetrators, but to examine the reported events. In modeling R-REM events, a Poisson regression of count data was performed. The Poisson model used for the R-REM reporting count data was:

$$\eta_{ij} = \log(\lambda_{ij}) = \alpha + \mu_i + \mu_j + \beta_1 * cdiagpr + \beta_2 * time + \beta_i * time,$$

where eta is the log link, α is the intercept, μ_i is the fixed effect for group, μ_j is the random effect of unit with mean=0, β_1 is the slope of the cognitive measure (pro-rated for missing data and treated as time varying), β_2 is the slope of time and β_i is the slope of time for group i . (Aitkin, Anderson, Francis & Hinde, 1989; Lawless, 1987). The probability of reporting an event is:

$$p(y) = \lambda^y \frac{e^{-\lambda}}{y!}.$$

Results

Sample and response rate

Including all residents who did not participate regardless of the reason (e.g., refusals, family refusals, sick in the hospital, not on site, expired, language barrier, not alert, severe physical impairment) in the denominator, the overall response rate was 80.2% (1405 enrolled/1751 eligible). There were a total of 193 resident and family refusals. The response rate was 79.9% (685 enrolled/ 857 eligible) in the control group, 80.5% (720 enrolled/ 894 eligible) in the experimental group.

Attrition

Differential attrition was observed over time, potentially affecting the staff process outcome. At six months, the total number of subjects was 1059 (378, control; 681 intervention) and at 12 months the total was 839 (285 control, 554 intervention). In part this was due to the inability to collect the follow-up waves of in-person resident, staff and observational data on several units. However, as discussed below, the samples for the longitudinal analyses of the BRDS reporting source was not affected by attrition, and was appreciably more balanced for the longitudinal analyses (654 control and 643 experimental respondents) because data were collected on all individuals over time.

Demographic equivalence at baseline—At baseline, both groups (control and experimental) were primarily female, white, and widowed. The control and the experimental group residents were of equivalent age, $M = 84.8$ (± 9.9 years) and $M = 84.4$ (± 9.4 years), respectively. There were no significant demographic differences between the two groups (see Table 1).

Equivalence on covariates at baseline—Groups were equivalent on the majority of covariates at baseline. However, the experimental group evidenced cognitive and functional impairment levels of a slightly greater magnitude compared to the control group (CAREDIAG, experimental $M = 8.50$, $s.d. = 4.76$; control $M = 7.41$, $s.d. = 4.66$; Performance ADL (PADL) Scale experimental $M = 12.27$, $s.d. = 13.92$; control $M = 9.51$, $s.d. = 13.29$). Both groups evidenced similar levels of affective disorder (see Table 1), and were equivalent with respect to potential covariates, and all primary and secondary outcomes. It is noted that because of the colinearity between the PADL and cognitive measure, only the cognitive covariate was included in multivariate analyses described below.

Primary process level 2 outcome: Staff Knowledge

Hypothesis 1—Staff knowledge related to R-REM will increase after training.

Results from paired t-tests showed that out of the 10 items included in the Module 1 (Recognition and Risk Factors) knowledge test, there was a significant gain in knowledge on 5 of the items and a trend for significance on another item (not shown). Enhanced staff knowledge was also evidenced when Module 2 (Management of Resident-to-Resident Elder Mistreatment) pre-post knowledge tests were examined. A significant gain in knowledge on 4 of the items and a trend for significance on two others was evidenced (not shown). At the scale level, nursing staff's gain in knowledge was evidenced for both Module 1 ($p < 0.001$) and Module 2 ($p < 0.001$) in that the total post-test scores for each module were significantly different (indicative of higher levels of knowledge) from the total pre-test scores (see Table 3).

Primary process level 3 implementation outcome: Staff recognition and reporting of R-REM

Hypothesis 2—The frequency of recognized and reported R-REM in the intervention group will increase, relative to the comparison group after training.

Staff recognition and reported R-REM was measured with the R-REM BRDS and with the R-REM Staff Instrument, respectively. Higher levels of recognition and documentation of R-REM were observed in the experimental as contrasted with the control group. The groups started out equivalently, but over time, twice as many R-REM BRDS (behavior reports) were collected on behalf of the experimental group unit residents (200) as contrasted with the control group residents (95) ($p < 0.001$).

The staff-reported R-REM level was equivalent between experimental and control groups at baseline; however, as hypothesized, the experimental group reported many more incidents at 6 and 12 months than did the control group. The sum of incidents reported during the staff interview at baseline for the previous two week period was 354 for the control group and 353 for the experimental group. After training, the six month numbers for the control and experimental groups were 79 and 580 and at 12 months 23 and 239, respectively. (See Table 4.) Thus at six months the experimental group reported 7 times as many incidents, and at 12 months, 10 times as many. Sensitivity analyses excluding two sites with greater attrition due to study end and other factors resulted in strikingly similar results, i.e., at 6 months, the experimental units reported 6.5 times as many incidents and at 12 months, 8.2 times as many (See Table 4a). Similar results were found for reports of incidents in the past year.

To formally test hypothesis 2, a Poisson model for count data was performed for the R-REM Staff Interview. This model used a maximum likelihood imputation method to account for missing data, and thus was more robust for modeling missing observations. The results showed that over time the experimental group reported significantly more R-REM events than did the control group ($p = 0.0058$), thus lending confirmation for hypothesis 2. (See Table 5.) Specifically, using the estimation equation reported earlier, the model based probability of reporting any event was calculated, adjusting for cognitive impairment level (although cognitive level was not significant in the model). The intervention and control groups started out at equivalent levels of reporting; however, this diminished over time for the control group, while the experimental group increased. With mean cognition score = 8, the estimate of the probability ($p(y)$) of any reported incident events in the last 2 weeks was 7% in the control group and 36% in the experimental group. It is noted that these probabilities should not be interpreted as prevalence rates, but as staff reporting rates. The estimated average reported events per resident per year (λ) in the control group was 0.35 as

contrasted with 2.06 for the intervention group or about 6 times higher in the intervention than control group.

Discussion

The findings from this study highlight the importance of providing formal, well-developed staff education programs on resident-to-resident mistreatment. There was an increase in staff knowledge in at least half of the items tested as well as for the module tests overall. Also of importance was that the experimental group evidenced higher levels of recognition and reported more incidents of R-REM following the education sessions than did the control group. Highlighting the importance of these findings for clinical practice, education may provide staff with the incentive to document these events. Nursing staff need to be encouraged to complete the required documentation on all aspects of R-REM so that patterns of behavior can be identified and care strategies implemented. All levels of staff may learn how to prevent and manage instances of R-REM. It is most likely that at the present time the majority of resident-to-resident mistreatment incidents are not reported in most nursing homes and strategies to manage them are left to each individual nurse involved in or witnessing the incident. Consequently, different management techniques will be used to deal with similar events, resulting in an unplanned approach to care. To improve the person-centred care approach to managing R-REM requires a coordinated approach, such as the SEARCH program, as developed for this project.

Integration of best practice into participating facilities' philosophy and culture of care

While the best practice is to provide training in how to recognize, manage and reduce R-REM, moving forward, it will be essential to adjust implementation for individual facilities. This can be accomplished by allowing staff at each nursing home to assist in determining the most viable implementation strategies, based on the philosophy and culture of care at that facility. Staff that takes ownership of the best practice products will likely feel more comfortable with the implementation.

Strengths and limitations

The BRDSs were monitored throughout the project. These forms were deemed simple to understand and complete; and therefore easy to incorporate into the daily routine and into the paperwork completed by staff. Despite the small amount of time required (two minutes or less) to complete the sheets, there was resistance to their use over time. Because of the existing economic environment in some countries, in which nursing homes have been significantly impacted by financial cuts, staff reductions concomitant with increased responsibilities, nursing staff expressed heightened levels of pressure to complete their augmented tasks. The completion of the BRDS was perceived as yet one more task to fulfill, and as a competing demand for time necessary for direct service duties.

Because randomization was of units within facilities, there is the potential for contamination. All the facilities involved in the study used a primary care model in their practice which minimized the potential for crossover between the study groups. In order to estimate the extent of the bias, we examined CNA crossover; of the 356 CNAs represented in the study, 52 (14.6%) were on more than one unit during the course of data collection period. Of these 52 CNAs that changed units, 23 (44.2%) did not switch group status, i.e., switched from a control unit to another control unit or from an intervention unit to another intervention unit. An additional 12 CNAs switched from control to intervention units. While a small number (15 CNAs out of the 356 (4.2%)) switched from intervention to control, posing a potential risk for contamination; based on these data it appears as if the risk was relatively small.

An additional limitation is the minor imbalance between the intervention and comparison groups in terms of baseline characteristics, i.e., functional and cognitive status. It was not possible to randomize within units because of contamination. Additionally, there was differential attrition between groups, in part due to protracted data collection and the end of funding. Despite this differential attrition, the groups remained balanced on nearly all variables. These differences were addressed statistically and in sensitivity analyses. Another limitation is the lower than desired internal consistency of the knowledge tests, that may have reduced the observed effect sizes; however despite this, significant ($p < 0.001$), clinically meaningful increases in knowledge were observed for both modules.

Overall, however, the results of this study are encouraging: staff received training in R-REM, which resulted in heightened awareness of its risk factors, prevalence, and potential consequences. The training sessions were successful in that large differences were observed between the groups over time in R-REM recognition and reporting. Given that the groups started out at equivalent reporting levels, this is an important finding, providing strong level-3 evaluation evidence in support of the training intervention. The training may have led to increased sensitization and intervention with respect to R-REM, thus contributing to the increased implementation outcome of R-REM reporting. This conforms with other findings that enhanced staff training is significantly related to positive outcomes (Pillemer, 2003; Teresi, Holmes, Ramirez, & Kong, 1998). However, it is acknowledged that long-term implementation of an intervention requiring additional documentation by the staff is a challenge. Working with the Information Services department, the feasibility of using an electronic method for recording R-REM events should be investigated.

Clinical implications

Education on Resident-to-Resident Mistreatment for staff—The use of education for nursing staff on preventing and managing resident-to-resident mistreatment will help to clarify for all staff what constitutes abuse (Hirst, 2002), help staff in preventing abuse occurring (Payne & Cikovic, 1995) and provide guidelines for staff to follow when resident-to-resident abuse occurs. Baker & Heitkemper (2005) identified that elder mistreatment is rarely covered in nursing curricula, and argued that along with mandatory reporting requirements; it must be taught to nursing students. “Nurses can also make unique contributions to inter-professional collaborative efforts to combat elder mistreatment” (Baker & Heitkemper, 2005, p.258).

The training was developed for direct care staff that could include CNAs, RNs and social workers. However, because CNAs deliver 80% of direct care and are more likely to witness and take action regarding these events, the level of presentation was targeted to CNAs. Nonetheless, it is argued that the training is not exclusively applicable to CNAs. Our recommendation about including RNs in the training responds to several implementation factors: 1) the nurse educator plays a major role in the development and delivery of institutional in-service trainings; 2) RNs in their supervisory roles (to CNAs) are in a prominent position for enforcing best practices; and 3) nurses occasionally, on a voluntary basis, attended the training sessions, anecdotally providing positive comments about the training that may suggest a more inclusive approach toward the nursing staff for future delivery of the training program.

There are enormous challenges faced by the aged care sector, including workforce factors such as staff shortages, turnover and uneven and poor quality of education received by direct care staff. The need for investing in staff education and training in nursing homes is imperative if nursing homes are going to provide high quality care and maintain a competent, motivated workforce (Tolson, 2011, Thomas, 2010, Moyle, et al, 2010). Given the fiscal challenges and demands faced by the long term care industry, and by its staff in

the context the daily direct care provision, changes in staff knowledge alone is not and cannot be persuasive enough for investing in staff education and training programs. Although evaluations of educational programs frequently only measure staff change in knowledge (Feldt & Ryden, 1992; Gates, Fitzwater & Succop, 2005), because knowledge change does not translate automatically into the implementation of better care practices, staff educational programs should examine whether programs have an impact on the care provided. In this evaluation, an attempt was made to move beyond level 2 (knowledge) to level 3 (recognition and reporting) outcomes.

However, the efficacy of achieving behaviour change through staff education does not take into account the time and resources needed to achieve this result, whereas an effective staff development program has taken into account the context in which the change has to take place. Consequently, an efficacious education program would not take into account how well the educational change is implemented into practice; an effective educational program would measure the application to practice. Moyle et al (2010) have suggested that it is still difficult to identify if behaviour change results from staff education programs. Cervio (1985) identified four necessary conditions in order to achieve effective behaviour change from education programs: the quality of the educational program; participant's motivation; the complexity and acceptability of the targeted change issue; and the organizational context, including its receptivity to change. Given that the program presented here was implemented in a real world environment, it could be argued that limited support for effectiveness was shown. However, it is acknowledged that sustained implementation of evidence-based practices remains a challenge.

Documentation of abuse—As previously stated, nurses need to document R-REM in order to provide appropriate care plans. Hirst (2002) identified that many nurses will see incidents of abuse that they will not categorize as examples of resident abuse. “If a nurse does not perceive abuse as occurring, then a behaviour will not be reported and an older resident may be left at risk” (Hirst, 2002, p.281). Castle (2010) found that nurse aides in his study were indifferent to incidents of yelling and insulting remarks, and the implication was that they did not see these incidents as forms of abuse and therefore would not report them.

Preventing and managing aggressive behaviour incorporating person-centred care—Gates, Fitzwater and Succop (2005) found that CNAs are not confident of their knowledge and skill in preventing and managing residents' aggressive behaviour. They conclude that the prevention and management of aggressive behaviours requires nurses who are experienced in critical thinking and clinical skills. They suggest that these skills involve using distraction, time out and validation of the aggressive person. CNAs with a high workload may feel that they do not have time to spend on these individualized activities.

Because of the diversity of R-REM types, their management requires a person-centred care approach, involving interventions that must consider the needs and abilities of individual residents, as well as focus on the particular environment (Pillemer et al 2011; Rosen, Pillemer, & Lachs, 2008a; Rosen et al., 2008b). Castle (2012) suggested that there is a need for nurses to learn and use conflict resolution and recognize situations associated with greater risk. An outcome of this project was the development of the R-REM training package for nursing homes and other long-term care settings emphasizing the SEARCH approach: Support, Evaluate, Act, Report, Care plan and Help to avoid. This project represents an important first step in the process of developing approaches to ameliorating and preventing R-REM in long-term care settings.

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What is already known about the topic

- Abuse of older people in the community is of concern.
- Resident mistreatment of staff and of other residents is a concern for nursing home management.
- Abuse of residents in nursing homes by staff is relatively rare in comparison with instances of residents mistreating other residents. Thus, R-REM is of concern for the aged care industry.

What this paper adds

- The use of an education program targeted to nursing staff in long-term care settings on recognizing, reporting, managing and preventing resident-to-resident mistreatment will clarify what constitutes mistreatment, help staff in preventing occurrences of mistreatment and provide guidelines for staff to follow when resident-to-resident mistreatment occurs.
- The documentation of all aspects of R-REM identifies patterns of behavior so care strategies can be developed and implemented.
- Management of R-REM benefits from a person-centred care approach initiated by a registered nurse, in collaboration with front-line certified nursing assistants (CNAs), using the SEARCH program: **S**upport, **E**valuate, **A**ct, **R**eport, **C**are plan and **H**elp to avoid.

Table 1

Baseline demographic and other information for R-REM consented sample (n = 1405; no short term units included).

	Control (n=685)		Experimental (n=720)		Total (n=1405)		Theoretical range		Observed range	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	min-max	p-value	min-max	min-max
Resident measures*										
Range of Motion Limitations Scale	6.82 (7.41)		6.72 (7.18)		6.77 (7.30)		0-21 ^a	0.840		0-21
Feeling Tone Affective Disorder Response Scale	8.82 (6.27)		8.47 (6.27)		8.65 (6.27)		0-80	0.359		16-63
Care Diagnostic Cognitive Impairment Scale	7.41 (4.66)		8.50 (4.76)		7.96 (4.74)		0-18 ^b	<0.001		0-17
Performance ADL (PADI) Scale	9.51 (13.29)		12.27 (13.92)		10.92 (13.68)		0-54	<0.001		0-47
Extended Depression Scale	6.45 (5.71)		6.96 (6.11)		6.67 (5.88)		0-37	0.278		0-29
Observed affect prorated score over time	6.73 (2.51)		6.79 (2.65)		6.76 (2.58)		0-56	0.636		0-30
Observed behavior prorated score over time	5.40 (2.23)		5.20 (2.16)		5.30 (2.19)		0-100	0.087		0-31
Staff informant measures*										
Disturbing Behaviors	9.65 (8.16)		10.00 (8.14)		9.83 (8.15)		0-62	0.427		0-50
Mood Disorder Scale	.47 (5.63)		.52 (5.52)		.49 (5.57)		-11-23	0.868		-10-22
Basic ADL – Assistance Scale: Morning Care	11.52 (7.63)		13.71 (7.19)		12.64 (7.49)		0-20	<0.001		0-20
Perceived Difficulty Providing Care	1.43 (2.45)		2.02 (3.06)		1.75 (2.81)		0-10	<0.001		0-10
Control (n=685) Experimental (n=720) Total (n=1405)										
	N	%	N	%	N	%		p-value		
Female	500	73.0	525	72.9	1025	73.0		0.974		
Age (mean, std. dev.)	84.79(9.69)		84.40(9.41)		84.59(9.55)			0.450		
Education (years; mean, std. dev.)	11.92(3.85)		12.13(4.07)		12.02(3.96)			0.359		
Race/Ethnicity										
Black, non-Hispanic vs. else	121	17.7	133	18.5	254	18.1		0.515		
Hispanic vs. else	109	15.9	133	18.5	242	17.2		0.127		
Marital Status										
Married vs. else	88	12.8	82	11.4	170	12.1		0.420		
Staff reported number of incidents in past two weeks (mean, std. dev.)	.52(3.40)		.51(2.79)		.51(3.11)			0.922		
Staff reported incident occurred in past year (excluding past two weeks)	85	12.6	68	9.8	153	11.2		0.097		

	Control (n=685)		Experimental (n=720)		Total (n=1405)		Theoretical range		Observed range		
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	min-max	min-max	min-max	min-max	
Staff reported number of incidents in past year (excluding past two weeks) (mean, std. dev.)	3.12(15.89)		4.50(19.04)		3.82(17.57)						0.146

* All scales are scored in the deviant direction

^a 20 plus physical impairment levels.

^b 15 plus cognitive impairment levels.

Table 2

Outcome measures and covariates considered for inclusion in multivariate models

Outcome	Measure	Reporting Source	Direction of scoring	Internal consistency estimate (α) and explained common variance (ECV)
<i>Primary Process Level 2 Outcomes*</i>				
Staff Knowledge	R-REM Knowledge tests: Recognizing R-REM (module 1)	Staff	Positive	10 items: 0.461 9 items: 0.566 (standardized)
	R-REM Knowledge tests: R-REM Management (module 2)	Staff	Positive	10 items: 0.335 9 items: 0.399 (standardized)
<i>Primary Process Level 3 Outcomes</i>				
R-REM Reporting	R-REM Staff Instrument	Staff, Interview	NA	Total: 0.90 Scale: 0.94 ECV: 0.59
R-REM Recognition and Documentation	R-REM BRDS	Staff	NA	NA
<i>Covariates/Risk Factors</i>				
Cognitive Level	CAREDIAG	Resident	Impaired	0.875, ECV=0.399
Function	Performance Activities of Daily Living	Resident	Disabled	0.940
<i>Multi-level Factors</i>				
Unit of residence				NA

* Outcome levels are based on Kirkpatrick's Four-Level Model of Evaluation for Learning. Level 2 is **Learning**: The resulting increase in knowledge or capability; Level 3 is **Performance**: Extent of practice (recognition and reporting) change

Table 3

Mixed model results for Module 1 and 2 knowledge test total scores (number correct), adjusted for clustering within facility.

n	un-adjusted means			un-adjusted paired t-test			Adjusted mean differences and standard errors (se)		
	pre test		post test	differences mean	differences standard error of the mean	sig	estimate	se	sig
	mean	std. dev.	mean						
M1319	7.43	1.16	8.13	1.29	-696	.088	-696	.115	<.001
M2271	7.40	1.54	8.38	1.52	-974	.097	-964	.128	<.001

The covariance structure used in the mixed models was identity.

Table 4
Staff reported individual incidents by administration and randomization group (from Staff Informant).

	Control (n = 685)				Experimental (n = 720)			
	Sum of individual incidents	Mean	Standard Deviation	Median	Sum of individual incidents	Mean	Standard Deviation	Median
Staff reported number of incidents in past two weeks								
BASELINE	354	.52	(3.40)	0	353	.51	(2.79)	0
6 MONTH FOLLOW-UP	79	.27	(1.46)	0	580	1.08	(7.34)	0
12 MONTH FOLLOW-UP	23	.10	(.39)	0	239	.51	(4.01)	0
Staff reported number of incidents in past year (excluding past two weeks)								
BASELINE	2096	3.12	(15.89)	0	3125	4.50	(19.04)	0
6 MONTH FOLLOW-UP	362	1.24	(9.70)	0	982	1.84	(10.83)	0
12 MONTH FOLLOW-UP	203	.85	(8.29)	0	896	1.93	(12.32)	0

a. Sensitivity analysis excluding two sites with incomplete follow-up

	Control (n = 383)				Experimental (n = 401)				
	Sum of individual incidents	Mean	Std. Dev.	Sum of individual incidents	Mean	Std. Dev.	Sum of individual incidents	Mean	Std. Dev.
BASELINE	189	.50	(4.23)	152	.39	(1.73)			
6 MONTH FOLLOW-UP	79	.27	(1.47)	511	1.62	(9.01)			
12 MONTH FOLLOW-UP	23	.10	(.39)	189	.72	(5.18)			

The staff reported incidents were recoded to none versus any.

Table 5

Results for staff reported individual incidents.

Staff reported individual incidents (n = 1395)			
	Estimate	Std. Error	p-value
Intercept	-0.7716	0.3404	0.0283
CARE Diagnostic	-0.0313	0.0225	0.1646
Randomization Group	0.1613	0.4104	0.6944
Time	-1.5985	0.5611	0.0044
Time by Randomization Group	1.6540	0.5986	0.0058

The total number of R-REM incidents from the R-REM staff report measure was used. A higher number indicates more incidents reported by the staff. The CARE Diagnostic scale was coded in the deviant direction. Poisson regression analyses were performed with a log link function, assuming a compound symmetry covariance structure, adjusted for clustering within unit. Up to three waves of data were included in the analyses. The original sample size requirements were based on posited differences as small as 0.25 between the experimental and comparison groups in the average incident event rates per resident in one year (different λ_0 , λ_1), given power =0.80; $\alpha=0.05$, $R=.90$, Variance Inflation Factor due to clustering=1.87. This set of calculations yielded sample sizes as high as 322 per group. The observed estimated adjusted differences reflected in the analyses above were much larger: $\lambda_0 = 0.35$; $\lambda_1 = 2.06$.